

---

## **Vulnerability to Food Insecurity among Smallholder Farmers in Kande Local Government Area: Implication for Human Resource Development**

---

By

LINDA K. YARO

*Department of Social Studies,  
Federal College of Education,  
Pankshin.*

**and**

ZWALCHIR RAUTA

*Department of Social Studies,  
Federal College of Education,  
Pankshin.*

### **Abstract**

*The study assesses the vulnerability of smallholder farmers to food insecurity in Kanke Local Government Area of Plateau State and links this to current changes in climate which has result in loss of food production. A total of 50 smallholders, farmers were selected using convenience sampling method results show that cereal crop production is common and important among smallholder farmers. Further the study show's that the effects of food in security on smallholder farmers have prevented them from contributing meaningfully to the socioeconomic development of their families and the country at large. However, the study endorses relevant education and support from government so as to ameliorate smallholder farmers for effect of good insecurity. This development could provide farmers with the vital resource base not only for achieving self-actualization and self fulfillment but also for contributing productively to the necessary where-with-all needed for sustainable food security in Plateau State and indeed Nigeria at large.*

Climate change is now generally accepted to be a major global problem. This is a truism as global environmental indicators shows a depletion in the ozone layer, continuous rise in sea/ocean currents and the melting of the arctic. Many have blamed greenhouse gases for the changes (Marten and Van 2007). The rise in greenhouse

### *The Intuition*

---

gases, combines with global population growth seems to be threatening for and livelihood security for large numbers of people especially in developing countries. African is considerably vulnerable to these changes in climate as a result of poverty (Eriksen, O'Brien and Rosentrater 2008). Continual changes in the climatic condition may compound the existing poverty through reduced food availability, increased water scarcity, financial insecurity and incidence of illness.

Projections of climate change suggest that developing nations may be affected the most because of their geographical and climatic conditions (Fussel, 2007). Developing nations' susceptibility is further compounded because of their high dependence on subsistence agriculture and natural resources-driven activities and limited capacity to adapt to the changing climate. The capacity to adapt is undermined by the limited availability of social, economic, political and technical resources available to these countries and communities.

The major employer of labour in Africa particularly Sub-Saharan Africa is agriculture. This sector further houses a large number of smallholder farmers, most of who produce under unfavorable conditions characterized by low and erratic rainfall and poor soils (Graef and Haigis, 2001). Hence, the need to better understand the nature and magnitude of the impacts of climate change on food security in general, and for the smallholder farmers in particular in order to help in the identification and development of practical means for enabling communities to reduce vulnerability and to mitigate negative impacts of climate change.

### **Problem Statement**

Kanke LGA of Plateau State is mountainous. This means that arable lands are very limited to the teeming populace of the locality. The Local Government Area as a whole is becoming drier by the day as rainfall becomes erratic, unreliable and insufficient. Raining seasons are often punctuated by mid season droughts which affects crops resulting in poor harvests. Kanke's revenue drive to a large extent is from the federal allocation which is not enough and hence, augmented through agriculture. The economy of the local government is agro-based. This therefore means that development is pinned to a large extent to agriculture. In addition, kanke LGA has very limited capacity to adapt and cope with negative impacts of climate change due to low income, lack of technologies, poor infrastructure and weak institutions. The study seeks to assess vulnerability to food insecurity for smallholder farmers in Amper District as a result of climate change.

### **Research Objectives**

The main aim of the study is to assess the vulnerability of smallholder farmers to food insecurity as a result of the change in climate in Amper District of Kanke LGA of Plateau State. The study is aimed at achieving the following specific objectives:

- i. To find out how climate change affect smallholder farmers in Amper District of Kanke LGA.
- ii. To examine how vulnerable smallholder farmers are to food insecurity:
- iii. To make appropriate recommendations.

### **Methodology**

The social survey method was employed for the purpose of this research work. This is due to the large population size and the difficulty involved in studying every element in the population. The study was conducted in Amper District of Kanke Local Government Area of Plateau State. The population of the study consisted of smallholder farmers in Amper Districts, in Kanke LGA at the time of the study. A total of fifty (50) smallholder farmers were purposively selected from Amper District. Furthermore, ten (10) local leaders and government officials were also purposively selected by the researchers.

