



***COMMUNITY PARTICIPATION IN LAND RESOURCE CONSERVATION
AND MANAGEMENT IN GOMBE STATE, NIGERIA***

SAIDU ALHASSAN UMAR

FRSB 2016 3



**COMMUNITY PARTICIPATION IN LAND RESOURCE CONSERVATION
AND MANAGEMENT IN GOMBE STATE, NIGERIA**

By

SAIDU ALHASSAN UMAR

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

May 2016

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DEDICATION

This project has been dedicated to my Parents, Saidu Umar and Balkisu Ahmad, and my late Grandmother Addaji (May her souls rest in perfect peace, Ameen).



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science.

COMMUNITY PARTICIPATION IN LAND RESOURCE CONSERVATION AND MANAGEMENT IN GOMBE STATE, NIGERIA

By

SAIDU ALHASSAN UMAR

May 2016

Chairman : Mohd Johari Bin Mohd Yusuf, PhD
Faculty : Design and Architecture

Land degradation in forms of desertification, soil erosion, and pollution has become one of the challenges facing the entire universe. It results in loss of lives, property, and decrease in food crops, climatic changes, extinctions of animals and plants species among others. These problems still constitute a serious challenge in the 21st century. Government's approach to land resource conservation has been found to be insufficient in addressing the problem, resulting in call for participation of all stakeholders, including NGOs, CBOs, and other local community members, as well as the use of integrated and multi-dimensional approach to the problems of land degradation, yet not much success was recorded. This study attempts to identify the extent of community participation and factors influencing the participation in land resource conservation and management in the local government areas of Gombe State, Nigeria. Survey research method was employed in collecting data from 240 adults (aged 20-above) respondents of both sexes, scattered over 3 local Governments. To augment the short coming of quantitative research, 6 FGD sessions and 6 in-depth interviews were also conducted among the adult members of the communities, community leaders, and forestry officials. The greater part of the data was collected through Multi- Stage Cluster Sampling from 240 respondents, and the data analyzed, using SPSS to determine the relationship between participation and characteristics of individual respondents. Similarly, qualitative findings from the in-depth interviews and the FGD were used in complementing the quantitative data. The result of the findings revealed a very low level of community participation (especially women) in conservation and a continuous dominance of government limiting conservation and management project. Factors such as poverty, inadequate conservation facilities, partisan politics, and lack of motivations are found to be the main influence, hindering participation in land resource conservation and management in the area of study. Thus, only when the poverty level is reduced among the population; education and employment opportunities are improved; people own the project; and only when government is committed to provide adequate conservation facilities and subsidies on other alternative energy sources, among others, would participation in land resource conservation and management increase among the local community.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

PENYERTAAN KOMUNITI DI DALAM KAJIAN PENGURUSAN DAN PEMULIHARAAN SUMBER TANAH DALAM GOMBE, NIGERIA

Oleh

SAIDU ALHASSAN UMAR

May 2016

Pengerusi : Mohd Johari Bin Mohd Yusuf, PhD
Fakulti : Rekabentuk dan Senibina

Degradasi tanah berlaku akibat 'desertification', hakisan tanah, pencemaran adalah salah satu cabaran yang dihadapi oleh seluruh dunia. Isu ini mengakibatkan pelbagai masalah seperti kehilangan nyawa, harta dan pertanian, perubahan iklim, dan kepupusan flora dan fauna. Kesulitan ini merupakan satu cabaran yang serius dalam abad ke-21. Disebabkan usaha-usaha yang dikemukakan oleh pihak kerajaan masih tidak mencukupi untuk membendung perkara-perkara diatas, pihak-pihak berkepentingan yang lain diundang untuk menyertai usaha merintang degradasi tanah seperti pihak pertubuhan bukan kerajaan (NGO), komuniti dan masyarakat tempatan, dengan menggunakan cara-cara baru dan sepadu, namun tidak begitu berkesan.

Kajian ini bertujuan untuk mengenal pasti keberkesanan penyertaan komuniti dalam memerangi isu ini, dan faktor-faktor yang mengundang penyertaan komuniti dalam pemeliharaan dan pengurusan sumber tanah di dalam kawasan kerajaan Negeri Gombe, Nigeria. Kajian penyelidikan telah digunakan untuk mengumpul data dari 240 orang dewasa kedua-dua jantina (berusia 20 keatas), diseluruh tiga kawasan kerajaan tempatan negeri Gombe, Nigeria. Untuk mengimbangi kelemahan analisis kuantitatif, 6 sesi 'Focus Group Discussion' (FGD) dan temu ramah dijalankan dikalangan komuniti, termasuk orang dewasa, ketua-ketua komuniti dan pegawai kehutanan.

