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LAND DEGRADATION AND FOOD SECURITY IN EBONYI STATE, NIGERIA

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ABSTRACT
In most rural agro-based economies, people's livelihoods are dependent on land and its resources. When such land is degraded, food security is challenged. This study was conducted to examine the nature and causes of land degradation, and the socio-economic impacts on food security in Ebonyi State. The multistage cluster sampling was used following the existing 3 senatorial zones of the state (North, Central and South). A local government was selected from each of the zones (Abakiliki from the North, Ikwo from the Central and Ohaozara from the South). Apart from survey sample, qualitative instruments (FGD, SSI and KII) were also used. It was found that the nature of land degradation in the areas were gradual caused by continuous cropping, poor farming practices, bush burning, and mining activities. It was recommended that conscious efforts on land management practices be promoted among farmers and all stakeholders involved in agricultural activities.
Keywords: Land, Degradation, Food Security, Multistage, Ebonyi

INTRODUCTION
It is common fallacy that land is ample and indestructible. However land degradation is widespread particularly in developing countries and is a threat to sustainable development. Another common mental image is that of gradual change: that degradation proceeds slowly and can be reversed, slowly with adequate inputs. Yet agro-ecological systems and societies are resilience only up to a threshold and collapse when pushed too far. In this paper land degradation refers to a reduction of biological and economic potential of rain fed crop land, irrigated crop land or range, pasture and forested land by one or combination of processes (Amalu, 1998), which include displacement of soil material by wind and water erosion, deterioration of soil physical and chemical properties and long term loss of natural vegetation. It can also be seen as loss of resilience of land, loss of utility or potential utility of land or the decline in soil characteristics as a result of poor management and conservation of land. The rate of natural resource degradation may seem slow to some, but this should not lull us into complacency. Land use, not even intensive land use, does not lead to degradation. Proper short term investments in inputs and long term investment in structures and equipment can conserve soil, while allowing productive and sustainable agricultural land use. However if conditions are such that farmers cannot invest in these inputs and structures, human activity will continue to degrade natural resources and peoples livelihoods that are dependent on it. (De Vries and Molden 2002) Land degradation can reduce agricultural output and yield thereby precipitating starvation and poverty (Fagbemi 2002)

Among the many consequences of land degradation is reduction in household food security. Food security in this paper implies the production of food, the access to food and the utilization of food. For household food security refers to the ability of households to produce or purchase food they need for a healthy and active life. In Ebonyi state food insecurity is as a result of poor crop yield, lack of income and access to food, which is driven by poverty. Conditions of high absolute poverty induce the poor to become both agents and victims of environmental degradation. The objective of

this paper therefore is to present an analysis of the impact of land degradation on food security in Ebonyi state with focus on food insecurity resulting from land degradation factors.

Agriculture is a major industry in Ebonyi State. Idachaba (1993) reported that about 80% of the people of Ebonyi State are small holder farmers. Small holder farmers have been described by Agbilibeazu (1984) as those farmers who produce on small scale for subsistence and cultivate more than 5 hectares of land annually on the average. These small holder farmers are also multiple croppers who cultivate more than one type of crop on a piece of land in an irregular manner (Francis, 1986, Forbes, 1992). The popular Abakaliki rice is cultivated throughout the State. Other food crops include yam, cassava, maize, cocoyam and groundnut. Cash crops such as oil palm, cashew, and rubber are also cultivated. The presence of large arable land, rivers and streams has made farming very attractive. Fishing is also carried out on commercial level particularly along the Ebonyi River which crosses the North-Central and the Cross River which passes the southern part of the State. Livestock farming is also common. This includes the traditional rearing of animals such as goats, pigs, chickens, cattle, horses and pets. There are small-holder cattle ranching in Onicha, Ohaozara and Ishielu LGAs. Apart from farmlands the State is blessed with some natural environmental resources, such as brine (salt) granite, lead- zinc-copper sounds limestone, barytes, kaolin, marble stone, Gypsum, False Gold/Gold, crude oil (dormant). Climatically, Ebonyi State is semi Savannah with seasonal variations, hot mild cold weather and mixed grid vegetation. The mean annual rainfall is between 1,500mm and 1,800mm. Naturally the climate is atypical hot humid type characterized by high rainfall, high temperature and sunshine with marked seasons, the rainy and the dry seasons.

