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Review article

Natural Resource Management, Food Security and Violent Conflicts in Nigeria: Concepts, Issues and Policy Considerations

Running title of the work

Abstract

The ability to manage natural resources in our environment sustainably will determine human wellbeing today and in the future. In spite of this, policy formulations and pronouncements in Nigeria have not taken due cognizance of the fact that human wellbeing and natural resources management should be examined as joint issues because of the nexus between them. This paper reviews relevant concepts on natural resources, food security and conflicts in order to highlight the linkages between natural resources management, on the one hand and; food security and conflicts, two factors which have significant impact on human wellbeing, on the other hand. It examines natural resource management, food security and violent conflicts in Nigeria. The paper further looks at the effects of the struggle for control over natural resources and food insecurity status on conflicts in Nigeria, and the political, social, and demographic factors that may aggravate these conflicts. It concludes with a discussion of some policy recommendations and measures that may be used to manage natural resources and ensure food security which may reduce violent conflict and foster peace in Nigeria.

Keywords: Conflict, Food Security, Nigeria, Peace, Resource Management.

1.0 INTRODUCTION

Nigeria should be able to utilize its abundant natural resources to develop its economy and guarantee the social wellbeing of all its citizens. However, this has not been the case. It appears the exploitation of some of the natural resources, especially oil, has caused the nation harm rather than good. It has engendered conflicts and some other social misdemeanours.

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This paper seeks to shed light on the nexus between natural resource management, food security and violent conflicts in Nigeria. The paper further looks at the effects of the struggle for control over natural resources and food insecurity status on conflicts in Nigeria.

The paper is organized into seven sections. Following this introduction is section 2 which reviews concepts and other issues on natural resources management. Section 3 focuses on food security. Assessment of Conflict in Nigeria is done in section 4. Natural resource management and violent conflict nexus is discussed in section 5. Section 6 summarizes policy implications on natural resource management, food security and violent conflict while section 7 concludes the paper.

2.0 NATURAL RESOURCES:

2.1 Concepts

Natural resources are stocks of physical assets that are not produced goods which are valuable to humans (Echeme and Ubani, 2010). A resource may be considered valuable because of its sheer existence, or because it produces a flow of services or benefits that can be used in production, trade, or consumption (African Development Report, 2007). Natural resources are classified as follows:

(a) Raw Materials which are needed for most human activities. They include fossil energy carriers and minerals such as gypsum and china clay, biomass, such as agricultural crops and forest products such as rubber, timber, cocoa, coffee, cassava and so on. Under this classification, the concern is how to ensure continuous supply of these materials for human usage.

(b) Environmental Media such as air, water, and soil, which sustain life on earth and produce biological resources. In contrast with raw materials, their declining quality is the main concern. The issue is not the quantum, but the quality. For example, the quantities of air and water on earth do not change within human time scales, but their quality is often poor because of pollution.

(c) Renewable resources are resources that are replenished by the environment over relatively short periods of time. This type of resource is much more desirable to use because often a resource renews so fast that it will have regenerated by the time they have been used up by human beings. These include solar energy, wind energy, plants and animals. Water is

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also sometimes considered a renewable resource because you cannot really used up water on earth. Geothermal energy, that is, heat from the earth and biofuels (fuels made from living organisms) are also considered as renewable resources.

(d) Non-Renewable Resources which are resources that are not easily replenished by the environment. They include crude oil, natural gasses, coal and nuclear fuels. Non-renewable resources have a regeneration rate of zero or regenerate over a very long period (Lujala, 2003). Non-renewable resources can be recyclable (for example, minerals, and oils used in plastics) or non-recyclable (for example, oils used as fossil fuel).

