

## An Assessment of the Effects of Environmental Related Poverty in Adamawa State-Northern Eastern Nigeria

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### ABSTRACT

This study assessed the effects of Environmental Related Poverty (ERP) in some selected Districts of Adamawa State of Nigeria, with the view to develop a model for policy guidance on addressing the link between environmental related poverty and poverty alleviation measures. This research also determined the effects of ERP factors as well as their magnitude and variations of the effects in some selected districts (Futu, Song and Timdore in Adamawa state. District based study was adopted by collecting data through questionnaire from sixty selected informants in the three Districts. The 60 respondents were selected by simple random sampling technique. The result revealed that, effects of ERP are prevalent in the state and their variations in effects intensity decrease with distance southwards. The study recommended that ERP alleviation projects should be provided based on the magnitude of the effects. Bottom top approach should be adopted for prioritizing projects implementation.

**Key words:** Assessment, Effects, environmental related poverty.

### 1.1 INTRODUCTION

Majority of the poor in rural areas have increasingly become clustered on low-productive land. This has resulted due to a combination of factors that are of various importances from one country to another – land expropriation, demographic pressures, and intergenerational land fragmentation, privatization of common lands, and consolidation and expansion of commercial agriculture with reduced need for labour.

The poor mostly have access only to areas with higher risk for health and income making. They mostly lack the resources to lower the exposure to the risk or to invest in alleviating the causes of such risk. Environmental degradation therefore can affect the health and nutrition status of the poor and lower their productivity. This can happen both directly through, for instance, lower yields per unit of labor or land because of reduced soil quality, and indirectly through the reduced physical capacity of labor to produce because of malnutrition and poor health. Even in cases where the poor are healthy labour productivity can be low because of increased time being allocated to less-productive activities such as fuel wood collection and away from agriculture and other income generating activities [Kumar and Hotchkiss, 1988]. In terms of the productivity of the resources that the poor manage, the decline is intricately related to the poverty-population-environment interaction [Mink (1993)]. Where the poor

depend on biomass fuel and confront increasing fuel wood scarcity they often shift to using animal dung, fodder and crop residues for fuel. The quantities of these materials that are returned to the soil are thus reduced and its fertility declines. Non-replenishment of soil nutrients leads to soil exhaustion as fuel wood supplies diminish and animal manure is increasingly used as a fuel substitute. Poverty forces a trade-off between the immediate demands for fuel for cooking and heating and manure for the land.

North eastern Nigeria has witnessed, increasing levels of land degradation over the last decades (Uyanga, 1999). Unsustainable deforestation, livestock overgrazing and farming activities have been cited as primary causal factors or the persistent deterioration of land quality in the region (Sajo, 1999). Institutional and market failures, ranging from land tenure to government – influenced commodity markets, have been postulated as the driving forces for the unsustainable economic activities mentioned above (Adebayo and Tukur, 1999).

Parallel with environmental degradation, social welfare conditions in general have deteriorated in the region especially in recent years. The number of people living below the poverty line has changed substantially and both the depth of poverty and relative poverty has deteriorated significantly (Sajo, 1999).

There has been much controversy over the relationship between poverty and environmental degradation. one theory which has been adopted and popularized by many policy makers postulates that poverty is a direct cause of environmental degradation (Jalal, 1993) on the other hand, an emerging school of thought argues that the poor do not have the resources or the means to cause environmental degradation (Somonathan, 1991). This lack of a consensus on the relationship between poverty and environmental degradation suggests a nexus governed by a web of factors (Duraiappah, 1998). The challenge is to resolve the web and identify the fundamental forces, which govern its complexity. This research work is a response to this challenge.

### **1.1.1 Aim and Objectives**

The aim of this study is to assess environmental related poverty alleviation measures in Adamawa State of Nigeria, with the view to develop a model for policy guidance on addressing the link between environmental related poverty and poverty alleviation measures. The study has the following objectives:-

- 1.to assess the magnitude of the effects of the environmental related induced poverty on the selected Districts (people);
- 2.to determine the variation of the effects of the environmental related poverty on the Adamawa state
- 3.to develop a model for guidance on addressing the link between environmental related poverty and poverty alleviation measures in the state.

