



UNITED NATIONS
UNIVERSITY

UNU-LRT

Land Restoration Training Programme
Keldnaholt, 112 Reykjavik, Iceland

Final project 2013

EXPLORING LOCAL BELIEF SYSTEMS FOR THE BENEFIT OF LAND RESTORATION: A CASE STUDY OF THE JAAGBO SHRINE RESTORATION IN THE TOLON/KUMBUNGU DISTRICT OF NORTHERN REGION, GHANA

Wahabu Salifu

Environmental Protection Agency
Post Office Box 620, Tamale, Northern Region, Ghana
whbsalifu@yahoo.com

Supervisor

Dr Gisli Palsson
Faculty of Social and Human Sciences, Department of Anthropology
University of Iceland, 101 Reykjavik, Iceland
gpals@hi.is

ABSTRACT

People often act based on their belief systems, and these include the way they utilise natural resources in their environment. It is now known that long before the world took to scientific conservation/restoration approaches, in most parts of the world people protected their sacred sites (considered as abodes of their gods). This case study assessed the local belief systems of the people of Jaagbo and its surrounding communities and how their belief systems were harnessed for the restoration of the Jaagbo Shrine project carried out from 1993 to 1997 by UNESCO-MAB in the Tolon/Kumbungu District in the Northern Region of Ghana. The case study was conducted with a literature review and administration of questionnaires in two communities adjoining the Jaagbo Shrine. Also, key stakeholders like staff of the Tolon/Kumbungu district assembly and the chief priest of the shrine were interviewed and taped, thus capturing the significance of the restoration project, its impact on conservation in the area generally and the sociocultural benefits to the people. It was revealed that the people have strong local belief systems and these are manifested in the way they protect certain plants and animals in the area. Many in the Jaagbo area including the neighbours said the Jaagbo project helped to protect the shrine and has enhanced their spiritual needs as well as the sociocultural needs of the people in the area as the Jaagbo Shrine has become a site for eco-tourists.

Keywords: Sacred grove; conservation; belief system; land degradation; Jaagbo; Ghana.

This paper should be cited as:

Wahabu S (2013) Exploring local belief systems for the benefit of land restoration: a case study of the Jaagbo Shrine restoration in the Tolon/Kumbungu District of Northern Region, Ghana. United Nations University Land Restoration Training Programme [final project]
<http://www.unulrt.is/static/fellows/document/wahabu2013.pdf>

TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1 Statement of research problem	1
1.2 Importance of the study	2
1.3 Research objectives	3
1.3.1 Main objective.....	3
1.3.2 Specific objectives.....	3
1.3.3 Research questions.....	3
2. LITERATURE REVIEW.....	3
2.1 International and local efforts at protecting Sacred Natural Sites	4
2.2 The Jaagbo Shrine	5
2.3 Importance of the Jaagbo Shrine Project.....	6
2.4 Gender effects.....	7
3. METHODS.....	7
3.1 Study area	7
3.1.1 Tolon/Kumbungu District Assembly (TKDA)	7
3.1.2 Location and size	7
3.1.3 Topography and drainage.....	7
3.1.4 Climate, vegetation and soils.....	8
3.1.5 Population, settlement and culture	9
3.2 Data collection.....	9
3.3 Data analysis.....	10
4. RESULTS.....	11
4.1 Sociodemographic characteristics of respondents.....	11
4.2 Local beliefs systems and conservation practices	13
4.3 Research interviews and emerging themes.....	16
4.3.1 Uniqueness of the Jaagbo Shrine.....	16
4.3.2 Ecological perspective of the Jaagbo	17
4.3.3 Sociocultural benefits of the Jaagbo.....	17
5. DISCUSSION	19
5.1 The importance of sociocultural factors to the people	19
5.2 Local belief systems and conservation practices	19
5.3 Research interviews and emerging themes.....	21
6. CONCLUSIONS.....	22
6.1 Recommendations	23
ACKNOWLEDGEMENTS	25
REFERENCES.....	26
APPENDICES.....	29

1. INTRODUCTION

Faced with a high sense of destruction in the form of land and other environmental degradation due to human activities, the global environmental players over the years have tried several options including land restoration as a means of redeeming the environment (Schaaf 2003). Because of over-concentration on scientific solutions to global environmental problems, the world has largely failed to cause the desired change in the environment (Palsson et al. 2012). Like many others, Palsson et al. (2013) advocate for a paradigm shift in research and environmental protection efforts based on or making human experiences central to limit the false starts that have characterised past environmental protection and management efforts. Studies by Gadgil et al. (2003), Schaaf (2003) and Dudley et al. (2005) have also maintained that the conservation needs of many societies can only succeed if the local people are involved in the process. It is also realised that society's understanding and environmental practices are often shaped by their belief systems (Dudley et al. 2005).

One organisation that has made an effort to build on existing belief systems and conservation as observed in many societies across the world is UNESCO. According to Schaaf (2003), the World Heritage Convention in 1972 under the guidance of UNESCO included Natural Sites (such as sacred groves, normally considered by the local people as dwellings of their ancestral spirits) in the list of protected Cultural and Heritage Sites. The convention emphasised the role of human culture in understanding the transformation it brings to the environment, including the natural ecosystems. One key element which drives this cultural heritage and its impact on the immediate environment is said to be the society's belief systems (Githitho 2003).

According to Schaaf (2003), local belief system is critical in understanding and developing sustainable conservation strategies for any local community, emphasising the interdependence of culture and environment and how they shape each other. UNESCO and its agencies like Man and the Biosphere (MAB) have over the years emphasised the importance of involving local communities in environmental management, and so from 1993 to 1997 UNESCO-MAB carried out the Co-operative Integrated Project on Savannah Ecosystems in Ghana (CIPSEG) within the Jaagbo Shrine in the Northern Region of Ghana as a restoration measure within the savannah and guinea savannah ecosystems, deemed as the most affected areas in Ghana by land degradation due to human activities (Schaaf 2003).

1.1 Statement of research problem

Environmental degradation, especially, land degradation has attracted the attention of policy makers, development planners, and communities as well as individuals worldwide because of the importance of the environment to human society (Turner & Meyer 1994). Land degradation including deforestation, soil infertility and many other factors have bedevilled human society, especially in the last century, which many believe will continue to one of the greatest challenges to human development in the 21st century (Eswaran et al. 2001). Today, there are concerns over human activities causing environmental degradation such as loss of biodiversity and vegetation cover in almost every part of the world. According to Meyer and BL Turner (1994), the negative impact of human activities on the environment is likely to continue as humans become more and more technologically advanced. Natural conditions are said to be giving way to modified land conditions, and more areas continue to experience dry land conditions (Bojő 1996).

In Ghana, the level of land degradation varies from one ecological zone to another. Apart from the different ecosystems, the nature of activities of the local people also contributes to the differences in local conditions of the environment. There are concerns over deforestation in the forest zone and water pollution around the coastal belt. These concerns are so because land continues to play a key role in the lives of the majority of the people in Ghana, especially in rural areas (Benneh et al. 1990).

The Northern Savannah Ecological Zone, on the other hand, is highly affected when it comes to dry lands or desertification in the country. One obvious impact of these land conditions is poor farm productivity due to poor soil fertility resulting from loss of vegetation cover. Therefore, there is a need for sustainable land conservation as well as restoration approaches that can easily be adopted by the local people who work on the land based on their belief systems. In order to address the challenges of land degradation, the Jaagbo Restoration Project was set up by UNESCO-MAB to serve as a model for replication towards land restoration in the northern region.

Following the excitement that greeted the inception of the Jaagbo project (Amoah 2003) one would have expected a region wide manifestation of similar projects to show that people immediately accepted the concept and are ready to work with it since it was meant to enhance their sociocultural well-being. However, the Jaagbo project appears to be just one success story and the questions many in the area including the researcher are likely to be asking are what, if anything, really went wrong? Are the people lacking the initiative skills to implement similar projects on their own? Is the concept well seated with the people's culture or was there something more that needed to have been done?

1.2 Importance of the study

Reduction of land productivity is a major consequence of land degradation. The long term effects are even more serious, as land degradation manifests itself in the form of socioeconomic challenges such as food insecurity, migration, limited development and damage to the ecosystem which undermine progress towards achieving environmental sustainability (Nkonya 2004). In Ghana, youth migration from the rural areas to urban centres is being attributed to the environmental degradation of the place of origin of the immigrants (Benneh et al. 1990).

Activities such as overexploitation of forest resources, unsustainable mineral mining, bushfires and others which are causing the land degradation are visible in almost every part of the country in different forms. Hansen et al. (2009) estimate the country's annual deforestation to be about 2% in reserved areas and about 5% where there is open access. This means that land degradation is a continuous problem in Ghana and has, therefore, become a source of debate, especially between individual groups who are involved in illegal mining (mostly unsustainable) on the one hand and government authorities responsible for protection of the environment on the other hand.

Within the savannah ecological zone of Ghana, sacred groves are easily recognised like many other places because of their unique characteristics (Dudley et al. 2005). They normally appear as a small forest surrounded by degraded lands which makes them unique. The existence of these groves provides an insight into the people's belief system and how far they are willing to respect their beliefs even in the face of increasing demand for firewood for domestic energy needs and fertile lands for agricultural activities (Khan et al. 2008). Based on

this, the CIPSEC project was implemented to serve as a model for adoption and for replication within the project area and beyond, and not just to become a once-only success story in this area of great potential for building on local knowledge and belief systems for conservation.

It is, therefore, important to attempt an investigation into the underlying causes of the limits or failures of this noble attempt by UNESCO to initiate this method of land restoration/conservation through the use of existing local belief systems in the area which could be adopted by the adjoining communities and others in the region. The study sought to investigate the reasons why, although successful as a pilot project, the project failed to bring the desired change in environmental conservation in the area. This information, if acquired, could be used by people interested in undertaking similar projects in the area or elsewhere to improve on their work.