Sebahagian besar data yang dikumpul melalui 'Multi Stage Cluster Sampling' daripada 240 subjek telah dianalisis dengan menggunakan 'SPSS' untuk menentukan hubungan diantara penyertaan dengan ciri-ciri individu. Data-data yang dikumpul dalam temu ramah dan sesi 'Focus Group Discussion' (FGD) digunakan untuk meningkatkan kualiti data keseluruhan. Keputusan penyelidikan menunjukkan tahap penyertaan yang rendah dalam pemeliharaan, (terutamanya golongan wanita) dan dominasi oleh pihak kerajaan dalam isu in menghadkan pemeliharaan dan pengurusan sumber tanah. Dalam pada itu, faktor-faktor seperti kemiskinan, kekurangan kemudahan pemeliharaan, politik partisan dan kekurangan motivasi dikenalpasti sebagai akibat yang utama yang membantutkan penyertaan komuniti dalam usaha ini. Oleh sebab ini, adalah diandaikan bahawa apabila tahap kemiskinan dalam populasi dikurangkan,

peluang pendidikan dan pekerjaan ditingkatkan, usaha – usaha yang dijalankan merangkumi komuniti setempat, dan apabila kerajaan tempatan sendiri mengambil langkah untuk menyediakan kemudahan dan memberi subsidi sumber tenaga alternatif kepada komuniti setempat, hanya akan penyertaan komuniti dalam pemeliharaan dan pengurusan sumber tanah meningkat diantara komuniti setempat.



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I wish to express my appreciation to my brothers and sister, Haruna, Umar, Salamatu, Yaya Ali and Yaya Aminu. I am also grateful to Umar Saidu Umar, my head research assistant and others whose names did not appear here.

I certify that a Thesis Examination Committee has met on 18 May 2016 to conduct the final examination of Saidu Alhassan Umar on his thesis entitled "Community Participation in Land Resource Conservation and Management in Gombe State, Nigeria" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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LIST OF ABBREVIATIONS

UNEP:	United Nation Environmental Programme
PRB:	Population Reference Bureau
NRCCD	Nigeria's Report on the Implementation of the United Nations Convention to Convert Desertification (CCD)
FAO	Food and Agriculture Organization
RCT	Rational Choice Theory
CBO	Community Based Organizations
NEAP	National Environmental Action Plan
RBDA	River Basin Development Authority
SEAP	State Environmental Action Programme
NAP	National Action Plan
NSAP	National Strategic Action Plan
SEPA	State Environmental Protection Agency
PRA	Participatory Rural Appraisal
NES	Nigerian Economic Society
ESCCSD	Economic & Social Council Commission on Social Development
IUCN	International Union for Conservation of Nature
IMF	International Monetary Fund
UNDP	United Nations Development Programme
DLDD	Desertification, Land degradation and Drought
GGWSSI	Great Green Wall for the Sahara and Sahel Initiative
GGWSAP	Great Green Wall Strategic Action Plan
SLM	Sustainable Land Management

CHAPTER 1

INTRODUCTION

1.1 Research Background

There is an increasing realization that development cannot be achieved without consideration for the environmental resources, in particular their conservation and proper management. The concept of sustainable development emerged to underline the importance of resource conservation and management. Thus, by extension, development, in all its ramifications, depends largely on quality and quantity, use and management of land resource. Healthy and productive land is the fundamental basis for our long-term food, water and energy security, and a necessary pre-condition for socio-economic development (UNCCD secretariat 2013).

Land degradation is a worldwide phenomenon. Today our land suffers from different forms of degradations, ranging from soil erosion, desertification or (desert encroachment), misuse, flooding, drought, pollution, etc. Yet, land is something fundamental to our existence, Land and the fertility of its soil are critical natural capital essential for sustainably ensuring food, renewable energy and water security while eradicating rural poverty, conserving terrestrial biodiversity and building the resilience of our agricultural systems to climatic shocks (UNCCD secretariat 2013).

Land degradation is accelerating and drought is escalating worldwide. At the Rio+20 Conference, world leaders clearly acknowledged that desertification, land degradation and drought (DLDD) are challenges of a global dimension affecting the sustainable development of all countries, in particular developing countries. In view of this, they committed to strive to achieve a land-degradation neutral world in the context of sustainable development and to monitor land degradation globally (UNCCD secretariat 2013).