### **1.1.2 The study intends to find out:**

The magnitude of the effects of environmental induced poverty on the selected communities in Adamawa state. The variation in the effects of the environmental related poverty across Adamawa state(North to South).

### **1.1.3 Hypotheses**

- i. There is no significant relationship between environmental factors and the prevalence of Poverty in the selected Districts in Adamawa state
- ii. There is no significant variation in the effects of environmental related poverty in Adamawa state.
- iii. The magnitude of environmental related poverty does not decreases with distance From the North to the Southern part of Adamawa state.

## **2.0 MATERIALS AND METHODS**

Three sites (Districts) in Adamawa state were selected for the research. One district each from the North (Futu), Central (Song) and South (Timdore) based on the three Senatorial districts in the state. The study sites were

selected purposely to reflect the social, cultural and environmental diversity of the state. In each of the three districts, fieldwork was carried out by a team of four research assistants over a period of three days. The team members stayed in the districts to collect data. Simple random technique was used to select the respondents from among the informants. The technique was chosen to ensure equity in respondent's representativeness and convenience (Ifah, 1996).

The tool generated data on the environmental effects that course poverty across the study area. Measures of central tendencies and the analysis of variance (ANOVA) were used for the analysis of data with the aid of statistical package for social science (SPSS).

### 3.0 RESULTS AND DISCUSSIONS

Findings from the study were packaged and presented in order to assess the effects of environmental induced poverty on the selected communities in Adamawa state. Data on the findings are presented on tables 1a, 1b, 1c and 2 overleaf for the various districts accordingly.

In Futu district, the variables whose standard deviation range from 0.6 - 0.825 is 12 and 0.826-1.68 are 15 with mean deviation of 0.9478 while the expected mean is 2.9527. The highest and lowest standard deviation was recorded on accommodation problems (1.0846) and flies breeding and land degradation in crop yield (0.6097) respectively. The result also revealed that six of the 27 variables over performed while nineteen under performed as indicated on table 2. Based on the confidence revealed in the deviations and performance level, Futu district has sever effects of environmental related poverty.

Song district had 11 out of the 27 variables for assessment falling within the range of 0.6-0.83 while 16 are within the range of 0.83-1.12 standard deviation. The mean deviation is 0.8795 while expected mean is 2.6191 with the highest and the lowest deviations in poor animal health (1.1118) and soil erosion (0.6051). In summary, 14 of 27 variables over performed while 13 under performed (see table 2). This information implies that the magnitude of the environmental effects in inducing poverty in the district is moderate.

Timdore district recorded 10 variables within the range of 0.6-0.83 and then 17 within 0.831-1.2 standard deviations with the mean deviation of 0.9083 and expected means of 2.6704. The highest (1.1698) and the lowest (0.6051) standard deviations were recorded on land degradation in crop yield and soil erosion respectively. The district also has 14 over performed variables and 13 under performed variables (see table 1). The magnitude is therefore assessed moderate and mild compared to Futu districts.

Table 1a: Environmental Effects and Poverty In Futu District

	N	Minimum	Maximum	Sum	Mean	Std.deviation
Poor animal health	60	1.00	4.00	218.00	3.6333	.6630
Water scarcity	60	1.00	4.00	209.00	3.4833	.8334
Migration from the community	60	2.00	4.00	208.00	3.4667	.7695
Poor water quality	60	2.00	4.00	207.00	3.4500	.321
Labour deman on women and children	60	1.00	4.00	202.00	3.3667	.8227
Land degradation in crops yield	60	2.00	4.00	202.00	3.3667	.6097
Low level of literacy	60	1.00	4.00	198.00	3.3559	.9052
Soil fertility deterioration	60	1.00	4.00	200.00	3.3333	.6806
Fire hazards	60	1.00	4.00	198.00	3.3000	.8497
Deforestation/tree cutting	60	1.00	4.00	195.00	3.2500	.7730
Poor human health	60	1.00	4.00	194.00	3.2333	.7217
Conflicts on resources	60	1.00	4.00	193.00	3.2167	.8045