The instrument used for the study was the in depth one-on-one interview schedule which was held with smallholder farmers in Amper. Furthermore, Key Information Interviews (KII) were involved in carrying out interviews with stakeholder such as local leaders, government and non government service providers in the area of study. The KII were also carried out to get in-depth information on local leaders and government role in the communities, their perceptions on climate change and how they were addressing its impact.

To ensure the face and content validities of the instrument, draft copies were given to three professional in the department of Geography and Environmental Sciences of the University of Jos, to assess the suitability or otherwise of the items in the instrument. Experts' objective suggestions were integrated in the final copy. Furthermore, the items were subjective with existing standardized test on issues pertaining to climate change and its impact on food insecurity.

### **Result and Discussion**

In-depth interviews with smallholder farmers showed that they were experiencing changes in the onset of the rainfall season and increased frequency of dry spells. The farmers mentioned that the rainfall season is now starting late to wards the end of June or early July compared to previous years when it started in April or early May. Farmers also stated that these changes in climate were making it difficult for them

### *The Intuition*

to plan for their cropping activities. Households in Kanke mainly depend on agriculture for their livelihood and a change in climate is likely to compromise their productivity and increase vulnerability to food insecurity among them.

Furthermore, farmers were asked to list constraints faced in their community and create criteria for ranking the constraints by importance for a number of outcomes (food security, income generation and general improvement in livelihood). Table 1 and 2 shows results from the interviews carried out in Amper. The importance of each constraint was scored on a scale of 1 – 20. Higher scores were assigned to the factors deemed to be of high importance. The total score for each factor was calculated and this was used to arrive at a ranking for the identified constraining factors on a scale of 1-5, with a rank of 5 assigned to the least important factor.

**Table 1: Amper District Men Matrix Ranking of Constraints**

<b>Constraints</b>	<b>Improved livelihoods</b>	<b>Food security</b>	<b>Income generation</b>	<b>Total</b>	<b>Rank</b>
Lack of draught power	13	11	13	37	5
Erratic rains, drought	22	23	21	66	1
Late supply of inputs	15	17	16	48	3
Shortage of drugs in clinics	20	19	17	56	2
Bad roads	13	15	18	46	4

Table one (1) above showed that men are more concerned that crop farming being mostly rain fed, erratic rains and drought were a major hindering factor in production. This is indicate by the highest rank of 1 by a total of 66 men, while shortage of drugs in clinics is ranked 2 and late supply of inputs also ranked 3 with 48 responses. In addition, bad roads was ranked 4 with a total of 45 responses and the least is lack of drought power which is ranked 5 with a total of 37 responses.

**Table 2: Amper District Women Matrix Ranking of Constraints**

<b>Constraints</b>	<b>Improved livelihoods</b>	<b>Food security</b>	<b>Income generation</b>	<b>Total</b>	<b>Rank</b>
Lack of draught power	13	11	19	43	2
Erratic rains, drought	17	20	21	58	1`
Late supply of inputs	10	12	18	40	3
Shortage of drugs in clinics	6	4	5	15	5
Bad rods	12	10	14	36	4

Table two (2) above also showed that women just as the men were more concerned that crop farming being mostly rain-fed, erratic rains and drought were major hindering factor in production. This is indicated with the highest rank of 1 by a total of 58 women. Women also indicate lack of draught power as another main constraint which was ranked 2 with a total of 43 responses. Late supply of inputs was ranked 3 with a total of 40 responses, while bad roads was ranked 4 with a total of 36 responses, finally shortage of drugs in clinics was rank 5 with a total of 36 responses.

In addition, planting draught-tolerant crops is the most common adaptive strategy in the Local Government Area. However, women in Kanke Local Government Area said that small grain crops such as millet and sorghum are hard to process compared to maize. Millet and sorghum are processed manually whereas maize can be taken to the mechanical grinding mills for processing. Women prefer maize to the other cereals and smaller pieces of land are allocated for maize. Thus, the preference of individual farmers can also determine the extent of adopting a technology.

The other role that extension officers have within the community is to link the farmers with the suitable organizations that work with farmers such as seed and fertilizer companies; Researchers and buyers of products. During the interviews with the local extension officers, they highlighted that they did not have information about climate change to enable them to help farmers address climate change impacts. The extension officers mentioned that they advice farmers to use improved technologies such as staggered planting, draught resistant crops, early maturing varieties and dry planting.