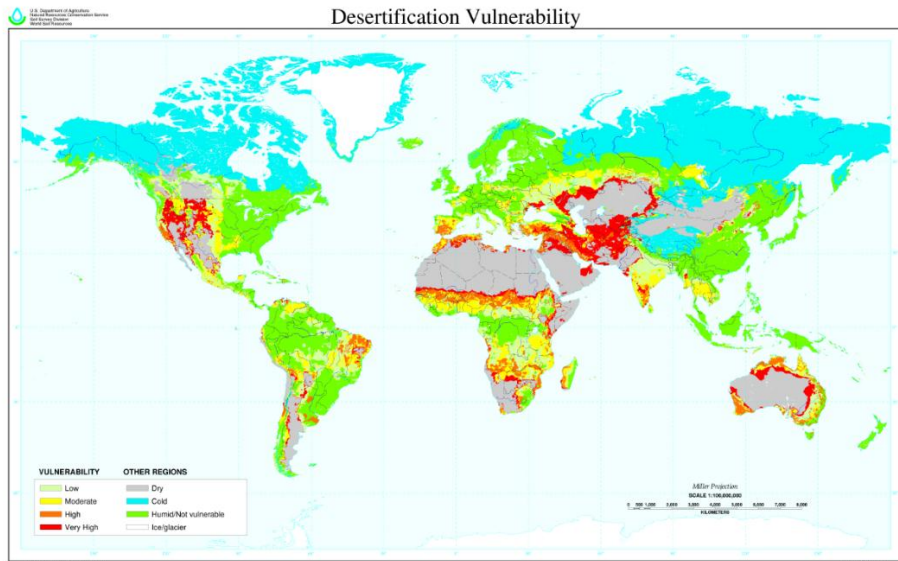


Figure 1.1: Areas vulnerable to desertification in different parts of the world (Source: U.S. Department of Agriculture, Natural Resources Conservation Service).

Global assessments indicate that the percentage of total land area that is highly degraded has increased from 15% in 1991 to 25% by 2011 (UNCCD secretariat 2013). The number of country parties who declare themselves affected under the UNCCD has also increased from 110 in the early days of the Convention to 168 today (UNCCD secretariat 2013). While the world's dry lands continue to be the most vulnerable, land degradation is a global phenomenon; some findings indicate that 78% of the total land being degraded between 1981 and 2003 is located in terrestrial ecosystems other than dry lands (Bai et al., 2008). DLDD processes have accelerated rapidly in the last century, with an estimated 24 billion tons of fertile soil lost to erosion in the world's croplands (FAO 2011). If the current scenario of land degradation continues over the next 25 years, it may reduce global food production, from what it otherwise would be, by as much as 12% resulting in world food prices as much as 30% higher for some commodities (IFPRI 2012).

Productive land and soil are critical natural capital assets essential for agricultural productivity, conserving biodiversity and the provision of ecosystem services, such as carbon sequestration, water purification and storage, biofuels, climate protection and regulation, and natural heritage (UNCCD secretariat 2013). For those communities that rely heavily on land as their main source of livelihood, particularly the rural poor, human health and wellbeing are completely dependent upon and intricately linked to the health and productivity of the land (UNCCD secretariat 2013). Thus, the vital functions of land and soil underpin the nexus of food, renewable energy and water security.

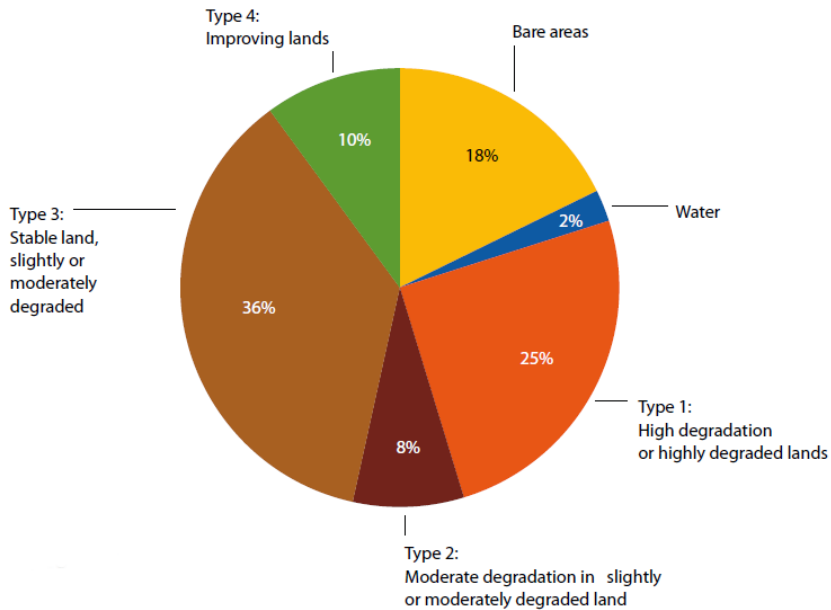


Figure 1.2: Status and trends in global land degradation (Source: FAO 2011).