Low farm output	60	1.00	4.00	184.00	2.0667	.7099
Soil erosion	60	1.00	4.00	174.00	2.9492	.8793
Drought related condition	60	1.00	4.00	175.00	2.9167	1.0623
Pest invasion	60	1.00	4.00	172.00	2.8667	.8919
Reduced human productivity	60	1.00	4.00	171.00	2.8500	.8198
Fuel wood scarcity	60	1.00	4.00	166.00	2.7667	.8900
Unsanitary condition	60	1.00	4.00	163.00	2.7167	.7831
Weak community institution	60	1.00	4.00	160.00	2.6667	.8370
Reduction in livestock carrying capacity	60	1.00	4.00	159.00	2.6500	1.0222
Much flies breeding	60	1.00	4.00	158.00	2.6333	.6097
Decline in vegetation cover	60	1.00	4.00	146.00	2.4333	.9632
Flood problems	60	1.00	4.00	143.00	2.3833	.7612
60	60	1.00	4.00	136.00	2.2667	.9543
Accommodation problems	60	1.00	4.00	126.00	2.1000	1.0846
Dusty wind	60	1.00	4.00	120.00	2.0000	1.0577
Valid N list wise	58					

Table 1b: Environmental Effects and Poverty in Song District

	N	Minimum	Maximum	Sum	Mean	Std: Deviation
Flood problems	60	2.00	4.00	174.00	2.9000	.6561
Poor human health	60	1.00	4.00	173.00	2.8833	.7831
Weak community Institution	60	2.00	4.00	171.00	2.8500	.6346
Soil erosion	60	2.00	4.00	168.00	2.8000	.6051
Land degradation in crops yields	60	1.00	4.00	167.00	2.7833	.9931
Low farm output	60	1.00	4.00	164.00	2.7333	.7561
Deforestation/tree cutting	60	1.00	4.00	163.00	2.7167	.8253
Pests invasion	60	1.00	4.00	163.00	2.7167	.8456
Fuel wood scarcity	60	1.00	4.00	163.00	2.7167	.7831
Conflicts on resources	60	1.00	4.00	162.00	2.7000	.8497
Much flies breeding	60	1.00	4.00	161.00	2.6833	.8476
Unsanitary deterioration	60	1.00	4.00	161.00	2.6833	.7917
Wind storms problems	60	1.00	4.00	161.00	2.6833	.7917
Fire hazards	60	1.00	4.00	159.00	2.6500	.7773
Dust wind	60	1.00	4.00	159.00	2.6500	.8198
Soil fertility deterioration	60	1.00	4.00	157.00	2.6167	.1.0750
Poor water quality	60	1.00	4.00	157.00	2.6167	.9223
Accommodation problems	60	1.00	4.00	154.00	2.	.9273
Reduction in livestock carrying capacity	60	1.00	4.00	153.00	2.5500	.9284
Water scarcity	60	1.00	4.00	153.00	2.5500	.8911
Decline in vegetation cover	60	1.00	4.00	150.00	2.5500	.9829
Migration from the community	60	1.00	4.00	149.00	2.4833	.9999
Labour demand on	60	1.00	4.00	149.00	2.4833	.8924

women and children						
Poor animal health	60	1.00	4.00	148.00	2.4667	.1.1118
Reductive in human productivity	60	1.00	4.00	140.00	2.3333	1.0840
Low level literacy	60	1.00	4.00	133.00	2.2167	.1.0907
Drought relate condition	60	1.00	4.00	131.00	2.1833	.9296
Valid N (listwise)	60					