1.3 Research objectives

1.3.1 Main objective

The main objective of the study was to assess the impact of local belief systems on environmental conservation in the project area and to offer recommendations.

1.3.2 Specific objectives

1. To assess the role of local belief systems as a tool for land conservation as in the case of the Jaagbo Project.
2. To assess the sociocultural impact of the restoration of sacred groves on the various groups in the community.
3. To examine why the Jaagbo Project, although partly successful, has not been replicated by the community or by the adjoining communities.

1.3.3 Research questions

The following research questions guided the conduct of this project:

- What role do local belief systems play in environmental conservation practices of the area?
- Has the Jaagbo Shrine conservation project made the desired impact on the lives of the local people?
- Has the Jaagbo Shrine conservation project influenced the environmental conservation of the people in the neighbourhood?

2. LITERATURE REVIEW

People often act based on their belief systems; this includes the way they utilise natural resources in their environment, particularly in determining what is permissible and what is not based on their knowledge and beliefs (Gadgil et al. 2003; Campbell 2005; Xu et al. 2005). This is more the case in developing countries, especially rural Sub-Saharan Africa (Dorm-

Adzobu et al. 1991; Byers et al. 2001; Verschuuren 2006). Protection of sacred sites is said to pre-date modern scientific methods of conservation (Dorm-Adzobu et al. 1991; Byers et al. 2001). This implies that nature conservation did not start with the official demarcation and protection, but has been an integral part of how the people have acted since time immemorial (Dudley et al. 2005; Khan et al. 2008). According to Khan et al. (2008), the practice of protecting sacred groves by communities pre-dates modern conservation. Societies across Asia, Africa and Latin America are known for demarcating unique environments as the resting places for the gods, which are given respect and protection (Gadgil et al. 2003). Despite the wide spread of major world religions like Christianity and Islam, the practice of traditional worship is still prevalent in Asia, South America and Africa (Gadgil et al. 2003; Dudley et al. 2005; Khan et al. 2008).

Many people believe sacred groves, if well explored, would provide the right avenue for bridging the existing gap between modern legally protected and demarcated conservation and the traditional, community-based acceptable concept of protection of specific sites for well-known purposes (Soutter et al. 2003; Dudley et al. 2005). In many parts of the world today, the significance of traditional belief systems and nature conservation are being closely assessed in Asia, Africa and in South America (Malhotra et al. 2001; Xu et al. 2005; Verschuuren 2006). Dev et al. (2004), maintained that the West Bengal people and their participation in the restoration of their sacred grove project were motivated by the desire to protect their sacred places. Verschuuren (2006) intimated that the local belief systems are key in the ecosystem management of an area. Studies conducted by Byers et al. (2001) on comparative analysis of conservation in traditional sacred sites and the official or state reserved areas in parts of Zimbabwe and among the Shona people concluded that the Shona people had much respect for their sacred sites compared to the state-owned forest reserve in the area.

As many parts of the world, conservation of sacred sites comes in many ways in Ghana. In most communities, people know local rules governing sacred sites which are backed by myths. For example, people may be prevented from using a sacred forest or fishing in a river or lake on certain days believed to be the resting days of the ancestral spirits which need peace and an undisturbed environment. Myths such as causing self-inflicted misfortunes like meeting one's own untimely death or getting lost in the forest are sometimes associated with disrespecting these myths. This, according to Amoako-Atta (1998), is well respected among community members. In Ghana, sacred groves are visible in almost every part of the country, and despite the influence of the world's major religions like Christianity and Islam many people still practice their local beliefs, according to Amoako-Atta (1998). This has been corroborated by many other observers in Ghana including Dorm-Adzobu et al. (1991), Byers et al. (2001) and Campbell (2005). There are strong rules and regulations regulating the use of such designated sites which serve as sacred groves and community members sincerely uphold these values over the years (Amoako-Atta 1998).

2.1 International and local efforts at protecting Sacred Natural Sites

Over the years, international efforts at protecting Sacred Natural Sites have seen a lot of declarations at the UN level. The most explicit among the early efforts according to Daes (1994) is the Draft Declaration on the Rights of Indigenous Peoples. Article 13 of the draft states:

Indigenous peoples have the right to manifest, practice, develop and teach their spiritual and indigenous traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to the use and control of ceremonial objects; and the right to the repatriation of human remains. States shall take effective measures, in conjunction with the indigenous peoples concerned, to ensure that indigenous sacred places, including burial sites, be preserved, respected and protected.

This to many people was an important declaration which subsequently helped shape similar declarations because it highlighted human experience. The Rio Declaration further stepped up international efforts in this direction (Jacquemont & Caparrós 2002). Article 8 (j) of the Convention entreated signatory countries to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity." UNESCO-MAB projects on Sacred Natural Sites protection around the world are one of the manifestations of this international drive (Schaaf 2003). The world conference on the subject in Japan entered into the Tokyo Declaration that facilitated the production and implementation of the UNESCO and IUCN "Draft Guidelines for the Conservation and Management of Sacred Natural Sites" on devoting time and resources on the course of conservation through Sacred Natural Sites protection.

In Ghana, efforts at protecting Sacred Natural Sites have been collaborative work between state institutions, local communities, NGOs and external collaborators. One of such collaborations was the case of the Jaagbo Shrine Project (the subject of the study), the restoration of the Anweam Sacred Grove in the Esukawkaw Forest Reserve (ancestral burial site of the Asunafo Royal Family).

2.2 The Jaagbo Shrine

The way that Ghanaians perceive and worship is captured in the work of Haverkort et al. (2002b) (see Fig. 1). They described traditional worship of the "Allfather". For the traditional worshippers, the "Allfather" God can only be reached through intermediates such as the lesser gods, ancestral spirits and many others because they consider him to be too distant and mighty to be reached directly (Haverkort et al. 2002b). Because of this, almost every community in Ghana has a sacred place for worship passed on from the ancestors. Apart from the community sacred groves, many families also have their clan gods or family deities in the form of totems, which family members are forbidden from harming or eating.

Jaagbo Sacred Grove and Shrine is one of these communities' sacred sites in the Northern Region of Ghana. The Jaagbo Sacred Grove is located near Tali, West of Tolon in the Tolon/Kumbungu District of the Northern Region. It is about 36 km West of Tamale on the Tamale Daboya road. The grove is approximately 11 square kilometres in area and is predominantly savannah reverie (gallery) forest or woodland with a stream running east-west which serves as source of water for some communities fringing the grove. The grove also has an amazing diversity of animals, particularly birds and small mammals and insects which offer a unique opportunity for educational studies and ecotourism and also serves as a resting place for crocodiles which are the totems of the shrine (Tolon/Kumbungu District Assembly 2006).

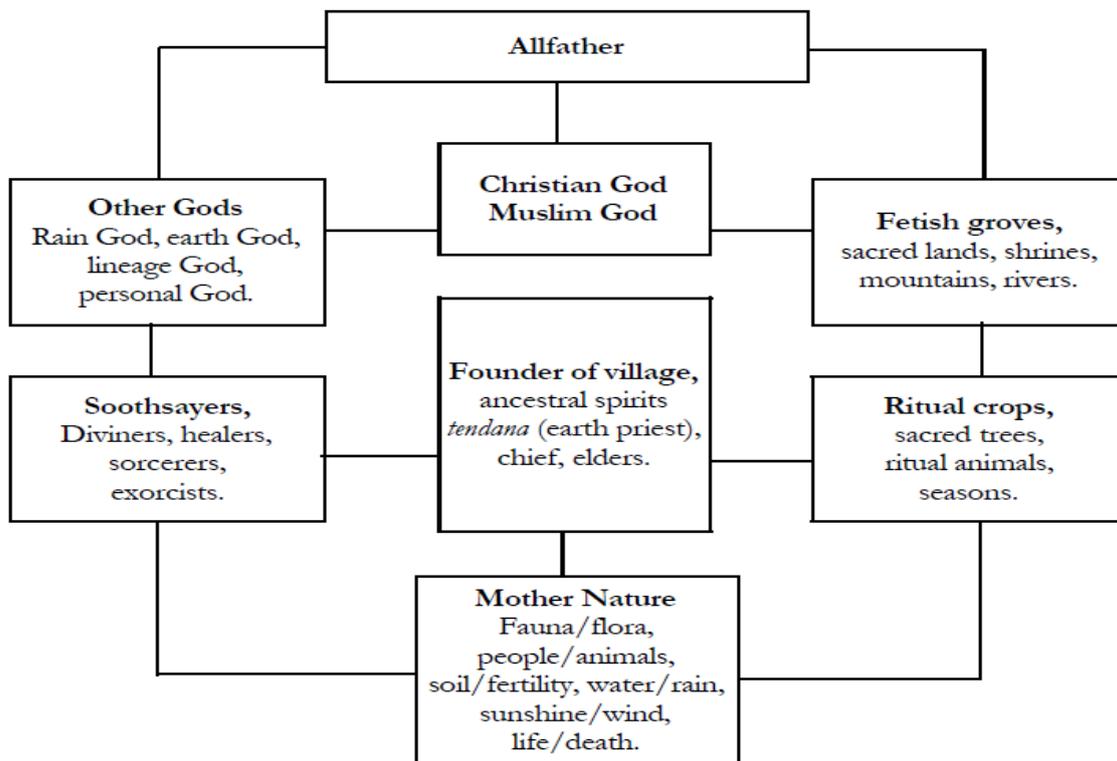


Fig. 1. How Ghanaians perceive and worship God by different religions including traditional worshippers who worship God through their deities. (Source: Haverkort et al. 2002b).

According to oral tradition, before the settlement of the Mole-Dagomba and the establishment of the institution of chieftaincy in this part of the country, the people lived an acephalous or head-less life with the **Tindana** playing the role of symbolic head who seeks answers to the challenges of his people through the gods. The introduction of any centralised chieftaincy institution among the Mole-Dagombas, however, did not change the role of the Tindana much but kept the Tindana as the intermediary of the people and their gods.