(e) Renewal and regenerative ability can be used to classify natural resources into three groups. The first of these involves resources, such as energy from the sun, rainfall, ocean tides, wind, and changing climate, which come in predictable flows over time. They are self-renewing and must be used as they come because of the difficulty if not impossibility of storing them for future use. This group is called flow resources. A second class, known as fund resources, occurs in nature as finite resources that are fixed in supply. Although they can often be recycled for further use, they cannot be replenished. Fund resources are further classified into (i) mineral fuels, such as oil, natural gas, and coal, that can be consumed through use, (ii) metals, such as iron, tin, copper, lead, and zinc, together with some non-metals, such as sand, gravel, salt, and sulfur, which are not normally destroyed though use and (iii) composite resources which have the characteristics of both flow and fund resources. Examples include crops and other flora, all animal life, including human beings, and water that may be stored in a reservoir or underground aquifer. These resources can come as a continuous or reoccurring flow over time as long as care is taken to protect the necessary seed stock (Mensah and Castro, 2004)

(f) Physical Space is needed to produce or sustain all the above mentioned resources. Land which is used for human settlements, infrastructure, industry, mineral extraction, agriculture and forestry, is an example.

2.2 Scope of Natural Resource Management and Policy Issues

Two key questions in considering Natural Resource Management (NRM) are: How much should we extract now versus later? And how do market extraction rates match the social optimum extraction rates? These questions are important in exploring the most efficient ways of utilizing natural resources. NRM also involves the management of resource extraction or

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imports, production and consumption, and the resultant financial resources, wastes and emissions (African Development Report, 2007).

The key objectives of such NRM include:

- ensuring adequate supply of, and efficient use of, natural resources for the creation of wealth and well-being in industry and society;
- avoiding overloading or destroying nature's capacities for reproduction and regeneration of resources and absorption of residuals;
- securing the co-existence of society and nature;
- minimizing risks related to national and international insecurity and economic turmoil due to dependence on natural resources;
- driving technological and institutional change in a way and towards a direction that provides economic and social benefits to all stakeholders (African Development Report, 2007).

The concept of "sustainable development" was first introduced in 1987 in the Brundtland Report as "development that meets the need of the present generation without compromising the ability of future generations to meet their own needs." This definition implies two equally important concepts of intra-generational and inter-generational equity. Intra-generational equity is the requirement to meet the needs of the present generation equitably while inter-generational equity is the requirement not to compromise the satisfaction of the needs of the future generations. Ideally, sustainable development should be development that generates optimal economic and social returns without impairing the long-term life-supporting capacities of ecosystems or reducing the chances of future generations to satisfy their own needs (Eurowatch, 2002).

2.3 Institutions and Natural Resource Management

Institutions are means of structuring the interactions between individuals and/or groups. They could be the formally constituted establishments or the generally recognized patterns of organization that are embodied in customs, habits, and laws of the society. Institutions can be considered in concrete or abstract terms. For example, markets can be physical locations and can also be abstract. Singh (1994) considers institutions as formal or informal rules about who makes decisions, according to which procedures, what actions are permitted, what information must be provided and what payoffs will be assigned to individuals. Based on this

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consideration, institutions may be responsible for deciding who (individual or group) is given or denied access to natural resources. It may either include or exclude an actor group from access to resources.

Institutions could be local, national or international. Institutions, especially at local level, are important for regulating the use of natural resources with a view to ensuring sustainable development. Local institutions are considered to be more efficient in promoting sustainability of natural resources because they are closer to the resources. Local institutions can also play a major role in minimizing conflicts due to access and control of natural resources.

2.4 Natural Resource Management and Environmental Justice

One aspect of NRM that is often ignored is environmental justice. The exploitation of natural resource often comes with environmental consequences in terms of air and water pollution and soil contamination. While the benefits of the exploitation are often enjoyed by large number of persons across wide geographical areas, the consequences are mostly localized to the immediate vicinities of the point of exploitation or the host communities. Examples of soil contamination and water pollution abound in the oil producing communities of the Niger Delta of Nigeria whereas the benefits of crude oil production is enjoyed in all the states of Nigeria. The citizens in the impacted communities lose some of their means of livelihood as a result of the water pollution and soil contamination. The fish catch decline with the level of water pollution while contaminated soils can no longer be used for farming. In addition, pollutants in the water and the air; and contaminants in the soil affect their health thus requiring investment of their limited financial resources to redress the negative health impacts.