Table 1c: Environmental Effects and Poverty in Timdore District

	N	Minimum	Maximum	Sum	Mean	Std. deviation
Poor human health	60	1.00	4.00	187.00	3.1167	.7386
Fuel wood problems	60	1.00	4.00	187.00	3.0000	1.0251
Soil fertility deterioration	60	1.00	4.00	177.00	2.9500	.9642
Flood problem	60	2.00	4.00	174.00	2.9000	.6561
Water scarcity	60	1.00	4.00	173.00	2.8833	.8045
Week community institution	60	2.00	4.00	171.00	2.8500	.6846
Poor water quality	60	1.00	4.00	169.00	2.8167	1.0332
Soil erosion	60	1.00	4.00	168.00	2.8000	.6051
Land degradation in crops yields	60	1.00	4.00	166.00	2.7667	1.1698
Low farm output	60	1.00	4.00	164.00	2.7333	..7561
Pests invasion	60	1.00	4.00	163.00	2.7167	.8456
Conflicts on resources	60	1.00	4.00	162.00	2.7000	.8497
Much flies breeding	60	1.00	4.00	161.00	2.6833	1.0167
Unsanitary condition	60	1.00	4.00	161.00	2.6833	.7917
Wind storms problems	60	1.00	4.00	161.00	2.6833	.7917
Reduction in livestock carrying capacity	60	1.00	V	159.00	2.6500	1.0708
fire hazards	60	1.00	4.00	159.00	2.6500	.7773
Dusty wind	60	1.00	4.00	159.00	2.6500	.8198
Deforestations/tree cutting	60	1.00	4.00	158.00	2.6333	1.1042
Accommodation problems	60	1.00	4.00	154.00	2.5667	.9273
Decline in vegetation cover	60	1.00	4.00	150.00	2.5000	.9829
Migration from the community	60	1.00	4.00	149.00	2.4833	.9999
Labour demand on women and children	60	1.00	4.00	149.00	2.433	8924
Poor animal health	60	1.00	4.00	148.00	2.4667	1.1118
Reduced human productivity	60	1.00	4.00	140.00	2.3333	1.040
Low level of literacy	60	1.00	4.00	133.00	2.2167	1.0907
Drought related condition	60	1.00	4.00	131.00	2.1833	.9296
Valid N (listwise)	60					

**Table 2: Environmental Effects Variables Performance Evaluation of the Three Districts**

S/N	FUTU	SONG	TIMDORE
1	# Land Degradation in crop yields	* Land Degradation in crop yields	* Land Degradation in crop yields
2	# Deforestation/Tree Cutting	# Deforestation/Tree Cutting	* Deforestation/Tree Cutting
3	# Soil Fertility Deterioration	* Soil Fertility Deterioration	* Soil Fertility Deterioration
4	* Reduction in Livestock Carrying Capacity	* Reduction in Livestock Carrying Capacity	* Reduction in Livestock Carrying Capacity
5	# Water Scarcity	* Water Scarcity	# Water Scarcity
6	# Poor Water Quality	* Poor Water Quality	* Poor Water Quality
7	# Fuel Wood Scarcity	* Fuel Wood Scarcity	* Fuel Wood Scarcity
8	# Poor Human Health	* Poor Human Health	* Poor Human Health
9	# Too much Flies Breeding	* Too much Flies Breeding	* Too much Flies Breeding
10	# Low Farm Output	* Low Farm Output	# Low Farm Output
11	# Poor Animal Health	* Poor Animal Health	# Poor Animal Health
12	# Increased labour demand on women and children	* Increased labour demand on women and children	# Increased labour demand on women and children
13	# Weak community institution	# Weak community institution	# Weak community institution
14	# Flood problems	# Flood problems	# Flood problems
15	* Wind storm problems	# Wind storm problems	# Wind storm problems
16	* Decline in vegetation cover	* Decline in vegetation cover	* Decline in vegetation cover
17	* Dusty wind	# Dusty wind	# Dusty wind
18	# Pests invasion	# Pests invasion	# Pests invasion
19	# Soil erosion	# Soil erosion	# Soil erosion
20	# Conflicts on resources	# Conflicts on resources	# Conflicts on resources
21	# Migration from the community	* Migration from the community	* Migration from the community
22	# Fire hazards	# Fire hazards	# Fire hazards
23	* Accommodation problems	# Accommodation problems	* Accommodation problems
24	# Unsanitary condition	# Unsanitary condition	# Unsanitary condition
25	# Reduced human productivity	* Reduced human productivity	* Reduced human productivity
26	* Low literacy level	* Low literacy level	* Low literacy level
27	* Drought related condition	* Drought related condition	* Drought related condition
	Mean Deviation <b>0.9478</b>	Mean Deviation <b>0.8795</b>	Mean Deviation <b>0.9083</b>

Key: \* Over performed variables # Underperformed variables

**Hypothesis one:** there is no significant relationship between environmental factors and the prevalence of poverty in the selected Districts in Adamawa state.