Some studies indicate that the percentage of total land area already degraded or being degraded increased from 15% in 1991 to 25% in 2011 (UNCCD secretariat 2013). By 2008, more than 20% of all cultivated areas, 30% of natural forests, and 25% of grasslands were undergoing some degree of degradation (Bai et al., 2008). Estimates indicate that up to 25% of all land is currently highly degraded, 36% is slightly or moderately degraded but in stable condition, while only 10% is improving (FAO 2011).

Some studies indicate that land degradation directly affects 1.5 billion people around the world with a disproportionate impact on the poor, women and children, and has already reduced the productivity of the world's terrestrial surface by about 25% from 1981 to 2003 (Nachtergaele et al., 2010). These assessments demonstrate how, within a relatively recent period, biological productivity has declined significantly in addition to the amount of land already degraded (UNCCD secretariat 2013). Although land degradation is a generalized risk, some 40% of the world's degraded lands occur in areas with the highest incidence of poverty (FAO 2011).

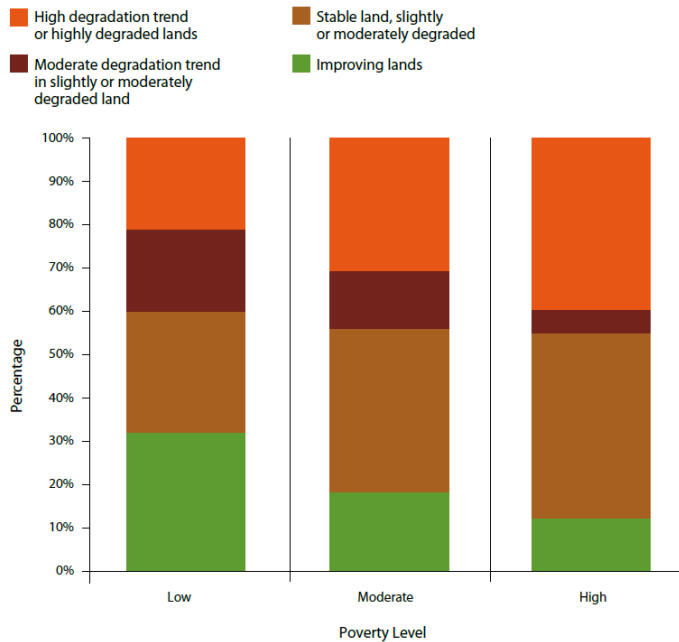


Figure 1.3: Relationship between poverty and land degradation (Source, FAO 2011.)

In recognition of the importance of land and its resources, various efforts were made and are still going on at international, regional, national, state and local levels, however, with different or mixed results. Generally, there has been too great reliance on government and on technical solutions to problems of land degradation. *The Federal Government cannot do it all as regards management of the environment. In the case of responding to the issue of desertification in Nigeria it needs the contribution and participation of the front-line states (Depo. A 2013).*

New emphasis is now being placed on local participation, re-emphasizing on traditional coping-strategies (such as the use of local manure, contours, use of grasses to control erosion and help retain soil moisture, etc.) and addressing problems which stem from the socio-economic/structural setup.

Despite the fact that it waxes and wanes, the concept of participation has been a constant theme in development dialogues for decades. Today, advocacy for participation is once again used by many governments (United Nations Agencies inclusive), and Non-Governmental Organization (NGOs), as central to development projects. In fact, a number of planners and professionals see it as a ‘magic bullet’ that will ensure improvement and sustainability of the project as well as equity for the ‘poor’ or beneficiaries. Thus, local people must be involved in planning and implementation of all development programmes (land resource conservation inclusive) because they are both intended beneficiaries and they know their situations and systems

better than outsiders. It is in line with this view that this research intends to find out the extent of community participation and identify factors that influence participation in land resource conservation in the Local Government Areas of Gombe State.

1.2 Problem Statement

A few decades ago, Nigeria was not among the list of Saharan Countries, (i.e. desert prone areas), but many states, within the north are today listed under desert prone regions, due to human and natural causes (NES 2005).

The most desertification prone area of the country and states within the region have often been described as desertification frontline states (NSAP 2012), They include Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara States (Figure 1.4).