Massey (2004) gave the example of industrial pollutants from industrialized economies which are carried northward by ocean currents that accumulate in the bodies of fish, seals, and other animals, that form a major part of the diet of the people (Inuit) who live in the Arctic Circle. Toxic chemicals produced throughout the world are found in extremely high levels in Inuit people's bodies and in Inuit women's breast milk. Inuit babies and children begin life exposed to an enormous burden of toxic chemicals, placing them at increased risk of a range of developmental disorders. They are bearing the burden of pollution from industrialized economies' operations though they are not benefiting from the outputs of the industrial operations.

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From economic perspective, these pollutions represent negative externalities which are being borne by persons who do not benefit from the profits generated from the industrial operations causing the pollutions. In most cases, these are poor people who live close to the factories or locations where natural resources are being exploited and who do not have the resources to protect themselves. Sustainable NRM should provide protection for these categories of persons from this "environmental injustice".

2.5 Sustainable Resource Conservation

Sustainable development has four pillars: the economic, environmental, social, and governance pillars, with the fourth pillar fostering the integration of the first three. Therefore if the natural resources sector is to contribute positively to sustainable development, it needs to demonstrate continuous improvement of its social, economic and environmental contribution, with new and evolving governance systems.

Sustainable development involves the achievement of "economic growth and social development without degrading the potential of its conditionally renewable natural resources" (Young and Ryan, 1995). The role of natural resources in ensuring sustainable development in Nigeria is critical given that economic growth and social progress depend on the natural resource base. This natural resource base cannot be conserved in light of the pervasive poverty in rural Nigeria (Paul, 2007). In addition, Nigeria is a country where the population is growing faster than the economy. Thus, people (especially the rural poor) over-exploit some natural resources in order to survive. The harvesting of wood fuel beyond sustainable level in some forests in Northern Nigeria is an example. In addition, governments often mismanage the wealth from natural resources' exploitation thus complicating sustainable development in Nigeria.

3.0 FOOD SECURITY

3.1 Definitions and Conceptual Issues

Food security is a flexible concept as reflected in the many attempts at its definition in research and policy usage. There were about 200 definitions in published writings [Clay, 2002, Maxwell and Smith, 1992].

Today, it is commonly defined as a condition in which all people have access at all times to enough food of an adequate nutritional quality for a healthy and active life (World Bank, 1986 as cited in Tollens, 2000 and Adebayo, 2010). There are four dimensions to this: (i)

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availability of sufficient amount of food which is a function of food production (ii) stability of supply over time which depends on the ability to preserve/store produced food and supplement available food through imports if necessary (iii) access to the available food which depends on income levels and its distribution and (iv) food utilization which encompasses procurement, ingestion and digestion all of which are dependent on nutritional quality, education and health (Tollens, 2000).

Food security exists at both the macro and micro levels. National Food Security (NFS), the macro dimension, is possession by a nation of the capacity to procure enough food through production or imports to feed its population. This is a necessary condition but not a sufficient condition for Household Food Security and Individual Food Security since food availability on a national scale does not preclude the lack of adequate access to such food by many of the inhabitants due to weak markets, poor infrastructure and information system, and inequality in resource and income distribution. According to Olagunju *et al*., (2012) food security means access to adequate food for a healthy life. This definition points to at least two parts of this complex concept: access to available food and adequate nutrient intake for sustainable health.

The 1994 UNDP Human Development Report promoted the construct of human security, including a number of component aspects, of which food security was only one. The list of threats to human security is long, but most of them can be classified under seven main headings: economic security, food security, health security, environmental security, personal security, community security, and political security.

From the foregoing discussions, food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern. Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.

The link between environmental resources and the livelihoods of rural people is widely acknowledged. Rural people rely on the environment for a range of goods and services. These services include provision of food, medicines and energy. Natural resources may serve as important safety nets during periods of stress.

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Poverty may contribute to unsustainable exploitation of the natural resources. The problems of poverty, food insecurity and environmental degradation in many developing countries are closely related (WCED, 1987). Increased population pressure, the long time needed for regenerating natural resources once degraded and persistent economic hardship are related phenomena in many African countries. Natural resource degradation is a common phenomenon among the poor, as they try to escape the scourge (Oyekale, 2008). Policies and laws that acknowledge environment as asset of poor people and which empower people to use these resources efficiently and productively can have positive impacts on achieving food security efforts.