From table 3 below, chi-square at 3 degree of freedom at 0.05 level of significance is 7.815. The calculated  $\chi^2$  value (2061.81, 1799.60 and 2629.30) for Futu, Song and Timdore Districts respectively is greater than the critical value (7.815), so we reject the null hypothesis and conclude that there are significant environmental effects that affect the selected communities in respect of income depreciations.

Table 3: Magnitude of Environmental Effects on Poverty Causes

		Sever	Moderate	Low	Not applicable	Calculated Value	Table Value
FUTU DISTRICT	Observed	2248	1722	754	125		
	Expected	1369.5	1369.5	1369.5	1369.5	2061.81	7.815
SONG DISTRICT	Observed	952	22147	830	232		
	Expected	1206.5	1206.5	1206.5	1206.5	1799.60	7.815
TIMDORE DISTRICT	Observed	1620	185	68	258		
	Expected	950.75	950.75	950.75	950.75	2629.30	7.815

**Hypothesis two:** There is no significant variation in the effects of environmental related poverty alleviation measures in rural communities in Adamawa state. From Table: 4.13 below, F statistic at the 2 and 11 degrees of freedom at the 0.05 level of significance is 4.26. The calculated  $\chi^2$  value (8.99) is higher than the critical value therefore we reject the null hypothesis and conclude that there is a significant variation in the effects of environmental related poverty alleviation measures on the rural communities in Adamawa state.

Table 4: ANOVA Summary Table for the Variation in The Effects of Environmental Related Poverty in Adamawa State

Summary of Variation	Summary of Sum of Squares	Degree of Freedom	Means of Square	F Statistic	Probability
Between Districts	138,365.17	k-1 3-1 = 2	69,125.75	Calculated value 8.99	0.05
Within District	733,489.15	N-K 12-3 = 9	76,869.53	Table value 4.26	
Total	871,854.32	N-1 12-1 = 11			

**Hypothesis three:** The magnitudes of the effects of environmental related poverty do not decrease with distance from the North to Southern part of Adamawa state. From Table 4.14 below, chi-square at 2 degree of freedom at 0.05 level of significance is 5.991. The calculated  $\chi^2$  value (75.79) is greater than the critical value (5.991), so we reject the null hypothesis and conclude that the magnitude of the effects of environmental related poverty decreases with distance from the North to Southern part of Adamawa state.

**Table 5: Incremental Effects of Environmental Poverty South To North**

	Futu District	Song District	Timdore District	Cal. Value	Table Value
Observed freq.	1369.5	1206.5	950.75	75.79	5.991
Expected freq.	1175.58	1175.58	1175.58		

### 3.1 Summary Of Findings

The findings of this study are summarized as follow:

Futu district has sever effects of environmental related poverty with considerable variations in the intensity of individual variable and six of the 27 variables indicated over performance .

The magnitude of environmental effects in inducing poverty in Song district is moderate with considerable variations in the intensity of each variable while 14 of the 27 showed over performance.

Timdore magnitude is moderate and mild with peculiarities in the mean and standard deviations while 14 of the 27 also showed over performance.

There are significant environmental effects that affect the selected communities in respect of income depreciations.

There is a significant variation in the effects of environmental related poverty alleviation measures on the rural communities in Adamawa state.

The magnitude of the effects of environmental related poverty decreases with distance from the North to Southern part of Adamawa state.