MATERIALS AND METHODS

The study was conducted in Ebonyi state. Three Local Government Areas, Abakaliki, Ikwo and Ohaozara were purposively selected because of intensive farming and the presence of some mineral deposit that are locally mined. Each of these LGAs represented a senatorial zone in the state. The sample size was 291 drawn from a population of adult males and females using multi-stage cluster and simple random sampling methods. The instruments of data collection include the questionnaire, Focus Group Discussion, Semi Structured Interview, Key Informant Interview and Observation during transient walk. Three hundred questionnaires were distributed while 291 were retrieved. Twelve sets of FGD, 6 SSI and 3 KIIs were also administered. The transient walk took the researcher to degradation sites where some unstructured questions were asked to people at such sites and pictures of observed degradation taken. A triangulation of the data from these sources generated the results presented in this paper.

RESULTS AND DISCUSSION

Causes of Land Degradation in Ebonyi State: When land degrades, farmers are the critical group that feels the effects and are the ones who can establish through experience, the existence of land degradation. Respondents were asked if they are aware of signs of land degradation in their communities and an overwhelming, 89.0 % (259) said yes, while only 10.0 % (29) said no. The researcher asked the respondents to list some of the signs of land degradation they observed in their various communities. This was an open-ended question which could be difficult to analyze but which can suggest variables of interest to the people and can touch on the root of the problem. Table1 shows the variables as listed by the respondents.

Table 1 showed that majority 168(57.7%) of the respondents see reduced soil fertility and shortage of food as outstanding sign of land degradation. This supports Stephen (2000) who found that a

decline in soil fertility negatively affects food security. This is followed by erosion (washing away of the top soil) 36(12.4%).

Table 1: Respondent's List of Signs of Land Degradation

Suggested signs	Frequency	%
Reduced soil fertility (shown in shortage of food and declining vegetation)	168	57.7
Erosion	36	12.4
Mineral Deposits in the Soil	28	9.6
Flood	8	2.7
Climate change (shown in low rainfall or too much heat)	4	1.4
Excess labour	4	1.4
Scarcity of good land	4	1.4
No Response	39	13.4
Total	291	100.0

Source; Field Survey, 2012

Other signs include; the polluting effect of minerals as a result of mining 28(9.6%).Those that have lesser importance are; effects of flood, dryness of land and excess labour. These were also mentioned as observable signs of land degradation in their various communities. One of the most challenging impacts is the strain the new environmental conditions puts on the availability of natural resources. According to Geo-Science (2011) as land productivity decreases and global population rises, from a current 6.2 billion in 2010 to a predicted 9.5 billion in 2050, there are major questions around how enough food will be produced to feed this growing number of people.

Table 2: Land Degradation Factors Affecting Food Security in Ebonyi State

Factors	Frequency	%
Over- cultivation of land	66	22.7
Poor farming practices	62	21.3
Effects of mining	52	17.9
Bush burning	87	29.9

Sources: Field Survey, 2012

Data in Table 2 shows that bush burning accounts for land degradation and food insecurity by 29.9%. The study also found out that it explains deforestation by 64.6%. Bush burning is a major means of clearing farms before cultivation in Ebonyi state and it has a negative effect on the soil condition. It causes the soil to lose its ability to absorb and retain water, exposes the soil to the sun, and creates soil that is lacking in nitrogen. This human activity affects food production in Ebonyi state leading to reduced availability of food for households. Table 2 also shows that over / continuous cultivation of land, and poor farming practices, explain land degradation and food insecurity by22.7% and 21.3% respectively. This is supported in a KII with the Head of Department of Health Abakaliki LGA when he said,

The impact is the plants are no more yielding as before because of land degradation. It reduces the economy of the people because they are no more getting as much as they want and poverty is increased….