3.2 Pressure, Status of Natural Resources, Poverty and Food Security

The importance of natural resource degradation, poverty and food security links makes it useful to employ a systematic framework for ensuring that environmental factors are not making the poor even poorer and threatening food security (Shyamsundar, 2002). The framework considers key environmental problems, identifies driving forces that are leading to pressure on natural resources, tracks the current status of the resource, and the incidence of poverty. This understanding allows us to track the impact of pressure factors not only on natural resources but also on the poor (see Table 1).

4.0 CONFLICTS

4.1 Definitions and Conceptual Issues

Conflict may be defined as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals. Conflict in teams is inevitable; however, the results of conflict cannot be predetermined. Conflict might escalate and lead to non-productive results, or conflict can be beneficially resolved and lead to quality final products (The Foundation for Coalition, 2016). According to Regional Enhanced Livelihoods in Pastoral Areas, RELPA (2008), to deal with a conflict effectively, it first needs to be analysed and understood, to see how conflicts arise and persist. Conflict analysis is the most important and necessary step that has to be taken before any conflict intervention can be carried out, and aims at gaining a clearer and deeper understanding of the origin, nature and dynamics of the conflict in question. At the same time, conflict analysis is an activity that has to take place during the whole process of dealing with conflict, as conflict continuously changes. Analysing conflicts includes not only collecting information and evidence about the conflict, but also interpreting and evaluating the information collected. Conflict analysis enables the:

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- clarification and prioritization the range of issues that need to be addressed;
- identification of the impacts of conflict;
- identification of the root causes and contributing factors of conflict in order to determine appropriate responses;
- identification of the stakeholders' motivations and incentives through an understanding of their interests, needs and views of the conflict;
- assessment of the nature of relationships among stakeholders, including their willingness and ability to negotiate with each other;
- identification of existing information about the conflict and what further information is needed;
- evaluation of the capacity of existing conflict management institutions or practices to deal with the conflict;
- building of rapport and understanding among stakeholders, where possible;
- enhancement of the problem solving and analytical skills of local stakeholders in addressing current and future conflicts (capacity building is an important part of participatory conflict analysis);
- increasing of understanding of the links between the broader social, political and economic context and resource use conflicts

The incidences of war globally are predominantly in the Third World Nations among which Nigeria is one. Since independence from Britain in 1960, Nigeria has recorded a major conflict the civil (The Biafra war) (Olabode and Ajibade, 2010); and several intra- national war in different parts of the country. According to Aliyu (2004), "conflicts in Nigeria are of diverse types and have been on rapid increase since after the civil war of 1967-1970". These conflicts are mainly attributable to natural resource control and divergent value systems in the country. Dougherty and Pfalzgarff, Jr. (1981) stated that, "the term conflict usually refers to a condition in which one identifiable group of human beings in a given environment (whether tribal, ethnic, linguistic, cultural, religions, socioeconomic, political, among others) is engaged in conscious opposition to one or more identifiable human groups because these groups are pursuing what are or appear to be incompatible goals".

In Nigeria, conflicts are being increasingly interpreted as religious and/or political even though the underlying drivers may be conflicts over access to resources (Blench, 2010). Nigeria is usually characterized as a deeply divided state in which major political issues are

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vigorously and or violently contested along the lines of the complex ethnic, religious, and regional divisions in the country. By virtue of its complex web of politically salient identities and history of chronic and seemingly intractable conflicts and instability, Nigeria can be rightly described as one of the most deeply divided states in Africa (Osaghae and Suberu, 2005). From its inception as a colonial state, Nigeria has faced a perennial crisis of territorial or state legitimacy, which has often challenged its efforts at national cohesion, democratization, stability and economic transformation (Maier, 2000).

4.2 Violent Conflicts in Nigeria

There have been violent conflicts between different communities at different times in different states of Nigeria. Figure 1 presents information on the intensity of conflicts across Nigeria as captured by Jirgi (2013).