2.3 Importance of the Jaagbo Shrine Project

The preliminary project survey of the Jaagbo site according to Schaaf (2003) revealed over 220 species of plants in the then highly threatened Sacred Site in the early 1990s. This, compared to the surrounding areas, was relatively conserved. The project therefore initiated collaboration with the local community members to restore the place which will continue to play the spiritual role and also provide opportunity to the people to appreciate large scale conservation.

According to the Tindana, the restored grove protects one of the permanent rivers in the area from which most of the communities draw their drinking water in the dry season. It is also possible for the people with permission to harvest rare medicinal plants in the grove when it becomes necessary for treatment. The Jaagbo Sacred Grove and Shrine, apart from serving the spiritual needs of the local people, is also an ecotourism site generating resources for the community and it has become a place of study for tours by the schools in the area because of its diverse plants and animals, especially the bird sanctuary (Tolon/Kumbungu District Assembly 2006).

2.4 Gender effects

Land degradation according to Wanyeki (2003) has a tremendous impact on women, especially in developing countries, because of their dependence on land resources. They are challenged when the land is degraded and are always forced to work marginal lands, especially in Africa because of the lack of land rights in most African rural communities. In most traditional societies in Ghana gender plays a vital role in determining who in the household provides what. For example, women would normally take care of firewood collection as well as fetching water for household use and then cooking, while the men are in charge of farming activities (Wanyeki 2003).

The activities of both men and women have an impact on the land and natural resources in general. Traditional knowledge and belief systems are in most cases known and practiced by all in the society (Dudley et al. 2005). These sacred groves have different functions as they are consulted for different purposes, including consultation for rain during a long drought, child bearing for couples, as well as for treatment of illnesses. Information on these local gender responsibilities and different levels of importance in the society and how this can benefit from activities like restoration of sacred groves is important for sustainable implementation of such projects.

3. METHODS

3.1 Study area

This case study was conducted in the Tolon/Kumbungu District in the Northern Region of Ghana, where the Jaagbo Shrine restoration project was carried out from 1993 to 1997 under the sponsorship of UNESCO-MAB with the support of EPA, the Tolon/Kumbungu District Assembly, and the Jaagbo community.

3.1.1 Tolon/Kumbungu District Assembly (TKDA)

3.1.2 Location and size

The district lies between latitudes 9°15' and 10°02' North and longitudes 0°53' and 1°25' West. It shares boundaries to the north with West Mamprusi, West Gonja to the west and Central Gonja to the south, whilst Tamale Metropolitan and Savelugu/Nanton Districts form the eastern boundaries with the district. It covers a total landmass of 2,741 km² forming about 3.9% of the entire area of the Northern Region (see Fig. 2).

3.1.3 Topography and drainage

The landscape of the area is generally undulating with a number of scattered depressions. There are no marked high elevations throughout the district. The district is drained by a number of rivers and streams, the most prominent being the White Volta which almost divides the district into two equal halves. Among the major tributaries of the White Volta are Kulabong, Koraba, Salo, and Bawa Winibo (Tolon/Kumbungu District Assembly 2006).

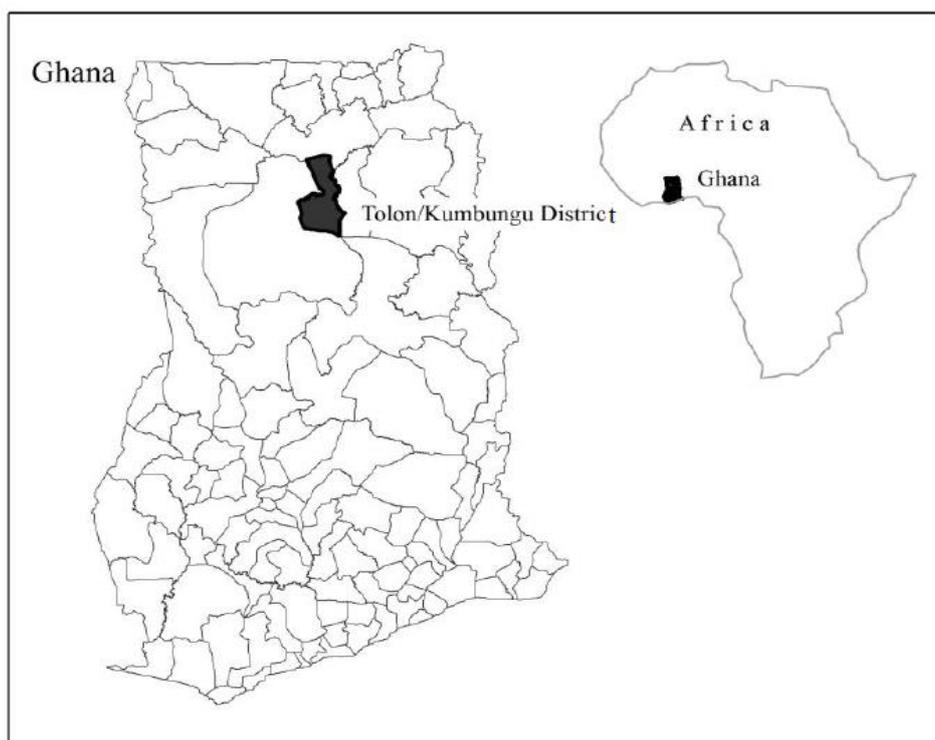


Fig. 2. Map of Tolon/Kumbungu District in Northern Ghana. (Source: Fanney Gisladdottir, Agricultural University of Iceland, 2013)

3.1.4 Climate, vegetation and soils

Rains begin in May and end in the latter part of October. The rainfall reaches its peak between July to September resulting in floods along the major rivers in the district. The rest of the year is dry. The average annual rainfall is 1000 mm. The temperature is warm, dry and hazy around February to April. It is cool, moist and rainy around May to September. The Harmattan wind is experienced in the period between October and December. The district is generally hot (Tolon/Kumbungu District Assembly 2006).

The vegetative cover is basically Guinea savanna interspersed with short drought resistant trees and grassland. The land is generally undulating with a number of scattered depressions. Major tree species include the sheanut, dawadawa, and mango, which are economic trees and form an integral part of the livelihood of the people (Tolon/Kumbungu District Assembly 2006).

The soils are generally of the sandy loam type except in the lowlands where alluvial deposits are found. Apart from the gentle slopes, the soils are highly vulnerable to sheet erosion and, in some areas, gully erosion also occurs. This condition occurs primarily because of the perennial burning of the natural vegetation, leaving the soils exposed to the normally high intensity. The continuous erosion over many years has removed most of the top soils and depleted or destroyed the organic matter. This situation does not allow the soil fauna to thrive and keep the top soil layers open and enable healthy plant roots to develop. It results in serious compaction, with considerable reduction in the rainfall infiltration rate. When the soil is affected by erosion and fertility is reduced, it still has some potential for agriculture if the available nutrients are managed sensibly, including appropriate supplementation measures to restore a better soil water infiltration rate (Tolon/Kumbungu District Assembly 2006).

3.1.5 Population, settlement and culture

The total population, according to the 2000 Population and Housing Census, was 122,550. The 2006 population was estimated at 161,160 with a growth rate of 3%. The population density is approximately 50 inhabitants per square kilometer. The current population stands at about 249,691 (Tolon/Kumbungu District Assembly 2006).

About 45% of the population is between the ages of 14 and 30, which indicates that the population is largely youthful. The district is made up of 237 settlements most of which are farming communities with a population below 500. Using a population of 5000 as the threshold for the urban-rural dichotomy, the district has about three urban centres. These include Tolon, Nyankpala and Kumbungu. This therefore implies that a greater percentage of the population lives in the rural areas (Tolon/Kumbungu District Assembly 2006).

The indigenous people are Dagombas; however, other settler groups such as Gonjas and Ewes are common in the area, especially along the major rivers like the White Volta where groups like the Ewes practise fishing. Dagombas constitute more than 80% of the district population, Islam and traditional religions being the predominant religions of the people according to the district profiling using the household survey index by the District Assembly. However, it is worth mentioning that there are pockets of Christians across the broad spectrum of the population, especially in the urban settlements like Tolon, Nyankpala and Kumbungu. Sociocultural activities of the Dagombas are manifested in the celebrations of annual events such as the damba festival and bugum (fire festival) which are both religious and traditional. The Dagomba are farmers; their commonly cultivated crops are sorghum, millet, corn (maize), yams, and peanuts (groundnuts). Besides these crops, they also rear animals such as cattle, sheep, goats, chickens, and guinea fowl for domestic purposes (Fage 1964).

The Dagomba sociocultural system as described by Fage (1964) is organised around the family. People with blood relations live in a common household under a common head, mostly an elderly man, a single house normally consisting of a number of males with their wives and children and other relatives. A village is ruled by a chief supported by his elders who usually constitute a local advisory council to the chief on day-to-day matters (Fage 1964).

Chieftaincy in Dagbon is through the paternal line and only the male children of the royal class can ascend to the throne. Spirituality is an integral part of the Dagomba ruling class who have high respect for their Tindanas (the spiritual heads of local shrines) dotted across the length and breadth of the Dagomba kingdom (Fage 1964; Oppong 1973).

3.2 Data collection

The case study was conducted in the Tolon/Kumbungu District of the Northern Region of Ghana. In this study, a number of data collection tools were used such as reviewing literature materials, interviews, direct observations and others, as is common with most qualitative research (Baxter & Jack 2008; Merriam 2009). Fifty-five people were interviewed in three communities around the Jaagbo Shrine using a structured and semi-structured questionnaire, and five in-depth interviews carried out using a questionnaire. The key informants were drawn from the communities and the District Assembly. Data collected during these in-depth interviews with key informants included the history of the grove, restoration, and conditions

in the grove. It also sought the individual's perceptions or opinions on the success and challenges associated with the project, existing regulations, and management style and utilisation of resources in the grove or restoration area.

