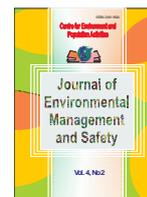




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Role of Community Participation in Combating Desertification in the Arid Zone of Nigeria: An Overview

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ABSTRACT

Desertification is one of the environmental problems affecting most of the northern States of Nigeria. This phenomenon exists because of population pressure, overgrazing and the continuous exploitation of marginal lands in the dry ecological regions of the country. Many programs/projects have been initiated in the past and some are still been implemented to fight desertification in the country. These programs/projects had limited impact in the affected areas, evidence by the continued encroachment of the desert southward and steady destruction of the natural habitat in the arid zone. If this trend continuous, Nigeria will hardly meet the Millennium Development Goals (MDGs) targets 1, 2 and 7. Community participation, therefore, is vital in ensuring enforcement of forest regulations thereby, leading to the sustainability of forest projects.

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1.0 Introduction

Desertification is a process of land degradation in arid, semi arid and dry sub -humid areas resulting from various factors including climatic variations and human activities. On a global scale, the process of desertification seriously threatens the well being and future of people in more than 120 countries in different part of the world (UNCCD, 2004). The impacts of desertification relate to its effects on world food producing capacity, bio-diversity and climate. The spread of desert, called desertification is a serious global problem knowing the implications. The world set aside July 17 yearly to celebrate world desertification day with the objective of creating awareness on desertification problems. According to the experts, the statistics on the impact of desertification are frightening (Table 2). Desertification is not new to Africa but the size of population affected by this menace is new. Desertification in Africa appears to be spreading as a result of changing climate as well as human activities.

In Nigeria for instance, the semi-arid zone which comprises Sudan-Sahelian regions is by its nature and characteristics, susceptible to desertification. According to Aminu (2003) the zone is most vulnerable to climate and human pressures arising from rapidly increasing population and intensive economic activities. The zone constitutes the largest livestock and grain producing area of the nation but prone to

desertification (Bzugu and Ibrahim, 2011). Scholars show that communities in an attempt to exploit the forest resources for livelihood in the semi arid zone had resulted in the decline of forest and increased desertification.

Nigeria has lost more than 90 percent of her natural forest and about 95 million hectares forest covered, in fact, a substantial part of its area face this problem. The most desert front-line States are Bauchi, Borno, Yobe, Kano, Sokoto, Kebbi, Zamfara, Gombe, and Jigawa. These areas house about a quarter of Nigerian population with about 90-95% of cattle, sheep, goat, donkeys and horses (Aminu, 2003). Desertification process is gradually pushing its limits southward at an estimated rate of 0.6km per annum (Vincent, 2005). This Implies that other States in the north are at risk of this phenomenon.

Many programs and projects have been initiated in the past and some are still been implemented to fight desertification in the country: the shelterbelt program; Ecological Disaster Relief Program (EDRP), the linkage program of the Federal Ministry of Environment and University of Maiduguri (FME/Unimaid) to mention but a few. These programs for abating desertification in the arid zone of the country have limited impact in the affected areas. This inference has some iota of truth because of the continued encroachment of the desert southward and steady destruction of the natural habitat in the arid zone (Vincent, 2005). Ownership of forest projects by

communities concern is vital in enforcing regulation thereby, ensuring sustainability.

2.0 Causes of Desertification

Desertification is caused by multiple direct and indirect factors. It occurs because dry lands ecosystems are extremely vulnerable to over-exploitation and inappropriate land use. Over cultivation, inappropriate agricultural practices, overgrazing and deforestation have been previously identified as the major causes of land degradation. It is in fact, a result of much deeper underlying forces of socio-economic nature, such as poverty and total dependency on natural resources for survival by the poor. It is also true to reiterate that desertification problems are best understood within the dictates of disparities of income and access to or ownership of resources.

Consequently, the causes of desertification are more complex to unravel. Desertification is driven by a group of core variables, most prominently climatic factors (Yang and Prince, 2000; Hulme and Kelly, 1993) that lead to reduced rainfall (Rowell *et al.* 1992) and human activities involving technological factors, institutional, policy and economic factors (UNCCD, 2004) in addition to population pressures, and land use patterns and practices. The technological factors include innovations such as the adoption of the use of chemicals and machineries in farming among others. The institutional and policy factors include agricultural growth policies such as land

distribution and re-distribution (AIBS, 2004). These variables drive proximate causes of desertification such as the expansion of crop land and overgrazing, the extension of infrastructure, increased aridity, and wood extraction.