Violent conflicts in Nigeria have been in different forms and scales. In some locations, conflict will be one-off, while in others conflicts are sporadic. Occasionally, conflicts assume a continuous dimension and look seemingly intractable. However, conflicts that sometimes look intractable have been rested. Over the years and even currently, there have been conflicts between pastoralists and crop farmers in different parts of Nigeria. These conflicts are sporadic in the sense that they occur intermittently in different locations. Ordinarily, one expects interdependent relationship between pastoralists and crop farmers, based on the exchange of dairy products for grains, access to cereal crop residues and a market for the animals that must be periodically sold to provide cash for domestic purposes. Access to crop residues could also beneficial to crop farmers because of the manure that is deposited on farms by the livestock while feeding on the residues.

One can interpret these conflicts in terms of ecological determinism; since the higher the pressure on resources, the greater the conflict between the two groups. However, comparative studies suggest that there are other factors to be considered. These include (i) relations of power and authority, both within and between the various ethnic groups and classes (ii) production system of arable crops versus pastoral (iii) allocation of economic rights and responsibilities – establishment of grazing reserves (iv) differences in religions and (v)

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representative democracy versus traditional authorities and the requirement to find politicians able to represent sectional interests (Blench, 2010).

Land and the related natural resources including minerals and water have also been major sources of conflict in Nigeria. The quest for land as a natural resource needed for agricultural production has led conflicts between agrarian communities in the country. The Ife-Modakeke communal crisis dwelt essentially on the control of territory and, especially, farm lands. There have been similar problems in other parts of the country, especially, between boundary communities in neighbouring states.

The Nigerian Land Use Decree of 1978, shifted the balance of power significantly against the traditional chiefs who in the time past control community and all unoccupied lands. The Decree essentially made the Federal Government the owner of all land and removed from chiefs their power to allocate unused or abandoned land. This continues to be a source of irritation to the chiefs who seem to have lost control over an important and limited natural resource from which could easily derive rents. There have hence been several cases in courts between "land owning families" and state governments or beneficiaries of government land allocations.

There is the dimension of conflicts arising from control over mineral resources under the ground. This generally takes the form of sharing of revenues (royalty and others) arising from the exploitation of the natural resources. This is the case of the conflict with respect to resource control in the Niger Delta.

5.0 NATURAL RESOURCE MANAGEMENT AND VIOLENT CONFLICTS NEXUS

5.1 Resource Ownership, Management and Control and Conflicts

The exploration of the link between natural resources and conflicts have yielded four major lines of argument. These are the grievance hypothesis (Oyefusi, 2007, Klare, 2001:208), the weak states hypothesis (Oyefusi, 2007, Fearon and Laitin, 2003, Karl 1997; Mahdavy, 1970), the separatist incentive hypothesis (Oyefusi, 2007, Ross, 2003; Collier and Hoeffler, 2002, and Le Billion, 2001), and the looting hypothesis (Oyefusi, 2007, Collier and Hoeffler, 1998, 2004).

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For the grievance hypothesis, it is argued that resource extraction creates grievances among local communities due to land expropriation, environmental hazards, inadequate job opportunities and social disruption accompanying labour migration and perceived injustice in the distribution of resource rents. This is definitely applicable to Nigeria and the Niger Delta where crude oil extraction has manifested all of these features. For the weak states hypothesis, it is argued that natural resource (particularly oil) wealth increases the probability of civil war by weakening the states bureaucracy (Oyefusi, 2007, Fearon and Laitin, 2003); by creating a state that is less responsive to its citizens (Oyefusi, 2007, Mahdavy, 1970); and by impeding the ability of states to resolve social conflicts (Oyefusi, 2007, Karl, 1997; Fearon and Laitin 2003). It could be argued that in Nigeria, the extraction of oil and the consequent generation of oil wealth have weakened the state's bureaucracy by mitigating the need to be efficient in service delivery and to be accountable to the citizens.