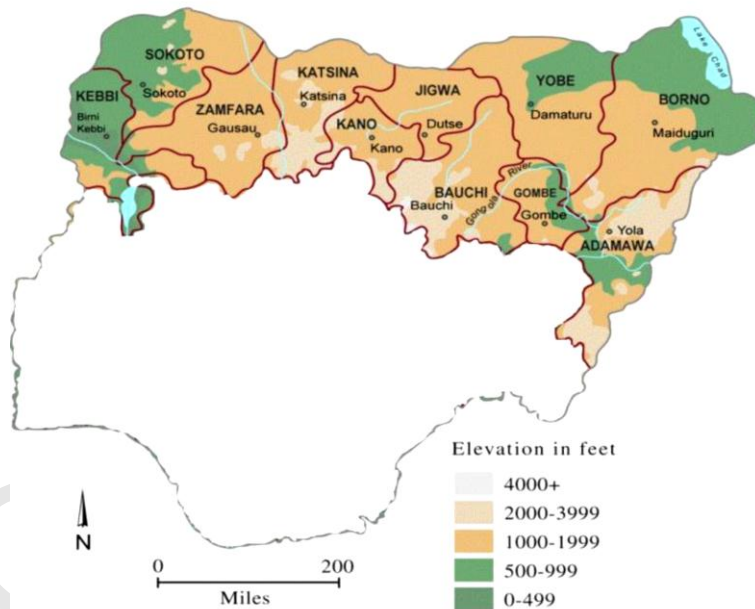


Figure 1.4: Nigeria Desertification Frontlines Sates (Source- NSAP 2012)

Visible signs of desertification in the sub-region include the gradual shift in vegetation from grasses, bushes and dotted trees to expansive areas of desert-like sand. Between the period of 1976/78 and 1993/95, sand dunes increased by approximately 17 % from 820 km² to 4,830 km² [10]. Some villages and major access roads have been buried under sand dunes in the extreme northern parts of Katsina, Sokoto, Jigawa, Borno and Yobe states.

In addition, many rivers and lakes have silted, leading to rapid drying up of water bodies after the rains. A typical example is the case of the receding Lake Chad (LCBC, 1990). Gully erosion, that hitherto was not a major threat, increased, threatening about 18, 400 km² (compared to only 122 km² in 1976/78) (FMEnv 2005, FmEnv 2008).

It has been estimated that between 50% and 75% of the 11 frontline states of Nigeria are under severe threat (NSAP 2012). These states, with a population of about 35 million people account for about 35% of the country's total land area. The pressure of migrating human and livestock populations from these states are being absorbed by buffer states (Benue, Kaduna, Kogi, Kwara, Nasarawa, Niger, Plateau and Taraba) and FCT, to the south, resulting in an intensive use and degradation of the fragile and marginal ecosystems of these areas, even during years of normal rainfall. The pressure point buffer states are reported to have about 10% to 15% of their land areas threatened by desertification. It is estimated that the country, on the whole, is currently losing about 351,000 hectares of its landmass to desert conditions annually, and such conditions are estimated to be advancing southwards at the rate of about 0.6 km per year (FGN, 2004; Wood and Yapi, 2004; Tiffen and Mortimore, 2002;). However, there is urgent need for up-to-date information on the rate and severity of desertification in Nigeria.

In the State level, Aliyu M. H. reported: The forest that cuts across 27 different locations in 10 out of the 11 Local government areas of Gombe state, has suffered levels of deforestation, following the ceaseless felling of trees by the fire wood suppliers, bush burning, as well as by acquiring new farm lands by the farmers" (Daily Trust. 2010).

Shedding light on the degree of environmental degradation owing to the felling of trees which has resulted in a major disaster, the Gombe state commissioner of urban Development, Water, Environment and Town Planning, Muhammad Magaji Doho, said that over 300 hectares of plantation land in the state have suffered the menace of deforestation. (Daily Trust. 2010).

In most states in Nigeria, governments especially in the northern Nigeria are discouraging felling trees for energy use to check desertification, In Gombe however, the situation was different and the state government was showing understanding in an agreement reached with firewood sellers which lead to decades of unsupervised felling down of trees for firewood (Weekly Trust 2013) , this lead the state to a Severe threat of desertification, and today Gombe State is one of the most vulnerable area to desertification and other forms of land degradation.

Several efforts and strategies for land resource conservation have been made and employed as mentioned above, ranging from purely governmental to multi- sectorial

approaches that claimed to involve community in the programme. For example, National Action Plan (NAP), State Environmental Action Programme (SEAP), etc. were all geared towards improving land resource conservation and management through such programmes as afforestation, social afforestation, individual woodlots, plantations, plants, nursery, promotion of appropriate rain water harvesting techniques, integrated programmes to alleviate poverty, creating awareness and public participation through tree planting campaigns, school conservation clubs, development and promotion of alternative energy sources as well as energy saving devices, to reduce the pressure on the fuel-wood (e.g. solar energy, wood - efficient stoves, coal briquettes, biogas, etc.).

Despite all these efforts, little improvement was recorded as attested to by United Nation Environmental Programme UNEP (2000), Akinagum (2004), Wezel and Rath, (2001) and Owaiye in Igugu (1999). Thus, one would wonder how and why the problem of land degradation refused to come down if all these strategies are truly in place and working. Owaiye in Igugu (2009) argues that out of 18 years of afforestation programme, only 0.1% increase in forestry plantation was achieved going by the then land use maps. He stressed that this apparent little achievement is related to lack of active participation.