Apiliyilli and Jagroyilli are the immediate and direct fringing communities by the Jaagbo grove which were actively involved in the restoration process of the shrine. In this study, the respondents were selected from the two communities because of the significant roles the communities always play as far as management and pacification of the sacred grove are concerned. However, people in Tali were included in the interviews because the chief priest is answerable directly to the chief of Tali who is also answerable to the chief of Tolon as the overlord of the area.

The five key informants as well as the fifty-five participants for the interviews were selected purposively based on their experience and knowledge of the belief systems, social life of the people, and the restoration in the grove. The determination of appropriate respondents was based on the researcher's pre-study visits and discussions with the communities. Qualitative research such as case studies tends to rely on purposive sampling (Miles & Huberman 1994), with researchers selecting participants based on the potential contributions that they could make. Close attention was paid to the atmosphere or surroundings of the interview grounds, what participants said, and how they said it. Each in-depth interview with key informant sessions was captured on a tape recorder, and the various recordings were subsequently closely listened to for transcription and validation (Merriam 2009). Important quotable statements were also captured during the interviews. These were done to give the whole process the needed qualitative research authenticity. Quotes from research participants give flesh to quantitative research reports. Quotes are used to support research claims and findings, illustrate ideas, illuminate experience, and evoke emotion (Berg 2004; Morse et al. 2008; Merriam 2009).

3.3 Data analysis

In analysing the data, efforts were made at reducing words and transcribing recorded interviews and discussions, by organizing them into themes or concepts that have meaning to the questions being explored. All information given by participants was objectively analysed for relevance (Merriam 2009). Individual interviews were coded to facilitate reviewing a set of field discussions and transcriptions in order to verify and cross-check them in case of ambiguity; this was aimed at ensuring as much as possible the originality of the participants' views (Miles & Huberman 1994). Also through the process of data review, cleaning, coding, entry and editing, flaws such as incomplete test instruments, unanswered items, as well as instruments with wrong responses were identified and the necessary corrections were made to render such instruments useful. The interview data were introduced into the Statistical Package for Social Science ver. 19 for further analysis. Tape recorded sessions of the key informants were played and listened to again. Responses of the individual stakeholders were grouped according to themes emerging from the discussions. Interesting statements and ideas expressed by informants were captured verbatim during the transcription stage under the themes identified. The emerging themes were systematically analysed to identify common ideas (Merriam 2009). Individual's expressions representing each theme were pulled together. The final report of the case study, which reflected the discussions as much as possible, was the outcome of the study.

4. RESULTS

4.1 Sociodemographic characteristics of respondents

Fifty-five individuals were interviewed. Out of the number, thirty-two were males constituting 58.2% and twenty-three were females constituting 41.8% of the total respondents. The relative sizes of the age groups of respondents are shown in Fig. 3. Out of the 55 respondents, the majority (45.5%) were in the age group 41-59, and those aged sixty and above constituted 36.4%. Other age groups included 20-40 years constituting 14.5% and those below < 20 years constituted only 3.6% of the entire number of respondents.

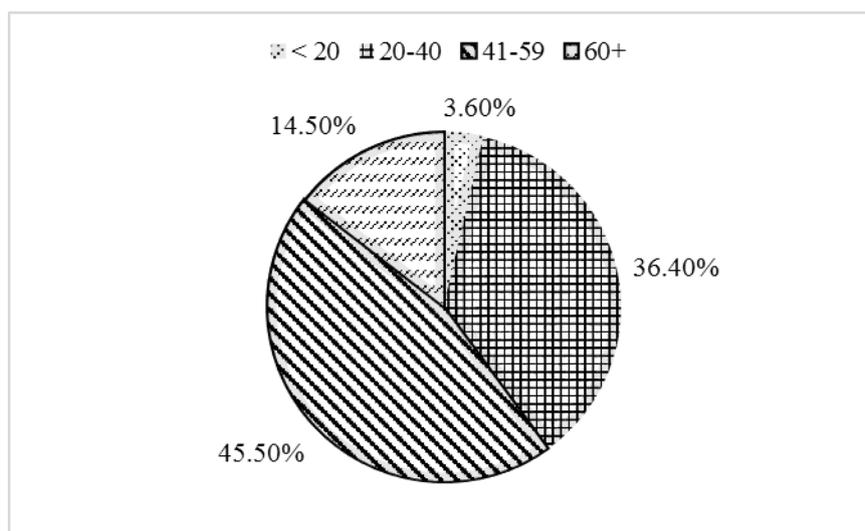


Fig. 3. The relative size of age groups of respondents interviewed in sampled villages in the research area. Respondents ranged from < 20, 20-40, 41-59 and 60+.

The hometowns of the respondents are presented in Fig. 4. From the figure, it is clear that a large number (32.7%) of the interviewees were from Taly. Similarly, 27.3% of the respondents mentioned Tolon as their hometown. The rest were 21.8% from Jaroyili and 18.2% from Apleyili.

The marital status of the respondents is shown in Fig. 5. Most respondents were married (67.3%), while 27.3% said they were single.

The occupations of the respondents are presented in Fig. 6. The results show that most (41.8%) of the respondents were engaged in farming alone. This is followed by the 27.3% who are in shea butter production and 18.2% practise both farming and other occupations.

The majority (50.9% of respondents) indicated they had never had any form of formal education, while a number of respondents, 21.8%, mentioned they had primary education. Similarly, 18.2% of the respondents had a junior high education, while 9.1% said they had a senior high school education (Fig. 7).

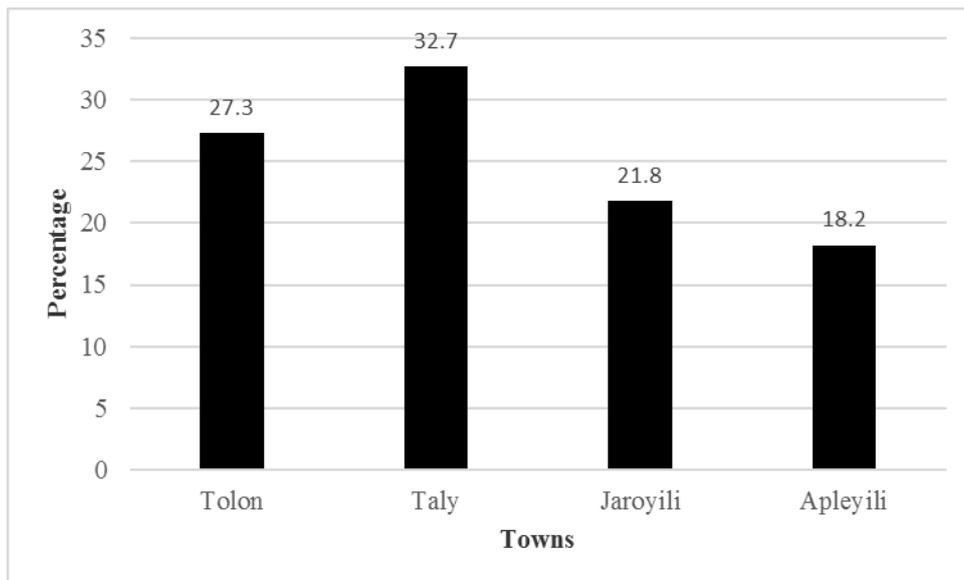


Fig. 4. Response of informants from different home towns across the region.

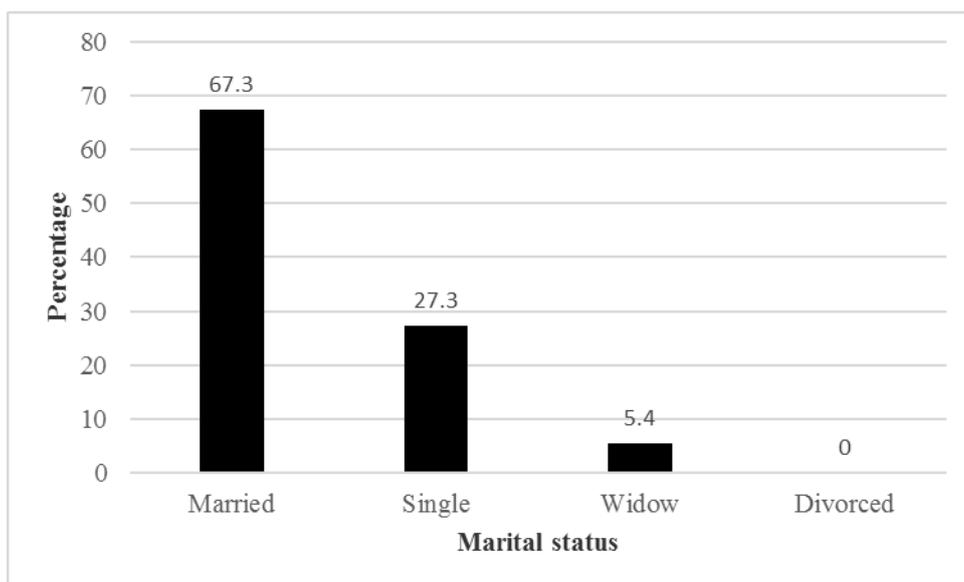


Fig. 5. Percentage of respondents who are married, single, widow(er)s or divorced