The looting hypothesis states that the risk of civil conflicts is increased by availability of natural resources through the provision of a source of finance for nascent rebel groups either by extracting and selling the commodities directly or by extorting money from extractive firms, which unlike manufacturing firms are location-specific. This was the case with blood diamonds in Liberia. In the Niger Delta of Nigeria, militants sometime creates blockades and occupy oil installations in other extort money from oil companies. The separatist incentive hypothesis states that natural resource wealth increases the risk of a secessionist war by giving residents in a resource-rich region an incentive to form a separate state (Oyefusi, 2007, Ross, 2004)

5.2 Food Security and Violent Conflicts

Violent conflicts tend to disrupt food production by local farming communities (United Nations, 1993). This in turn increases the risk of food insecurity. This has been the case in the Northeast of Nigeria where Boko Haram has dislocated families through incessant attacks and kidnapping. Also the herdsmen attacks on farming communities in Benue State will not only lead to dislocation of these communities but also reduce food production thus reducing food security. Other countries which have experienced violent conflicts have also suffered from food insecurity, especially during the conflicts. Examples of such countries include Ethiopia (1984–1985), Somalia (1992) and the Sudan (1987–1991) (Drèze and Sen, 1989; Ó Gráda, 2007; United Nations, 1993). Conflict-induced food insecurity has both immediate and long-term effects, especially on children. Such children were significantly shorter

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(stunted) than others, affecting their health, education and productivity throughout their lives (Alderman, Hoddinott and Kinsey, 2006; Blattman and Miguel, 2010).

6.0 POLICY CONSIDERATIONS ON NATURAL RESOURCE MANAGEMENT, FOOD SECURITY AND VIOLENT CONFLICTS

There are several legislations and policy statements relating to the management and control of various natural resources in Nigeria. These include policies and laws on land use, fisheries, environmental protection, solid minerals exploitation, crude oil exploration and production. The Federal and/or State Governments enacted these legislations for sustainable utilization of these resources. Some of these policies and laws are however due for review since they have not succeeded in preventing frictions and outright conflicts in several instances.

Relevant areas to which Government needs to pay attention include the link between natural resources and conflicts which in literature include the issue of grievances arising from land expropriation, environmental hazards, inadequate job opportunities and social disruption accompanying labour migration and perceived injustice in the distribution of resource rents. There is also the fact that extraction of oil and the consequent generation of oil wealth have weakened the Nigeria's bureaucracy by mitigating the need to be efficient in service delivery and to be accountable to the citizens. Accountability to the citizens should hence be strengthened in the exploitation of the nation's natural resources. If this could be achieved, it will minimize the incentive to form separatist groups and secession.

There is a need to take into consideration important national and regional demographic trends. The growth in Nigerian population will continue to put pressure on natural resources such land, water, forest and wildlife. It will also affect environmental resources such as natural parks and games reserves. Nigeria's natural resources should be managed scientifically in such a way that their sustainability is assured. Integrated management systems should be developed for each key natural resource to maintain the quality of the environment; offer better socioeconomic options that would lead to an adequate and acceptable quality of life for the teeming rural and urban poor and, at the same time, maintain biological diversity. The management systems and policies must address issues relating to energy supply and costs (especially of electricity, liquefy natural gas and kerosene), poverty reduction, crop production system (directed at limiting shifting cultivation and increasing

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intensification) and sedentarization of pastoralists. The management systems and policies for natural resources should take into account economic, environmental, and social concerns in respect of natural resources such as land, water, soil, plants, and animals. Particular focus should be placed on how the preservation of natural resources impacts the quality of life now and for future generations.

Environmental justice must be adequately considered by ensuring that minority and low-income communities do not bear a disproportionate share of environmental costs, that is, contamination that threatens their health and disrupts livelihoods thus creating a perception of unjust treatments. Strong institutions should be created for regulating the use of natural resources with a view to ensuring sustainable development of the Nigerian society.

Poverty may contribute to unsustainable exploitation of the natural resources. The problems of poverty, food insecurity and environmental degradation must be jointly addressed. Violent conflicts tend to disrupt food production by local farming communities which in turn increases the risk of food insecurity. Thus, conflict situations should be pro-actively addressed.