Darkoh (1993) believes that the persistence of the problem is due, largely, to lack of awareness among the people. Yet, UNCCD secretariat (2013) is saying high prevalence of poverty among the population is the major reason why the problems of land degradation refuse to significantly come down.

1.3 Research Questions

In view of the mentioned problems in section 1.1, the following research questions are developed:

1. What is the current level of participation in land resource conservation and management in the Local Government areas Gombe State?
2. What is the relationship between Poverty, Education/ Awareness, traditional practice in participation in land resource conservation and management in the Local Government areas Gombe State?
3. What is the extent of people dependence on land resource, the relationship between enforcement of law and reward in participation in land resource conservation in Gombe State and its local Government Areas?
4. what is the potential approach or method to enhance public participation in land resource conservation and management in the Local Government areas Gombe State?

1.4 Research Aims

The main aim of this research is to identify the extent of Community participation in land resource conservation and management, and to identify the factors influencing or hindering the participation in land resource conservation and management in the Local Government Areas of Gombe State.

1.5 Research Objectives

The following are the specific objectives of the study:

1. To determine the current level of participation in land resource conservation and management
2. To assess community's level of awareness of the negative impact of land resource degradation, and the relationship between levels of income, traditional practice and participation in land resource conservation and management.
3. To find out the extent of people's dependence on land resource, especially for energy purpose, determine the relationship between reward and participation in land resource conservation
4. To develop evident base-recommendations that emphasizes on the significance of community participation in land resource conservation and management so that, people can also appreciate its contributions to health and wellbeing of the community as a whole.

1.6 Research Methodology

Survey research method was used in this project. Through multistage sampling, data were collected from 240 (male and females) respondents, distributed over three local governments, selected out of 11 local governments found in Gombe state using questionnaire. Similarly, data were collected from the respondents through FGDs and In-depth interviews. The quantitative facts were presented in form of percentages and frequencies while the qualitative data were reported under appropriate headings as supplements. (refer Figure 3.11)

The selection of respondents was based on the criteria of; local people/ residents (youth and adult members of both sexes of 20yrs and above), resource use conflicts (the fastest degrading regions), ethnicity and community cultural clusters, community grouping and their socio-economic activities, community heads and expert officials.

Three (3) categories of respondents were selected for the surveys: namely; matured adult community leaders and community members; and forestry/ Expert officials. Two hundred and forty people (240) are selected from households in Gombe, Dukku and

Kwami Local Government Areas, of who 120 were males and 120 females. Secondly, three communities (3) leaders each from Gombe, Dukku and Kwami local government area, and 3 forestry/expert officials (Head Director from Ministry of Environment (HQ), Gombe State, Head Technical Officer, Ministry of Agriculture (HQ), and Head officer, Gombe State Environmental Sanitation and Protection Agency (GOSEPA). Lastly, 6 FGD groups (3 groups for each sex) were selected, with each group having minimum of 2 and maximum of 10 participants. Multi-stage sampling was used in selecting the 240 respondents. Three Local Governments were selected out of the 11 in Gombe State, namely Gombe, Dukku and Kwami local government area. Firstly, through the literature review lead to the findings of the three rapid lands degrading local government areas in Gombe state which include Gombe, Dukku and Kwami local government areas, the selection of the 240 respondents were based on the most affected local governments (Dukku and Kwami local governments) (see Figure 1.6). Firewood sellers testified that their source for the firewood is from the forest of Dukku and Kwami local government areas (LGA) (weekly Trust 2013). In view of this, the respondents are mostly from the Dukku and Kwami LGA.

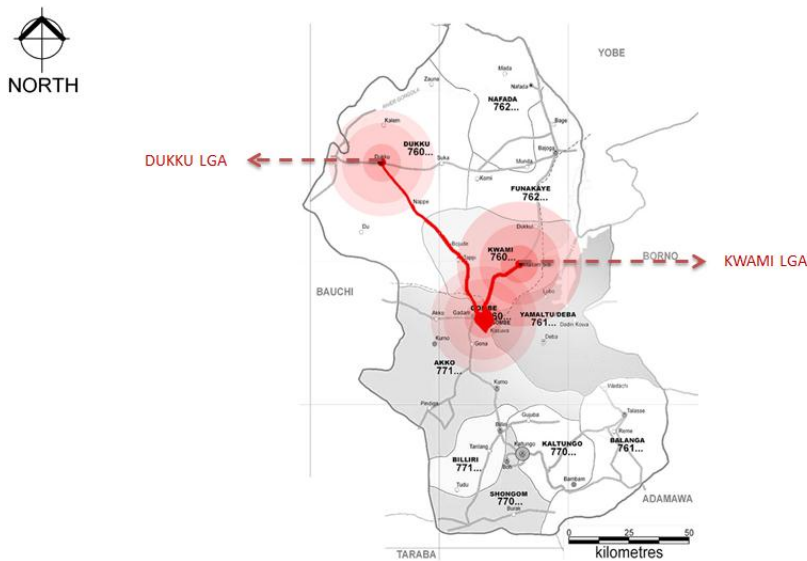


Figure 1.5: Gombe State 's most affected local government Areas (Source: Author)