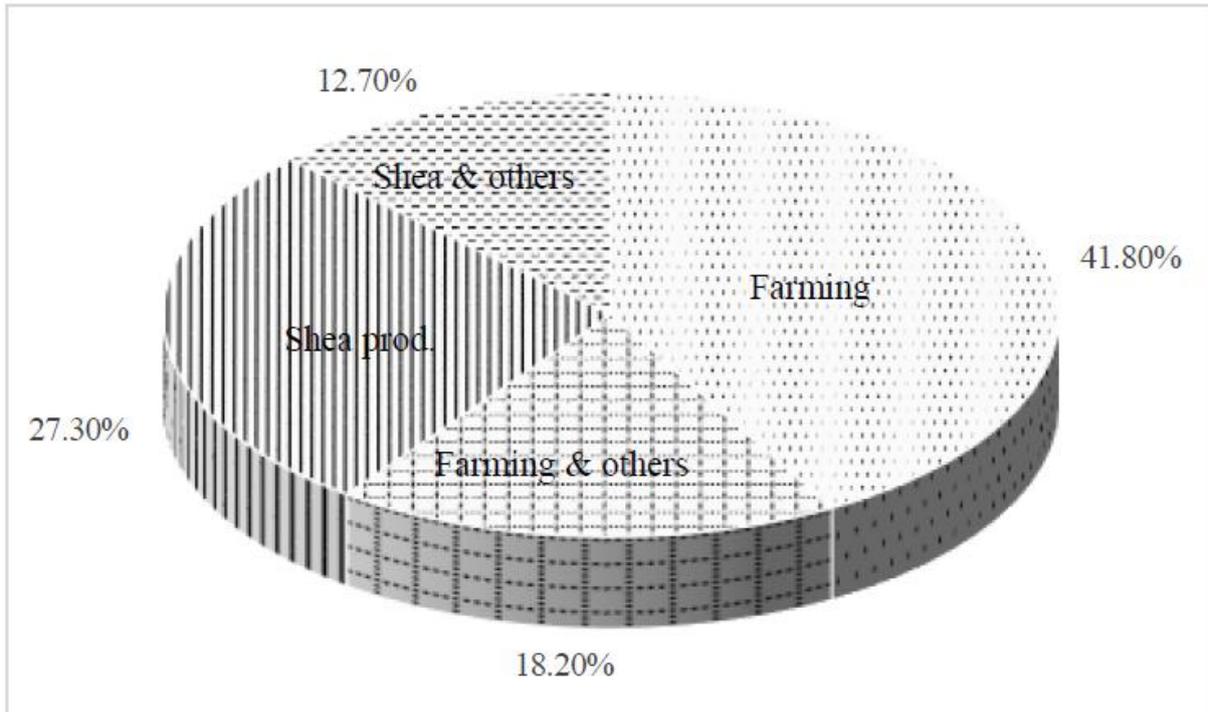


Fig. 6. Relative occupational distribution of respondents by the major forms of occupation among the people in the research area.

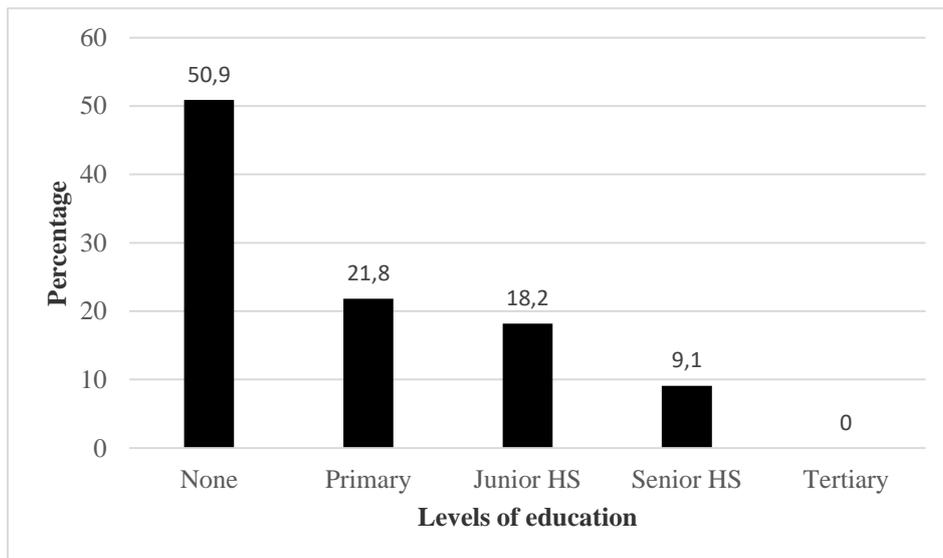


Fig. 7. Distribution of respondents as per levels of education attained by the individual respondent.

4.2 Local beliefs systems and conservation practices

Responses to key questions on belief systems among the people and conservation as relates to the restoration of Jaagbo are presented in Table 1. Regarding taboos associated with resource use within the shrine, 96.4% of the respondents said there were existing taboos. The majority (67.3% of respondents) indicated there were sociocultural benefits to the people from the conservation practices in the shrine. A full 92.7% of the respondents also answered "yes" and

7.3% "no" in response to whether there were other sacred groves in the area apart from the Jaagbo Shrine.

Table 1. Responses to key questions regarding local beliefs and Jaagbo restoration and how that translates into conservation of natural resources in the sacred grove and its immediate surroundings.

Variable/question	Response (%)
Are there taboos regarding resource use in the shrine?	
Yes	96.4
No	3.6
Are there socio-cultural benefits associated with the shrine?	
Yes	67.3
No	32.7
Are there other sacred groves in your community apart from Jaagbo?	
Yes	92.7
No	7.3
Are the conditions in those other groves the same as Jaagbo?	
Yes	9.1
No	90.9
Do you know of a similar restoration of groves in the region?	
Yes	12.7
No	87.3
Do you think the Jaagbo project is similar to other projects in the region?	
Yes	16.4
No	83.6

Other related issues respondents answered questions about included conditions in the shrine compared to other sacred groves in the area and whether sacred grove restorations were taking place in other parts of the region similar to the Jaagbo project.

The response of interviewees according to gender is very informative about how differently sex groups perceive local beliefs and resource use in the Jaagbo; this is shown in Table 2. Male and female interviewees were unanimous regarding the question on taboos governing resource use in the shrine. This was however, different when it came to the question of sociocultural benefits, while the male respondents were, once again, clear on their response (yes 71.8%, no 29.2%) their female counterparts were almost divided in their response (yes 55%, no 45%).

Similarly, responses from the three research communities - Apeliyilli, Jagroyilli and Tali - showed a certain pattern of perception among community members. In all, Apeliyilli and Jagroyilli which are immediate fringing communities around the sacred grove have given almost the same answers to these questions, while Tali, traditionally associated with the sacred grove, seem to have different views on issues related to the grove.

Table 2. Response on local belief systems and the conservation of the Jaagbo Shrine by gender and community of respondents in the Tolon/Kumbungu District, Northern Region, Ghana. Responses for Yes and No equal 100%.

Variable/Question	Percentage response per gender and community									
	Male		Female		Apeliyilli		Jagroyilli		Tali	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Are there taboos regarding resource use in the Shrine?	96	4	97	3	80.7	19.3	98	2	58.4	41.6
Are there socio-cultural benefits associated with the Shrine?	71.8	29.2	55	45	68.4	31.6	77	23	52	48
Are there other sacred groves in your community apart from Jaagbo?	97	3	91.4	8.6	88.2	11.8	98.4	1.6	75.4	24.6
Are the conditions in those other groves the same as Jaagbo?	15	85	33.4	66.6	13.2	86.8	5	95	11.6	88.4
Do you know of a similar restoration of groves in the region?	21	79	17.2	82.8	10	90	6.6	93.4	13.4	86.6
Do you think the Jaagbo project is similar to other projects in the region?	9	91	12	88	15.4	84.6	2	98	9.6	90.4

The responses of interviewees based on age are presented in Table 3. The results show that all the age groups recognised there were taboos (response for yes 94.4%, 77.4%, 97% and 98%), for age groups < 20, 20-40, 41-59 and 60+, respectively. The study revealed that different age groups had similar responses for almost all the questions. From the observed results it is obviously clear that Jaagbo is viewed in the same manner by the different age groups in the area as having unique ecological conditions compared to other groves and which are also respected by all manner of people in the locality.

Table 3. Response on local beliefs systems and the conservation of the Jaagbo Shrine by age groups of respondents in the Tolon/Kumbungu District, Northern Ghana. Responses for Yes and No equal 100%.

Variable/Question	Percentage response per age group							
	< 20		20-40		41-59		60+	
	Yes	No	Yes	No	Yes	No	Yes	No
Are there taboos regarding resource use in the Shrine?	84.4	15.6	77.4	22.6	97	3	98	2
Are there socio-cultural benefits associated with the Shrine?	53	47	77.2	22.8	95	5	89	11
Are there other sacred groves in your community apart from Jaagbo?	98	2	99	1	96.6	3.4	98.4	1.6
Are the conditions in those other groves the same as Jaagbo?	58	42	66.2	33.8	77.4	22.6	92	8
Do you know of a similar restoration of groves in the region?	1	99	10.6	89.4	5	95	3	97
Do you think the Jaagbo project is similar to other projects in the region?	1	99	4.2	95.8	6.6	93.4	2.2	97.8

The results of the questionnaire for respondents based on level of education are shown in Table 4. The table illustrates responses to questions about taboos, sociocultural benefits and other four key research questions in which respondents ranging from those without any form of formal education to those who have completed a senior high school education gave their views. None of the people interviewed had any tertiary education. Responses from the different groups appeared not to have any substantial difference in the way they all viewed local belief systems and conservation of natural resources in the area (Table 4).

All the respondents, despite their differences in education, either said clearly "yes" to questions or the opposite. For instance, the responses ranged from 89% to 98% "yes" for existence of local taboos, 56% to 68% "yes" for sociocultural benefits and at the same time indicated a unanimous "no" to the question comparing conditions in Jaagbo to other similar projects in the region (93% to 99%) (Table 4).

Table 4. Response on local beliefs systems and the conservation of the Jaagbo Shrine by level of education of respondents in the Tolon/Kumbungu District, Northern Region, Ghana. Responses for Yes and No equal 100%.