7.0 CONCLUSION

Now is the time for the Government to act to ensure proper regulation of natural resources' exploration and exploitation in the country. The review above suggests that Government must pay attention to the nexus between natural resources and conflicts. The relevant issues to consider include grievances arising from land expropriation, environmental hazards, inadequate job opportunities and social disruption accompanying labour migration and perceived injustice in the distribution of resource rents. Environmental justice, that is, minority and low-income communities do not bear a disproportionate share of environmental costs of natural resources 'exploitation should be given adequate consideration. Accountability to the citizens should be strengthened in the exploitation of the nation's natural resources to minimize the incentive to form separatist groups and secession.

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Table 1: A sample of poverty-natural resource indicators that affect income and food security of poor people in poor countries

Poverty issue	Poverty issue; Poverty-environment indicator	Natural resource problems that could influence this indicator
Income and Opportunity	Percentage of rural population below poverty line	- Deforestation - Water scarcity - Over-fishing - Land degradation
	Quantity of annual household consumption derived from common lands	
	Quantity of annual household consumption that is derived from forest products and fisheries	
	Percentage of irrigated area in total cultivated area by wealth/income categories	
	Percentage of rural households with adequate water for livestock by wealth/income categories	
Food Security	Rural per capita cereal production	- Land degradation - Water scarcity - Pest outbreak - Natural disasters
	Percentage of farmers who grow drought resistant crops by income/wealth	
	Quantity of household consumption that is derived from forest products and fisheries	- Deforestation - Overfishing
	Percentage of rural children under five who are underweight	- Land degradation - Water scarcity - Water quality
	Percentage of rural children under five who are stunted	
	Percentage of rural children under five who are wasted	
	Number of deaths from natural disasters by income / wealth	
	Percentage of farmers with land on drylands/wetlands by income / wealth	
	Percentage of rural children under five who are wasted	

Source: Shyamsundar, 2002

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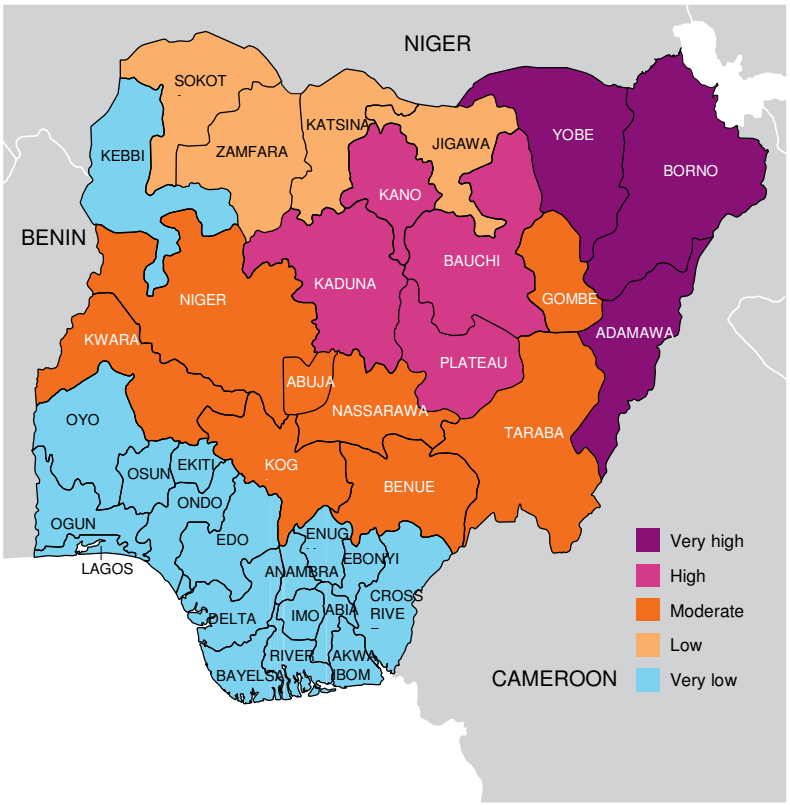

Figure 1: Map of Nigeria showing the Intensity of the New Conflicts across the Country

Source: Jirgi, 2013