1.7 Brief Examples of Successful Community Participation in Land Resource Conservation and Management.

1.7.1 Sierra Gorda's Biosphere Reserve Management (Mexico)

It is the second most populated reserve in Mexico, having 691 communities and over 93,000 human inhabitants, living, before, in extreme poverty. This biosphere reserve employed a co-management model involving the National Commission of Natural Protected Areas (CONAP) and the locally funded initiative called Grupo Ecologico

Sierra Gorda (GESG). This group focuses on schools, women and general community in term of their education and communication outreach.

GESG, through reforestation and environmental education, were able to establish over 1000 hectares of native trees and enlighten or at least reach as many as 16,000 children every month in 168 schools within the reserve area. In particular, they developed conservation programme such as children's forests and organic vegetable gardens. The outputs harvested are now utilized in healthy nutritional and whole food cooking classes. On the other hand, team promoters work with community women at least twice in every month during meeting, workshops, nutrition, cooking and gardening classes (including solar cooking, organic pesticides, traditional and herbal remedies, handcrafts etc.) at the end the women became sources of energy, with interest in wood-efficient stoves, community-based recycling centres etc.

For the general community, the social movement creates awareness of civil responsibility and environmental consciousness. These have been reinforced by participatory evaluation and formation of conservation networks such as voluntary civil brigades to control forest fires, network of civilian surveillance against environmental crime etc. Today, they have community based natural resources management projects that include small-scale enterprises as carpentry and ceramics workshops, dehydrated fruits and dried flowers etc.

1.7.2 India (Himalayan Foot-Hills)

Himalayan foot-hills cover an area of about eight million hectares in five northern states of India, and constituted one of the eight most degraded ecosystems in India. Grewal, (1995) characterized the area as having erratic distribution of rainfall, small land holdings, lack of irrigation facilities, heavy biotic pressure on natural forest, inadequate vegetative cover, heavy soil erosion, landslides, declining soil fertility and frequent crop failures resulting in scarcity of food etc. Piecemeal efforts in the pre and post-independence period have largely failed to reduce or halt these degradations (Hannaway, 1988), due to lack of integration between various agencies operating. But the realization that eco-development would be difficult to achieve without a community-led integrated development approach made World Bank to adopt a supported integrated development project, in some states, in 1990 (Grewel, Dogra and Jain, 2001). The project was termed integrated Watershed development Project aimed at complete integration of soil and water conservation. Thus, some of the project interventions include reforestation of degraded forest, and pasture lands, agricultural and horticultural crop demonstrations etc. The project was guided by the belief that community participation, and comprehensive demand driven planning, especially during the design are crucial in any development project.

The project encourages use of local grasses, shrubs and trees to meet the local need. It also encourages the use of local materials and indigenous technologies, formulating

community-based organizations, who shoulder the responsibility of implementing, cost sharing by beneficiaries, post-project operation and maintenance (Grewel et al 2001).

In the period of eight years, an area of 175, 000ha out of 230,000ha was treated. In fact, evaluation after 7 years revealed that there was reduction in run-off and soil loss (in the state of Punjab) from 40.3% down to 5.8% due to imposition of the treatments (of trees and grasses, drop structures, community-imposed control on grazing etc.). Other, successes attributed to the programmes include, employment generation, increase in crop and milk production and reduction in biotic pressure on forest among others (Grewel et al, 2001).

1.8 Significance of the Study

By way of reducing degradation processes and scaling up restoration activities at local levels, the objective is to maintain and improve the quantity and quality of productive land to enhance the flow of ecosystem services for current and future generations (UNCCD secretariat 2013). Land productivity is not only important for the provisioning services (food, fibre, etc.) but also for the delivery of regulating and cultural services that operate at larger temporal and spatial scales. As land degradation reduces soil and water efficiencies, it either decreases food production or increases the costs of production through external inputs (e.g. fertilizers, imported water, pesticides) (UNCCD secretariat 2013). This in turn raises prices and increases food insecurity and poverty.

The expected increases in the demand for food, energy and water, cannot be met sustainably unless we protect and restore the productivity of our land and use our water and energy resources more efficiently. For example, in order to achieve long-term food security, an estimated 60% increase in agricultural productivity - up to 100% in developing countries - will be necessary by 2050 (FAO 2011).