Variable/Question	Percentage response per level of education									
	None		Primary		Junior High		Senior High		Tertiary	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Are there taboos regarding resource use in the Shrine?	96	4	98.2	1.8	89	11	96.2	3.8	0	0
Are there socio-cultural benefits associated with the Shrine?	68.4	31.6	56	44	61.2	38.8	64.4	35.6	0	0
Are there other sacred groves in your community apart from Jaagbo?	95	5	96.4	3.6	88	12	93	7	0	0
Are the conditions in those other groves the same as Jaagbo?	6	94	11	89	12.4	87.6	11.6	88.4	0	0
Do you know of a similar restoration of groves in the region?	5	95	2.4	97.6	6.8	93.2	4	96	0	0
Do you think the Jaagbo project is similar to other projects in the region?	1	99	4	96	5	95	6.6	93.4	0	0

4.3 Research interviews and emerging themes

A number of themes emerged from the various responses provided by interviewees in the field which are teased out in Fig. 8. The themes that emerged include the uniqueness of the sacred grove, ecological importance and sociocultural importance. For the purposes of this classification, I have merged those interviews with the five in-depth interviews with identified stakeholders which were tape-recorded and subsequently transcribed, the key informants or stakeholders whose responses are very informative and were identified as Respondents I, II, III, IV, and V.

4.3.1 Uniqueness of the Jaagbo Shrine

Statements such as "Jaagbo signifies the power of the gods" appeared across all the respondents and the respondents indicated that the sacred grove was protected by "Chiha"

(taboos) commonly known by almost all the people in the area (Fig. 8). Also, Respondent I said "Before Islam and Christianity came to Dagbon, our ancestors consulted Jaagbo whenever they were in trouble for protection". Despite the introduction of Islam and Christianity into the area, Respondent I reported that:

Tolon-Naa pacifies the gods, and when there is impending calamity, be it strange disease, drought or war, the gods are consulted, Tolon-Naa will say I have come to you for your protection, I commit my entire subjects into your protection as we seek protection of the higher god through you that the calamity stirring on our faces fails to see those of us in this land and we shall never experience it but only hear about it from distance lands.

Also, the respondents indicated that Jaagbo is known for its sacredness and those who violate this sacredness are punished by the traditional authority and also made to pacify the gods to appease them or risk being "**struck**" by an unknown misfortune by the gods (Fig. 8).

4.3.2 Ecological perspective of the Jaagbo

The respondents also pointed to the fact that the sacred grove is protected from bushfires and illegal entry as well as exploitation of resources. They maintained that rare species of plants and animals in the area are still found in the grove. Respondent III emphasised the ecological importance of the grove saying "we have turned it into an eco-tourist site in the district and many including foreign tourists are now visiting the place because it has different plants and animals tourists can see and admire" (Fig. 8). Most of the interviewees said they could see that the land in the grove was more fertile than the lands in the immediate surroundings; they have also pointed to the stream in the grove which runs all year round when other streams in the area dry up in the dry season. Respondent I indicated that the stream and pond in the grove are the resting places of the crocodiles which are the "**Totems**" of the shrine. Animals such as pythons are also classified as totems and people are prohibited from harming them.

4.3.3 Sociocultural benefits of the Jaagbo

The sociocultural importance of the sacred grove is listed in Fig. 8. Some of the sociocultural issues mentioned in the interviews include "people usually consult the gods for favours and protection such as requests for child birth, a good farming season and business trips".

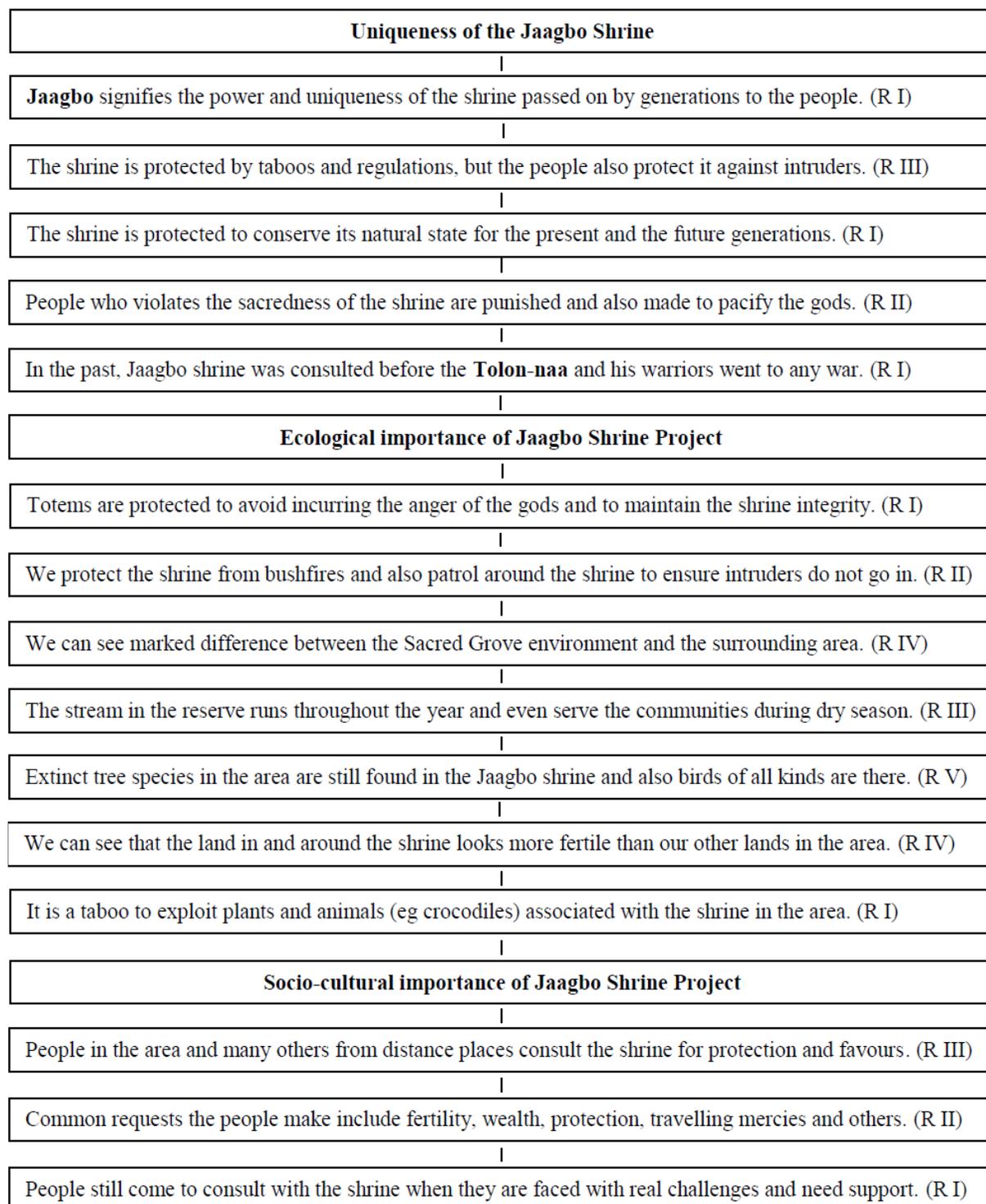


Fig. 8. General issues related to local beliefs and conservation of the Jaagbo Shrine located in the Tolon/Kumbungu District of the Northern Region, Ghana, as expressed by respondents.

5. DISCUSSION

The research results revealed a number of issues which have been grouped into themes and discussed in this section under their respective headings.

5.1 The importance of sociocultural factors to the people

The sociocultural importance of the Jaagbo Sacred Grove is captured in Respondent II's assessment that "the people have maintained the relationship between themselves and their ancestors, and this has been done by paying respect to their belief systems and protecting their ancestral totems as the representatives of the spirit of their ancestors". In many places, people have special ways of referring to their totem reflecting the respect they have for these ancestral symbols (Haverkort et al. 2002b; Gadgil et al. 2003). The studies revealed that the sociocultural nature of the people have had a tremendous impact on the relative preservation of the sacred grove. This to a large extent may be true. Shemdoe and Kingazi (2003) found that sociocultural diversity affects the traditional beliefs of the people of Losirwa and Eslalie (made up of different tribes) and the Barabaani (dominated by one tribe) in Tanzania and that the Barabaani had maintained their traditional belief systems and their sacred groves over the years compared to the Losirwa and Eslalie.

The people in the study area are predominantly Dagombas, who constitute more than 80% of the population according to the Assembly (2000). Despite the wide spread of Islam and Christianity as major religions in the area, Fage (1964) maintained that the Dagombas as a people still practice their traditional way of worship, especially in a rural set-up like this research area. Sociocultural activities of the Dagombas are manifested in the celebrations of annual events such as the damba festival and bugum (fire festival) which are both religious and traditional. This strong sociocultural bond is seen in the response of the different age groups to research questions in Table. 3. Across age groups, gender as well as location, the responses followed the same pattern, acknowledging the uniqueness of Jaagbo and the spiritual importance of the sacred grove as well as the willingness of the people to protect their sacred groves.

The existence of sociocultural and political systems among Dagombas, organised around the family as described by Fage (1964), has helped sustain the traditional belief system among the people. In Dagomba culture, relationship to both paternal and maternal lines plays a significant role in child upbringing. Culturally however, Dagombas are patrilineal and inheritance often goes from father to son, who more or less becomes the family head if there is no elderly male in the family (Fage 1964). This is not different from how chieftaincy is passed from one generation of rulers to another (Fage 1964; Oppong 1973).

5.2 Local belief systems and conservation practices

The study revealed that there are a number of sacred groves around the area which, although not in the same ecological condition as the Jaagbo, are still protected by the people because of their traditional values. The statistics, as captured in the percentage responses of informants during the questionnaire interviews, showed that the respondents recognize the existing traditional local institutions responsible for the maintenance of the Jaagbo. The above is relevant in the sustainable management of the grove since ownership of sacred groves in most parts of the world has proven to be a challenge and sometimes leads to the erosion of the value and sustainable management of these groves (Haverkort et al. 2002a; Shemdoe &

Kingazi 2003). Schaaf (2003) revealed that the ecological significance of the Jaagbo even before the restoration was realised during the preliminary survey when over 220 species of plants were recorded. The Jaagbo area compared to the surrounding areas was a relatively conservative situation said to prevail in most sacred sites in Ghana, which are relatively preserved sites surrounded by a degraded environment (Dorm-Adzobu et al. 1991; Campbell 2005) .