### 3.2 Discussion of Findings

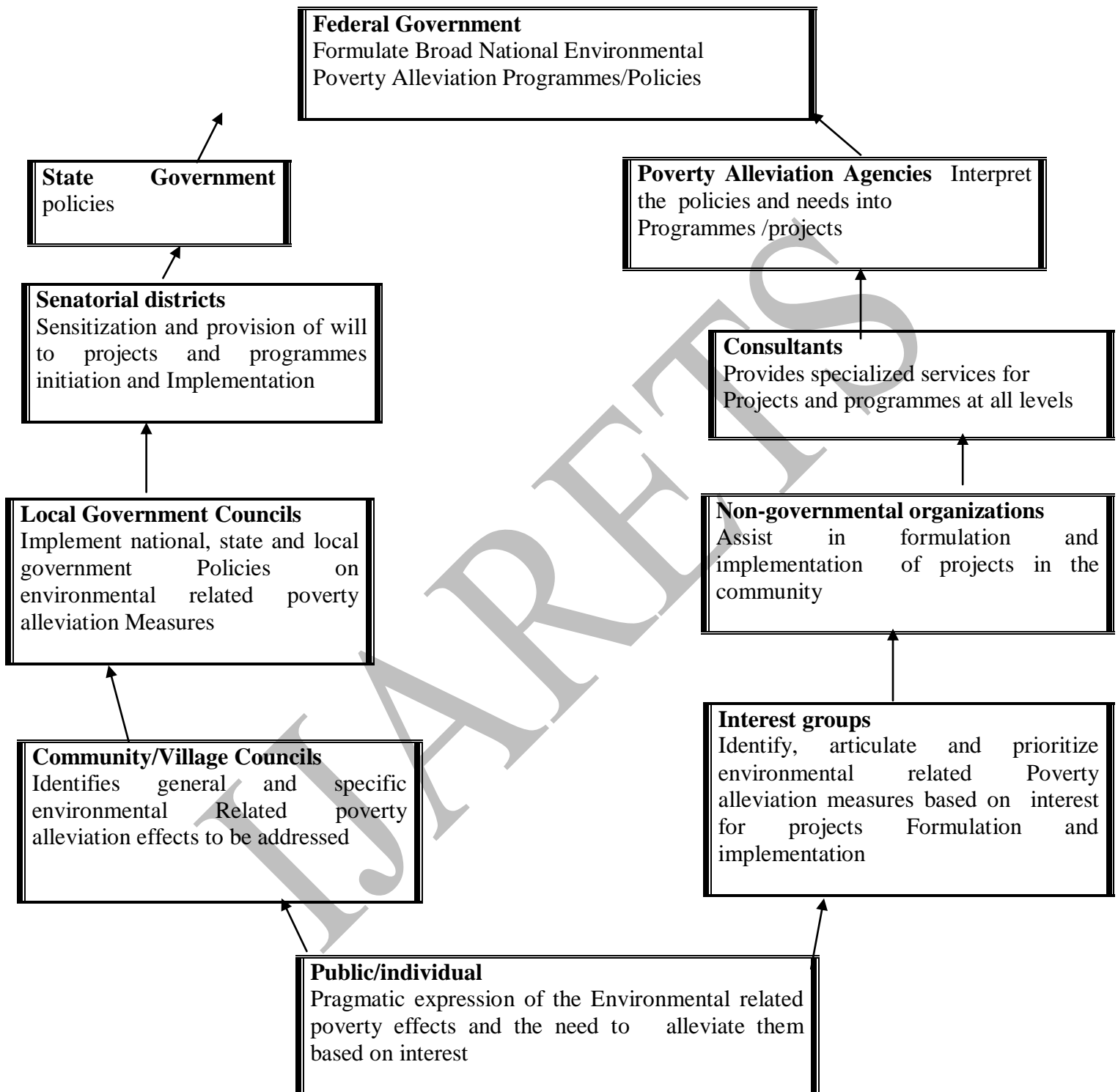
According to UN-HABITAT (2003), monetary measures of poverty have been used in many countries, but do not capture the multidimensional nature of the poverty. People may be poor not because of low income but their poverty may be derived from an inadequate, unstable or risky assets base needed as a cushion to carry them through hard times. They may be poor because their living is surrounded with low quality or insecure environment; because they do not have access to safe water, adequate sanitation, healthcare, and schools. They are lacking safety net or due to lack of protection by law and regulation, civil and political as well as socioeconomic and cultural rights, discrimination and environmental health or because they are denied a voice within political system. The multidisciplinary nature of poverty makes the system connected. This is likely because one dimension of poverty is often a cause or a contributor to another dimension especially the environment (Babarogla 2005).