Since most economies of African countries are mostly agro-based, a greater proportion of the desertification problems in rural areas in Nigeria are as a result of poverty related agricultural practices and other land use systems. Inappropriate farming systems such as continuous cultivation without adding any supplements, overgrazing, poor land management practices, lack of soil and water conservation structures, and high incidence of indiscriminate bushfires lead to land degradation and aggravate the process of desertification. These factors prevail in many parts of the Northern Nigeria. Between 1950 and 2006, the Nigerian livestock population grew from 6 million to 66 million, an 11-fold increase. The forage needs of livestock exceed the carrying capacity of its grasslands (Lester, 2006).

Globally, there is evidence demonstrating a heavy negative impact of the energy sector on forest and other vegetation cover and land productivity. More than 15 million hectares of tropical forests are depleted or burnt every year in order to provide for small-scale agriculture or cattle ranching or for use as fuel wood for heating and cooking (UNCCD, 2004). Biomass constitutes 30 percent of the energy used in Africa and over 80 percent used in many sub-Saharan countries. Production and consumption of fuel wood is said to have

doubled in the last 30 years of the 20th century and is rising by 0.5 percent every year (UNCCD, 2004). This high dependence on biomass fuel has resulted into an alarming rate of tree felling and deforestation, which is exposing large tracts of land to desertification. In Ghana, where the population density has reached 77 persons/ km², 70 percent of the firewood and charcoal needed for domestic purposes comes from the savannah zones, as a result destroying 20,000 ha of woodland per annum (Andreas, 2005). In Nigeria, more than 70 per cent of the nation's population depends on fuel wood. Katsina State alone, FAO (1985) observed that over 90% of the energy requirement comes from fuel wood. It is feared that the country might be left with no forest in a near future owing to the present level of deforestation activities (Asiodu, 2007). It is also feared that if the current rate of tropical forests deforestation is maintained, the tropical forests could be

almost entirely harvested by the year 2050, thus, devastatingly contributing to climate change, loss of biodiversity, land degradation and desertification (UNCCD, 2004).

The above direct causes of desertification are driven by a complex set of underlying factors including the high levels of poverty in Nigeria, high population growth rates, poor natural resources tenure and access regimes, conflicts, and climate change. Without alternatives poor people are forced to exploit land resources including fragile lands for survival (food production, medicine, fuel, fodder, building materials and household items). Given that most dry lands in Africa are poverty hotspots as well, the risk of desertification is high in many of these areas, as the poor inevitably become both the victims and willing agents of environmental damage and desertification. High population growth increases pressure on limited and fragile land resources (Table 1).

Table 1
Population Density of Desertification Frontline States of Nigeria

State	Size (Km ²)	Estimated Population (NPC, 2006)	2013 Projected Population based on 3.2% growth rate	Population Density based on projected. Population/ Km ²
Bauchi	49,119	4,676,465	5,830,089	118
Borno	70,890	4,151,193	5,175,240	73
Yobe	47,153	2,321,591	2,894,296	61
Kano	20,131	9,383,682	11,766,537	584
Jigawa	23,154	4,348,649	5,418,108	234
Katsina	24,192	5,792,578	7,221,536	298
Sokoto	27,825	3,696,999	4,609,001	165
Kebbi	36,800	3,238,628	4,037,555	109
Zamfara	37,910	3,259,846	4,064,010	107
Total	337,174	37, 954, 631	51,016, 372	151

Compile by Researchers, 2013

The projected population living in desert frontline States in Nigeria is estimated to be more than 151 million. This breeds favourable conditions for deforestation and overexploitation of land that lead to land degradation as a large and growing rural population, struggling to survive in a limited natural resource base, result in the over-utilization of the available natural resources. For instance the Nigeria’s human population which grew from 33 million in 1950 to 140 million in 2006, a fourfold expansion has forced farmers to plough marginal land under the pressure to meet food needs. As a result of this, the country is slowly turning into a desert (Lester, 2006).