As to what is behind these traditional or local belief systems which makes it appealing for use to underscore conservation, the account of Respondent III says "apart from the protection and favours people request from the gods, the gods through the Tindana also treat a lot of people with strange diseases using herbs from the shrine". Traditionally, herbal healers are highly respected elderly people in most African societies (Dorm-Adzobu et al. 1991). Respondents pointed to the fact that the Jaagbo shrine has a lot of plant species which have become rare in the local environment and when it becomes necessary and with permission from the Tindana, people are able to access some of the herbs for treatment of illnesses (Fig. 9).



Fig. 9. Chief Priest of Jaagbo Shrine during one of his usual inspection of the shrine done to ensure that illegal entry is detected and checked as early as possible (Source: photo by Adam Jafaru).

The myths and the stories surrounding the sacred grove appear so strong and unique. Like most sacred groves in Africa, the indigenes are often told stories of successes checked by their communities in the past with the support of their "**deities**" or gods and also how individuals or communities have been punished by those same gods because of the violations of the taboos associated with the gods (Dorm-Adzobu et al. 1991; Byers et al. 2001). Some of the Sacred Sites also stand as symbols of these myths which are preserved as evidence of the powers of the gods.

An example of these myths is shown in Fig. 10, with a mystical tree in the Jaagbo Shrine showing what appears to be footprint of a horse: the Tindana told a story of how one of the chief warriors of the area tried his powers by climbing the tree on horseback in preparation for an impending tribal war which the people eventually won. This story and many more have been identified as some of the motivations for conservation in many sacred groves (Dorm-Adzobu et al. 1991; Soutter et al. 2003; Shen et al. 2012).



Fig. 10. *Mysterious tree showing what is believed to be the imprint of a horse by an ancient warrior in the area during one of the tribal wars (Source: photo by Adam Jafaru).*

5.3 Research interviews and emerging themes

A number of themes emerged from the various responses provided by interviewees in the field which are teased out in Fig. 8. The themes that emerged include uniqueness of the sacred grove, ecological importance of the sacred grove and the sociocultural importance of the sacred grove. These highlight the significance of the themes and conservation of the Jaagbo Shrine.

Respondents indicated among other things that "Jaagbo signifies the power of the gods". The respondents indicated that the sacred grove was protected by "**Chiha**" (taboos) respected by the people in the area. Emphasising the introduction of religion, one of the respondents said "Before Islam and Christianity came to Dagbon, our ancestors consulted Jaagbo whenever they were in trouble for protection".

In addition, important element in the sacred grove which local people cherish is the pond which plays host to the deity crocodiles (Fig. 11). One of the respondents said that "crocodiles are water animals and can harm people, but these crocodiles are very peaceful and have never harmed anybody". Another respondent said that "whenever we are faced with a water shortage in the dry season we are free to fetch our water from the same pond". He also added that they can only use a calabash to fetch water from the pond because it is taboo to fetch water from the pond with metal. It is therefore significant to mention that this is not an isolated instance since sacred groves are noted for protecting many water sources because of their unique ecological conditions (they are well conserved).



Fig. 11. A pond in the middle of the Jaagbo Shrine where the Totems (Crocodiles) live which has never dried, and sometimes becomes the source of drinking water for the people during the dry season (Source: photo by Adam Jafaru).

The outcome of this research points to the fact that the Jaagbo sacred grove continues to play a very important role in the traditional lives of the people in the research area despite the existence of other religions such as Islam and Christianity. The respondents across all the age groups, young, middle age or older people have all indicated they have some knowledge about their local beliefs especially when it comes to Jaagbo Shrine.

6. CONCLUSIONS

A number of findings have been made in this research leading to some conclusions. From the questionnaire responses and the in-depth interviews conducted, it was clear that there was a high level of traditional knowledge among the people, especially when it comes to the Jaagbo Shrine among the local people. While knowledge of sacred sites in many communities seems to be limited to a few people, residents of the communities around Jaagbo showed they knew what was involved in the Jaagbo, including the taboos governing the shrine.

Another important conclusion about Jaagbo is the clear traditional leadership or ownership that has been institutionalised. The chief priest comes to the priesthood through one of the gates but largely guarded by the spirituality of the shrine. Lack of ownership has been cited in the literature as being responsible for the degradation of many sacred groves. In the case of Jaagbo, the spiritual head is the Tindana, while the Tali-Naa is the political head which makes the institutional arrangement more recognised. It is noted that if local beliefs are well harnessed for conservation tied to the existing local institutions, the outcome can be very positive.

Despite the good will and positive responses from both research questionnaire and what has been reviewed from the available literature, Jaagbo appeared to be a one-off success story in the area, except for the restoration of the Malshegu sacred grove in Tamale which even took place long before the Jaagbo restoration. Ever since the Jaagbo project was carried out almost two decades ago, respondents could not point to a single replica of it taking place, either in

the immediate surroundings or notable in the region. The preservation of the Jaagbo Shrine is therefore problematic as the project was projected as a model which could be replicated in other communities for the conservation of the environment.

My personal observation is that, despite the fact that the community members, especially the Tindana, showed some knowledge of the restoration project, it still appeared to the people as a national government project where big scientists (including those from the university of Ghana and the Nuguchi) were taken to the site to collect data and advise the project on what to do in terms of planting of trees without teaching the local people how to do similar projects on their own if they ever want to embark on one. The story of the project was filmed and shown on national television without further identification of similar sacred groves in the region.

Where this project could be replicated was problematic because from all indications this project was capital intensive, which makes it difficult for communities to embark on a similar project. A cursory look at the Jaagbo Restoration Project almost two decades later makes it a single island in a big ocean and, although impressive, it seems not to reflect or fulfil its original objective. Some of the reasons for this are to a large extent attributable to the way it was carried out as a project with the intent of leaving it as a model, with the assumption that communities would just copy it.

6.1 Recommendations

It is interesting to note that the Tolon/Kumbungu District Assembly has listed the Jaagbo Shrine as one of the eco-tourist sites in the district. The fact that District Assemblies have both the experts and the resources to undertake localised development projects presents the district an opportunity to kill two birds with one stone: as often said in Ghana, they can enhance their tourism potential and at the same time improve on their environmental management by identifying and helping restore sacred groves in the districts.

The existing traditional local institutions could be a good starting point in terms of building up the capacity of local people to carry out this kind of project. The Tindana who acts as chief priest of most of the sacred groves in the region and his equivalent in other parts of the country could be trained with some youths to identify sacred groves and who will then be supported to carry out enrichment planting and create buffers for the sacred groves in most communities. If communities are involved in developing plans for restoration or conservation of such groves it would lead to sustainable management as local community views are bound to be captured at the earliest stages and not merely involve them in implementation of the project.

- I therefore, recommend that the district assemblies should as a matter of importance add sacred grove management and restoration to the development plans of their respective areas. Ghana can copy the examples from India where sacred grove management plans are being developed. As part of this, the Indian authorities promote awareness campaigns in schools and communities to drum home the importance of sacred groves as a means of conservation which is worthy of adoption.
- It is important to point out that the existence of a whole ministry in charge of culture and chieftaincy affairs is another window of opportunity where partnership between the ministry, district assemblies and non-government organisations could be worked out to develop a working plan for sacred grove restorations across the country. As part of their

cultural exercises, schools could further be involved in this conservation effort by helping in tree planting to maintain these cultural sites.

- Tree planting education and provision of the tree seedlings to the villages with sacred groves to mark international days such as the World Environment Day or the UNCDD should be developed, as this will enhance ecosystem health in these areas.
- Also, tree species commonly used by local herbalists for treatment and those that are associated or identified as sacred trees should be domesticated and the seedlings provided to the communities in order to plant in or around their sacred groves, which may reduce movement, less clearing of the vegetation and hence biodiversity conservation.

Hopefully, when the above recommendations are taken into consideration coupled with the right support, as in the case of the Jaagbo sacred grove, many communities would be motivated to undertake and eventually restore their sacred places for both environmental management and the conservation of the culture of the people.

ACKNOWLEDGEMENTS

I thank the Almighty God, for his favours; my life, the health and strength I have had throughout this project. I am grateful to the UNU-LRT Programme and the Icelandic Government for the wonderful capacity building training opportunity given me and my colleagues. I am equally grateful to my supervisor Professor Gisli Palsson (University of Iceland) for supervising this work and for his guidance and support during this period. My special thanks go to the Director of the UNU-LRT Programme, her staff and all the lecturers for their selflessness and support and mentoring they have always played. To the management of the Environmental Protection Agency (EPA-Ghana), I thank you very much for all the support you have given me, both in and out of the office.

I thank the following people for their support here in Iceland and those in Ghana, my wife Mohammed Sanatu (especially), Musah Jafaru (EPA), the chief priest of Jaagbo Shrine, the District Planning Officer, all the staff of EPA-Tamale office. Finally, thanks to all my colleagues in the UNU-LRT Programme this year for the friendly environment created, especially to Enock Ssekuubwa (Uganda) and Idrissa Soumana (Niger), for their help during this project work.