And this was supported by a woman discussant in an FGD with Ihenu women, "there is general food scarcity and things are expensive, in fact, some families cannot feed adequately."

Under optimal management, better land quality boosts crop production and ensures food security. Due to increasing population shifting cultivation is rarely practiced; instead family and communal lands are allotted to males who farm their portions every year often using their traditional methods. In the face of continuous poor crop yield they now are adopting new technologies, chemical fertilizers, herbicides, pesticides etc with little knowledge of their uses. Mono cropping along with the imbalanced application of inorganic fertilizer, pesticides, and intensification of land use without application of organic fertilizer has led to deteriorated soil quality and fertility (Hossain and Kashem 1997, Rahman and Thapa 1999). Studies by Rutsch (2003) and Smith (2000) on the role of fertilizer in agricultural productivity found that

fertilization of farmland can boost agricultural production and influence food security status of the household. But the opposite is the case in Ebonyi state thus confirming the argument of Hoddinott (1995) that food availability may be constrained by inappropriate agricultural knowledge, technology, policies, inadequate agricultural inputs etc. Good practices such as crop diversification may help farmers minimize the risk from natural hazards, because this has often caused major changes in cropping patterns, use of agricultural inputs, and management of soil fertility (Ghosh, *et al*, 2011).

Table 2 also shows that effects of mining also affect land degradation and food security by 17.9% in Ebonyi. This was re-iterated by a woman farmer interviewed in the course of the transect walk. The woman said: "to have lead and zinc deposits in one's farm land is a bad omen, because the crops will not do well. If the pits are flooded and water enters into your farm or nearby river, every living thing there suffers*"*

Lead Mining Pit Drained of Over Flooded Water (Source: Survey)

Sometimes in digging these pits the miners do hit the water table and use draining tubes to drain out the contaminated water unto the environment. This has degrading effects on the soil, vegetation, and water sources. Mining which could have served as alternative source of income and livelihood is carried out in a crude method in the area.

A female discussant from Ishiagu - Enyigba re-iterated this.They use hoe and pick axe and sometimes they dig from January to December without hitting at the lead. And when they are not successful they pact their implements and go home. Another female FGD discussant from Enyim Agalagu in Ikwo Local Government Area when asked the cost of a bag of lead, said If it is oxide lead, we sell it for ₦3,500 or ₦4,000. But if it is zinc, we sell it ₦500 – ₦1000, but if there is increase in price we sell it for ₦1,500, and before you get that one bag …hmn… hmn…its difficult.

The foregoing excerpts present the degrading effects of local mining of lead, zinc, salt etc on land and their influence on income and access to food in the study area. A study by Mishra and Pujari (2008) on mining on villages in India found that agricultural productivity decreased due to mining activities. These situations also affect food security in Ebonyi State.

Broadcast of Mine Tailing on Farmland in Ebonyi State (Source: Survey)

CONCLUSION

The study had shown that reduced soil fertility shown in food shortages and low vegetation, sheet erosion and mineral deposit in the soil are major perceived causes of land degradation in the area. Other factors of land degradation that were seen to affect food security include bush burning, over cultivation of land, poor farming practices and mining activities. There is the need for government to improve on Agricultural Extension Programmes in the state. Their programme should among other things

include land management and conservation practices. This will help to educate the rural farmers thoroughly on land degradation especially those human activities (excessive use of inorganic manure and agrochemicals, bush burning and crude mining practices) that predisposes land to degradation. They should also be thought emerging strategies for controlling land degradation (avoiding bush burning, afforestation, planting leguminous cover crops etc.) The alertness and knowledge gained will help equip the farmers and involve them practically in management and conservation of land for greater food security in Ebonyi state.

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