3.0 Impact of Desertification on Livelihood Activities

The statistics on the impact of desertification are frightening (Table 2). Desertification has severe economic

repercussions on the entire nation as it impact on the socio-economic life of both rural and urban households (reduction in crop and animal production, death of livestock, high price of food stuff) and leads to widespread poverty with all social, economic and cultural consequences that this entails (Gwary, 2004). Desertification, mostly affects rural households who are forced to depend on natural resources for their livelihoods. More so, desertification lead to the migration of people to urban or other areas to engage in economic activities such as farming, grazing and fishing (Oladipo, 1993). Other impacts of desertification are that it could lead to economic and social strife; destruction and loss of biodiversity and impact on water resources (Gbahabo, 2011). The repeated droughts of the 1970s and 1980s have led to drastic changes in the environmental conditions of the lake Chad basin in Nigeria, which in turn has

led to the drying up of lake Chad, the encroachment of the desert, the decline of agriculture, livestock and fisheries which threatens the social and economic well-being of people living in the Basin (Musa, 2008).

Land degradation and desertification have impacted on the flora and fauna of the Sudano Sahelian zone of Nigeria. NAP (2000) revealed that some important animal species have endangered and indigenous plant species especially those with medicinal values are now difficult to locate.

Desertification in Africa is a major cause and consequence of poverty and resource depletion, which threaten economic growth. In many African countries including Nigeria, poverty and desertification are expected to rise during the twenty first century (Conserve Africa, 2006) given that most governments are unable to increase expenditure on agriculture to drive rural and urban economic development and reduce the dependence of the poor on the natural environment, a process that exacerbates desertification and poverty.

Table 2
Impact of Desertification

S/N	Fact	Figure	Source
1.	No. of people directly affected globally by Desertification	1 billion	IFAD, 2001
2.	Global Land Area threatened (ha)	4 billion	Bumba, 2004
3.	Current global financial loss occasioned by Desertification	US\$4 billion annually	ECOFORUM, 1993; IFAD, 2001
4.	Proportion of World Land surface at risk	33%	Tolba, 1984
5.	Rangeland, rain fed and irrigated Land currently affected by Desertification	3.5 billion ha	Tolba, 1984
6.	Proportion of world's dry land including sub-humid tropics affected by Desertification	75%	Tolba, 1984
7.	Land area currently reduce to near or complete uselessness	21 million ha	Tolba, 1984
8.	Annual movement of Desertification In Nigeria	0.6km	Lester, 2006; Vincent, 2005
9.	Nigeria Land Area Affected (ha)	351,000	Nwafor, 2006
10.	Percentage of Land Affected by Desertification in Nigeria	43	Gwary, 2004
11	Countries affected by Desertification	100	Sheikh and Soomro, 2006

Source: Compiled by Researchers

The loss of natural resources, environmental degradation (Van Crowder *et al.*, 1998) and desertification (UNCCD, 2004) affects food security. The poor households that are affected by desertification do not have adequate resources to deal with food shortages leading to food insecurity and hunger that affects millions of people. If land degradation continues at the current pace, it is projected that more than a half of cultivated agricultural areas in Nigeria could be unusable by the year 2050 and the country could be able to feed just 25 percent of its population by 2025 (Algiers, 2006). Agriculture being one of the main economic activities in Nigeria (which represents around 40 percent of the country's GDP and employs about 70 percent of the active labour force) (Alegre, 2006), this would lead to a catastrophe with unprecedented repercussions.

The effects of desertification extend beyond the affected dry land areas. As the level of vulnerability due to the combined impacts of desertification and socio-economic susceptibility increase, the probability of human migration becomes great (Acosta-Michlik, *et al.*, 2005). Desertification is displacing big population of people and forcing them to leave their homes and lands in search of better livelihoods. Desertification related migration takes many forms the majority occurring as internal migrations (Nanyunja, 2004), that is, displacements of populations within national boundaries. Migration is often a coping mechanism, with little faith in finding permanent residence

(Haque and Zaman, 1989; Mutton and Haque, 2004; Zaman, 1991). Availability of natural resources for example prompts pastoralists in desert frontline States in Nigeria to migrate away from areas of dwindling resources to the middle belt, thus, raising competition over finite resources with incidence of conflict increasing when these individuals move into areas of crop growing communities (Meier and Bond, 2005).

In Yobe state alone, at least 50,000 farmers in about 100 villages scattered along the desert fringes of the northern part of Yobe State were at risk of abandoning farming due to sand dunes. The dunes have covered a large expanse of agricultural farmlands (Toye, 2002). The dunes are threatening life supporting oasis, burying water points, and, in some cases engulfing major roads in the affected areas. Tree planted by the government as shelter-belts to check the advancing dunes are withering due to lack of attention (Toye, 2002).