The intensity of the effects of environmental related poverty varies from place to place based on the existence of dominant causal factors especially climate change. The magnitude of environmental effects in Futu is found to be sever, Song and Tim dore Districts recorded moderate effects. There are relative peculiarities in the effects of collective and individual variables. As the environmental effects causal factors differ in their deviation from the mean so is the need to approach poverty alleviation measures to curtail.

This implies according to World Bank (1999) that poverty is more than an economic condition because its impacts extent into all aspects of human life, susceptibility to disease, limited access to most types of services and information or lack of control over resources, utter insecurity in the changing circumstances as well as its psychological consequences which is the erosion of human dignity and self-respect.

Despite tremendous achievement made by Fadama II and LEEMP in environmental related poverty alleviation measures, wide spread of the environmental effects are revealed across the state. The magnitude of the effects decreases with distance from the North to the Southern part of the state which also signifies the magnitude of climate change resulting to poverty. The selected districts are characterized by inadequate infrastructure facilities in all ramifications.





**Figure 1: Model for Policy Guidance on Environmental Related Poverty Alleviation Measures**

The organograph above symbolizes the proposed model for policy guidance on environmental related poverty alleviation measures as it affect Adamawa state. The model envisages that the Federal Government makes broad national environmental related poverty alleviation programmes and policies/laws. These broad policies and programmes should be derived from the knowledge of the peculiarities of the senatorial districts and local

government areas in the federation However, there should be a bottom-top flow of information through the various organs or machineries as well as necessary linkages for effective guidance and implementation. The broad policies are interpreted into specific projects and programmes by the environmental related poverty alleviation agency and the federal, state and local governments. The major concern in this stage is the general environmental related poverty alleviation measures and the public would have contributed through the bottom-top approach.

At the state level, the state and local government make their own policies in line with the national environmental related poverty alleviation measures to integrate into all organs and machineries for poverty alleviation. The senatorial districts provides sensitization backing to local government councils in implementing the projects and programmes strategically as the particular climate or environment demands.

At the community or village levels, the environmental related poverty causing factors are identified and articulated into needs, projects and programmes. The interest groups and individuals also assist this aspect to concretize projects and programmes formulation.

To ensure acceptability and effective implementation from the bottom-up. Services of consultants in relevant projects and programmes can be engaged at any level especially by the poverty alleviation agencies to ensure adherence to professional standards in projects initiation and implementation.

#### 4.0 CONCLUSION

This study has proved that environmental effects (degradation) has tremendously induced poverty situation on the people of Adamawa state and the North eastern Nigeria at different levels of intensities of the causal factor. They contribute to conflicts as currently witnessed in the region. The human settlements therefore are characterized by poor housing quality, use of sub-standard building materials and low environmental quality. The needed infrastructure facilities are lacking in most rural communities and where they exist, are inadequate.

There is vague categorization of the poor thereby causing imbalanced provision for poverty alleviation measures. Government and the agencies concerned should find out who are the real poor? The poverty alleviation agencies should spread their projects rationally and keep to their promise.

#### 5.0 RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proffered:

1. Rural and urban development need to be improved to increase food output, income, promote jobs, upgrade slums and security;
2. Existing poverty alleviation agencies should make sure that the needs and categories of poor people should be determined so as to provide their immediate needs;
3. Environmental conservation should be enhanced by investing in improved
4. resources management to reduce environmental degradation;
5. Environmental Impact Analysis of every project that is critical to the environment must be carried out to ensure proper mitigation measures;
6. Implementation of projects for environmental related poverty measures should be based on the magnitude of the effects of the environment in a locality.
7. Environmental related poverty alleviation measures should involve direct Improvement in environmental quality especially in housing facilities;
8. No two or more poverty alleviation agencies should operate in the same community otherwise their operation should be along specific line of specializations;
9. Poverty alleviation agencies should have at least two staff members attached to every districts where they are operating to assist the poor people identifying and articulating their problems; and
10. Interest groups should be educated on different techniques of how to tackle environmental poverty in their community

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