REFERENCES

- Amoako-Atta, B. 1998. Preservation of sacred groves in Ghana: Esukawkaw Forest Reserve and its anweam sacred grove. Newsletter of the South-South co-operation programme, UNESCO-UNU-TWAS, Paris.
- Tolon/Kumbungu District Assembly. 2006. Tolon/Kumbungu District Assembly Profile. URL <http://tolonkumbungu.ghanadistricts.gov.gh/> [accessed on 15th July, 2013 2013]
- Baxter, P., and S. Jack. 2008. Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report* **13**:544-559.
- Benneh, G., G. Agyepong, and J. Allotey. 1990. Land degradation in Ghana. Food production and rural development division, commonwealth secretariat, London.
- Berg, B. L. 2004. Qualitative research methods for the social sciences. Pearson education, Inc., Boston.
- Bojö, J. 1996. The costs of land degradation in sub-saharan Africa. *Ecological Economics* **16**:161-173.
- Byers, B. A., R. N. Cunliffe, and A. T. Hudak. 2001. Linking the conservation of culture and nature: a case study of sacred forests in Zimbabwe. *Human Ecology* **29**:187-218.
- Campbell, M. O. N. 2005. Sacred Groves for forest conservation in Ghana's coastal savannas: assessing ecological and social dimensions. *Singapore Journal of Tropical Geography* **26**:151-169.
- Daes, E.-I. A. 1994. Equality of indigenous peoples under the auspices of the United Nations draft declaration on the rights of indigenous peoples. *Thomas L. Rev.* **7**:493.
- Dev, O. P., O. S. Baginski, and A. K. Karn 2004. Understanding livelihood impact of participatory forest management implementation strategy in Nepal. Twenty-five years of community forestry: Proceedings of the Fourth National Workshop on Community Forestry. Department of Forest, Community Forest Division. Kathmandu, Nepal.
- Dorm-Adzobu, C., O. Ampadu-Agyei, and P. G. Veit. 1991. Religious beliefs and environmental protection: The Malshegu sacred grove in northern Ghana. Vol. 4. Acts Press, Nairobi.
- Dudley, N., L. Higgins-Zogib, and S. Mansourian. 2005. Beyond Belief-Linking faiths and protected areas for biodiversity conservation. WWF/ARC, Bhaktapur, Nepal.
- Eswaran, H., R. Lal, and P. Reich 2001. Land degradation: an overview. *Responses to Land degradation*:20-35.
- Fage, J. D. 1964. Reflections on the early history of the Mossi-Dagomba group of states. *The historian in tropical Africa*:177-189.

Gadgil, M., P. Olsson, F. Berkes, and C. Folke 2003. Exploring the role of local ecological knowledge in ecosystem management: three case studies. *Navigating social-ecological systems: Building resilience for complexity and change*. Cambridge University Press, Cambridge.

Githitho, A. N. 2003. The sacred Mijikenda Kaya forests of coastal Kenya and biodiversity conservation. *The importance of sacred natural sites for biodiversity conservation*:27-35.

Hansen, C. P., J. F. Lund, and T. Treue 2009. Neither fast, nor easy: The prospect of reduced emissions from deforestation and degradation (REDD) in Ghana. *International Forestry Review* **11**:439-455.

Haverkort, B., K. V. Hooft, and W. Hiemstra. 2002a. Ancient roots, new shoots: endogenous development in practice. *Compas*.

Haverkort, B., D. Millar, and C. Gonese 2002b. Knowledge and belief systems in Sub-Saharan Africa. Ancient roots, new shoots. *Endogenous development in practice*. ETC/Compas, Leusden:137-152.

Jacquemont, F., and A. Caparrós 2002. The convention on biological diversity and the climate change convention 10 years after Rio: Towards a synergy of the two regimes? *Review of European Community & International Environmental Law* **11**:169-180.

Khan, M., A. D. Khumbongmayum, and R. Tripathi 2008. The sacred groves and their significance in conserving biodiversity: an overview. *International Journal of Ecology and Environmental Sciences* **34**:277-291.

Malhotra, K. C., Y. Gokhale, S. Chatterjee, and S. Srivastava 2001. Cultural and ecological dimensions of sacred groves in India. *Indian national science academy and the Indira Gandhi Rashtriya Manav Sangrahalaya, New Delhi and Bhopal, India*.

Merriam, S. B. 2009. *Qualitative research: A guide to design and implementation*. John Wiley & Sons, Inc., New Jersey.

Meyer, W. B., and I. Bl Turner. 1994. *Changes in land use and land cover: a global perspective*. Cambridge University Press, Cambridge.

Miles, M. B., and A. M. Huberman. 1994. *Qualitative data analysis: An expanded sourcebook*. Sage Publications Inc., California.

Morse, J. M., M. Barrett, M. Mayan, K. Olson, and J. Spiers 2008. Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods* **1**:13-22.

Nkonya, E. 2004. Strategies for sustainable land management and poverty reduction in Uganda. Research report 133. *International Food Policy Res Institute*. Washington D.C.

Opong, C. 1973. *Growing up in Dagbon*. Ghana Publishing Corporation, Accra.

Palsson, G., B. Szerszynski, S. Sörlin, J. Marks, B. Avril, C. Crumley, H. Hackmann, P. Holm, J. Ingram, and A. Kirman 2012. Reconceptualizing the 'Anthropos' in the anthropocene: Integrating the social sciences and humanities in global environmental change research. *Environmental science & policy*.

Schaaf, T. 2003. UNESCO's Experience with the protection of sacred natural sites for biodiversity conservation. Pages 13-20 in *The importance of sacred natural sites for biological conservation-Paris (UNESCO)-proceedings of the international workshop, Kunming and Xishuangbanna*.

Shemdoe, R. S., and S. Kingazi 2003. The role of local institutions in the management of biodiversity: a case study of Lake Manyara National Park Tanzania. Pages 251 in *Proceedings of the fourth annual scientific conference: 4-6 December 2003, Impala Hotel, Arusha, Tanzania*. Tanzania wildlife research institute.

Shen, X., S. Li, N. Chen, S. Li, W. J. Mcshea, and Z. Lu 2012. Does science replace traditions? Correlates between traditional Tibetan culture and local bird diversity in Southwest China. *Biological Conservation* **145**:160-170.

Soutter, R., Y. Ntiama-Baidu, J. Smith, and D. Rana 2003. Recognising the contribution of Sacred Natural Sites for biodiversity conservation. *World Parks Congress, Durban*.

Turner, B. L., and W. B. Meyer 1994. Global land-use and land-cover change: an overview. *Changes in land use and land cover: a global perspective* **4**:3.

Verschuuren, B. 2006. An overview of cultural and spiritual values in ecosystem management and conservation strategies. Paper contributed to the *International Conference on Endogenous Development and Biocultural Diversity*.

Wanyeki, L. M. 2003. *Women and Land in Africa: Culture, religion and realizing women's rights*. New Africa Books, Cape Town.

Xu, J., E. T. Ma, D. Tashi, Y. Fu, Z. Lu, and D. Melick 2005. Integrating sacred knowledge for conservation: cultures and landscapes in southwest China. *Ecology and Society* **10**:7.

APPENDICES

Appendix 1.

Glossary

CB	Convention on Biodiversity
SGS	Sacred Grove Sites
TKDA	Tolon/Kumbungu District Assembly
EPA	Environmental Protection Agency
UNESCO	United Nations Education Scientific and Cultural Organisation
MAB	Man and Biosphere

Appendix 2.

Questionnaire

UNU-Land Restoration Training Programme

Exploring Local Belief Systems for the Benefit of Land Restoration: A Case Study of Jaagbo Shrine Restoration in the Tolon District of the Northern Region, Ghana.

Questionnaire Administration

This questionnaire is designed to elicit information from the residents of Jaagbo community and other stakeholders in the Tolon District to help assess the local belief system in the area and the environmental as well as socioeconomic impacts of the Jaagbo Shrine Restoration Project. This exercise is purely an academic one, and all information is therefore for academic purposes and will be treated very confidentially. Your genuine response is therefore required.

Interview Date..... Questionnaire No.....

Time started..... Time ended.....

Section A: Demographic information of respondent.

1. Gender of respondent. A) Male (...) B) Female (...)
2. Age category of respondent. A) < 20 (...) B) 20-40 (...) C) 41-60 (...) D) 61+ (...)
3. Home Town & Region of respondent.
4. Marital status of respondent A) Married (...) B) Single (...) C) Widow (...) D) Divorced (...)
5. Level of education attained by respondent. A) None (...) B) Primary School (...) C) Junior High School (...) D) Senior High School (...) E) Tertiary (...)
6. Occupation of respondent.....

Section B: The local belief system and environmental conservation.

7. How important is the name of the sacred grove and where did the name come from?
.....
8. Do you think people are ready to preserve the sacred grove? And to what extent?
.....
9. Are there taboos regarding exploitation of certain plants and animals because of the Jaagbo Shrine? Yes (...) No (...)
10. If yes, name some of them.
.....
11. What are the reasons for the protection of those plants and animals?
.....

12. Are these taboos sometimes violated by both community members and outsiders? Yes (....)
No (....)

13. What are some of the reasons for that?
.....
.....

14. What do you do to a person who violates these taboos?
.....
.....

15. Are there any patrolling activities going on around the Shrine? Yes (....) No (....)

16. If yes, who organizes the patrolling, and who are the people involved
.....
.....

17. What are some of the environmental changes that have occurred in the area since the Jaagbo project was implemented?
.....
.....

Section C: Socioeconomic benefits to men and women in the community.

18. What are some of the activities that usually goes on in the sacred grove?
.....
.....

19. Apart from religion, are there socioeconomic activities associated with the sacred grove? Yes (....) No (....)

20. If yes, which group of people are doing the activities?
.....

21. Does the restoration of the sacred grove affect the socioeconomic life of the Jaagbo people? Yes (....) No (....)

22. If yes, which group of people are affected and how?
.....
.....

Section D: Influence of the Jaagbo project on other projects in the area.

23. Are you happy about the Jaagbo Shrine Restoration project? Yes (....) No (....)

24. Apart from Jaagbo, are there other sacred groves in the community? Yes (....) No (....)

25. If yes, are those other groves in similar condition as the Jaagbo Shrine? Yes (....) No (....)

26. Do your neighbours visit the Jaagbo Shrine? Yes (....) No (....)

27. If yes, what do they usually come to do?.....

28. Do you know of similar restoration carried out by any of your neighbours? Yes (....) No (....)

29. How do you compare your project with others in the region?.....