4.0 Role of Communities in ameliorating Desertification

Constituent elements to combat desertification and mitigate the effects of drought, within the framework of the National Policy on Environment, include encouraging individual and community participation in viable afforestation and reforestation programmes using tested pest and drought-resistant and/or economic tree species among others. Ayuba (2011) observed that natural resources users in Nigeria have usually been at variance with the basic needs of the local communities because decisions

are taken by government with limited consultation with the various stakeholders particularly rural community dwellers. When local communities participate in all phases of project planning, execution and evaluation, they will be more committed to the project and have a sense of ownership thereby, leading to community forestry.

Community forestry has been described as tree growing, production-oriented activity conducted with the purpose of providing forest based products for the direct benefit of the local community that takes part in the activity (Basu, 1983). The main thrust of the community forestry programme is that local community, through its active involvement and participation in a forest production activity is able to benefit directly from the product that is made available. The objectives are to satisfy the basic needs for forest products of local communities, to improve people's standard of living and to introduce wide environmental benefits (Dida, 1991).

Community forestry benefits both the community and government (Ford Foundation, 1998; Udo, 1999) through the following:

- i) Communities have access to the land and forest resources which they can use to solve the social, economic and environmental problems peculiar to them.
- ii) The income and general well being of the people would be improved through the

material benefits they would obtain from the forest.

iii) Community forestry would promote better management of the forest for sustained yield. This would ensure social equity, economic efficiency and environmental sustainability.

iv) Forest protection by the community would ease the problems government forestry department face in protecting forest resources.

Diance (1992) observed that local populations, their dynamics and their participation are key factors in the drive to halt desertification process and more generally to preserve our natural resources. Toulmin (1993) observed that participation of the beneficiaries of the project design, implementation and evaluation is now understood to be prerequisite for sustainability for many reasons:

- a) That indigenous knowledge is complex and sophisticated and can provide basic on which to build intervention.
- b) Failure of previous projects can be attributed to lack of attention to local priorities and needs.
- c) Establishing local rights and responsibilities is essential for building a pattern of long term interest and incentives to engender a sense of ownership by local people of project activities.

Community participation, therefore, entails changing procedures in the following core areas:

- i) Providing capacity building so as people involved can better grasp the issue, become actively involved from planning stage.
- ii) Improve the mechanism for funding desertification control projects
- iii) Engaging local people actively in the project, by allowing them contribute physically, mentally and financially to the success of the project.

Community participation in desertification projects had work out in other countries of Africa. When integrated into Nigerian desertification programs/project, it will go a long way in combating the dangers posed by desertification.

5.0 Conclusion and the way forward

Desertification (the process of turning a place with luxuriant vegetation into desert) is one of the environmental problems affecting most of the northern states of Nigeria. This phenomenon exists because of population pressure, overgrazing and the continuous exploitation of marginal lands in the dry ecological regions of the country. The repercussions of the dwindling natural resources in the arid prone areas of the country had been sectarian conflict in the country with attendant deaths, injuries, migration and heavy economic losses. If this trend continuous, Nigeria will hardly meet the Millennium Development Goals (MDGs) targets 1, 2 and 7. The

problem of desertification requires urgent attention, in holistic manner, so as to ensure that the semi-arid zone continues to support the socio-economic activities of its people. Community participation, however, will ensure local people involvement into desertification control program/project right from the onset to the completion and sustainability of the project. Local people if involved into the project will enforce the regulations governing the project because they are the beneficiaries of both the project as well as the immediate natural resources users. The following are recommended based on the review:

- i) Local communities should be involved in the Great Green Wall Initiative (GGW-I) aimed at desertification control in Africa.
- ii) Funding should be enhanced on the GGW-I particularly with reference to Nigeria, in order to achieve meaningful result.
- iii) Legislations on forest regulation need to be reviewed in Nigeria. The current one is outdated and lacks merits in view of the current reality.
- iv) Government should provide alternative energy sources in all the desert frontline States of Nigeria and enforced regulations on the use of firewood.
- v) Modern farming technologies should be provided to farmers in order to reduce annual land expansion as a result of population increase.

- vi) Intensive livestock management should be encouraged among Fulani herdsmen to reduce overgrazing and excessive use of land.

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