Clearing or converting remaining natural ecosystems for agriculture, grazing or fuel wood would have serious negative impacts on biodiversity and the often overlooked regulating, supporting and cultural services which would likely exceed critical thresholds of sustainability, including that of agriculture itself. In the last two centuries, humans have converted 70% of the world's grasslands, 50% of the savannah, 45% of the temperate deciduous forest, and 27% of the Tropical forest biome for farming and grazing (FAO 2011). Between 1985 and 2005, the world's croplands and pastures expanded by 154 million hectares (Ramankutty et al., 2012). This expansion has dramatically increased food production, but at the expense and severe loss of most other life-supporting ecosystem services of Earth. Thus, for example, agriculture is now estimated to be the proximate driver for approximately 80% of deforestation worldwide (Kissinger et al., 2012) and hence a severe loss of the forests critical climate and water regulation services. Given the current trends in land degradation and under a business-

as-usual scenario, deforestation is likely to continue unabated if production is to match the projected increases in demand for food, energy and water in the next two decades.

Degradation of land and its resources facilitates flooding, increases the number of loss of lives and properties by people living in such area. Equally, scientists have proved that the current problem of increase in global warming is largely due to absence of grass/vegetation cover, thus leading to shortages of surface water etc.

In a nutshell, attention is needed on conservation and management of land resources on a sustained basis in order to improve the living standards of the populace (both present and future generations). The sustainability of land resource conservation relies on 'sustainable society', where community members are active participants. It is hoped that an analysis or identification of factors influencing participation and existing practices in land resources might enable the policy makers, conservation managers, and community members to become more effective in fostering and supporting participation in land resource conservation, which will serve as a basis for improving the living standards of the population through provision of balanced and adequate nutrition, generating employment, reducing cost on government, and general cost of living, etc.

1.9 Scope of Research

Land degradation and drought (DLDD) are challenges of a global dimension affecting the sustainable development of all countries, in particular developing countries (UNCCD secretariat 2013). In view of this, this study is determined to find the extent of public participation in land resource conservation and management and identify factors influencing or hindering the participation in land resource conservation and management. Hence, the study will be using survey questionnaires and in-depth interview to explore public level of income, traditional practice and efficiency of law enforcement as dependent variables and their relationships with land resource conservation as independent variable. The unit of analysis is the local public from various age groups, particularly adult community members, both male and female in the Local Government and Area of Gombe State of Nigeria. The reasons for selecting local public of small towns in the state are because they have been in their towns for decades and have long experience and have sense of attachment to their places. Study on place attachment reveals that people attached many meanings to the places they valued such as specific personal place memories of childhood and the development of personal identities through long term connection and experiences of a place (O'Brien, 2006). Understanding of the attachment of local public to land natural resources may also be the first step in learning more about management and use (Ryan, 2005).

The area of study covers only the Local Government Area of Gombe State (particularly Gombe, Dukku and Kwami LGAs), particularly adult community members, both male and female.

1.10 Structure of the Thesis

In chapter One a preface on land resources and land degradation in the world presented. Then the rationale for doing this study was given, which was because Land and the fertility of its soil are critical natural capital essential for sustainably ensuring food, renewable energy and water security while eradicating rural poverty, conserving terrestrial biodiversity and building the resilience of our agricultural systems to climatic shocks. Next the problems, research questions, aims and objectives, research methodology and scope were discussed.

Chapter Two, it is divided into two parts. The first part deals with the review of relevant literature about land resources, land degradation and its causes, participation in land resource conservation and management, factors influencing participation and global success in community participation in land resource conservation have reviewed. Next area of study, extent of degradation, national efforts in land resource conservation and challenges was also reviewed. Based on the extensive literature review on the impact of land degradation globally, national, state and local, the second part discusses the theoretical framework. Under this part, four theories are explained, namely, Structural Functionalism, North-South Relations Theory, Rational Choice Theory and Interactionism, out of which three were chosen to be the theoretical framework for the study. That is to say the theoretical framework employed triangulation so that the deficiency of one theory is complemented by the other.

Chapter Three provides a survey research and a multi-layered methodology, then an overview of how the study was organised from data collection phase based on questionnaires, in-depth interviews and focus group discussions provided.

Chapter Four describes the findings based survey questionnaire (quantitative), where facts were presented in form of percentages and frequencies, while the qualitative (in-depth interview and FGDs) were reported under appropriate headings as supplement. Variables, such as income, sex, educational level, awareness level, access to facilities and traditional practices of the respondents were correlated with the level of their participation, Analysis tools including Pearson Correlation and Chi-square was used in testing the relationship between respondents' level of participation and factors influencing the participation in land resource conservation the chapter finished up with data analysis and discussion of findings.

Finally, Chapter Five presents summary of findings, significant contribution of the research and suggestions of future work, recommendations, conclusion and significant contribution of this research.

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