The traditional leaders are responsible for allocating land and enforcing customary laws and norms related to the use and conservation of natural resources. This includes not cutting down certain trees (mostly protected trees), stream bank cultivation, and certain water sources such as wells. The traditional leaders believe that the abuse of natural resources by people is causing climate change. Traditional leaders indicated that there has been change in the climate. Changes that were mentioned by them include; increased occurrence of dry spells, draughts and late onset of rainy season that has made it difficult for farmers to plan. Farmers used to rely on traditional forecasting which included observing how nature behaves such as local trees, insects and movement of winds. For example, if the mango tree produces many fruits, it means that there is going to be draught that some year. According to the traditional leaders, traditional forecasting has not been reliable because results obtained haven't been consistent with what they know.

Traditional leaders also attributed climate change to the diversity of cultural beliefs currently present among smallholder farmers in Kanke Local Government Area. The diversity of cultural beliefs has brewed social unrest among the communities and according to traditional leaders, making it difficult for unified climate change strategies to be taken up by farmers. Traditional leaders suggested that the community should set aside differences that were causing social unrest and work towards achieving adaptive strategies that would mitigate climate change. They also mentioned that farmers should plant more of drought-resistant crops such as sorghum, millet and cowpeas. The assessment of vulnerability to climate change is defined by the exposure and sensitivity of a system to hazardous conditions and the ability or capacity or resilience of the system to cope, adapt or recover effects of the conditions (Smit & Wandel, 2006). Kanke LGA is characterized by the low adaptive capacity in addition to a high degree of exposure and sensitivity to climate change. The welfare and livelihood of smallholder farmers in the local government area are agriculture-based with cereal production being predominant. Cereals production contributes to household food security status and the cereals are maize, sorghum and millet.

In addition, households largely rely on own production and have limited capabilities for purchasing food. If production is low, this often leads to the household becoming food insecure. Climate change will pose particular challenge for food production among households. Production conditions are already less ideal considering the location of the study sites; characterized by erratic rainfall and poor soils. Climate change will worsen the situation with climate predictions stating that the area will receive lower rainfall, increased frequency of droughts, dry spells, erratic distribution of rainfall and poorer soils. This will have negative implication on crop production considering that the majority of the households practice rain-fed agriculture, making them susceptible and vulnerable to negative changes in climate. In addition to farmers in Kanke LGA having their livelihoods dependents on rain-fed agriculture, the communities also have some of the households being found among the poor. Poor households are more likely to be vulnerable to climate change impacts. They often have low production levels and are often food-insecure. With the existence of climate change, the poor households' situation is likely to worsen rather than improve.

### **Conclusion and Recommendations**

The study assessed the vulnerability of smallholder farmers to food insecurity as a result of climate changes. Vulnerability is a function of hazards or risk people are facing and their ability to cope or manage the risks through human resource development will largely reduce or eradicate those risks. The study broadens the food insecurity assessment taking into account vulnerability to food insecurity and links this to vulnerability to climate change. One of the key findings of this study was that a large proportion of smallholder farmers are vulnerable to food insecurity. This means that

these communities will need food aid to minimize vulnerability to food insecurity as a short term strategy and this need to be developed soon. There is also need to develop long term solutions to ensure food security among the households because currently their own food production is not sustainable. The communities need to be capacitated through human resource development training that can help alleviate vulnerability to food insecurity. Other options could be training on off farm activities thus, helping farmers have diverse activities that can help them improve their livelihoods and minimize risk of having only one livelihood source. There is need for information to be availed to the farmers and option regarding technologies that they can use to reduce vulnerability to climate change and improve their livelihoods. This can also be achieved through training geared towards achieving human resource development. Furthermore, most smallholder farmers in Nigeria are illiterates and do not possess the adequate information to help fight against climate change which inversely, affects food security. Hence, this individuals need to be effectively trained in order to cultivate the necessary prerequisites and ideals germane for effective human resource development.

### **References**

- Eriksen, S.O' Brien, & K. Rosentrater, L. (2008). *Climate change in Eastern and Southern Africa impacts, vulnerability and adaptation*. Department of Sociology and Human Geography, University of Oslo.
- Fussel, H: (2007). Vulnerability: A generally applicable conceptual framework for climate change research. *Global Environment change* 17(2): 155-167.
- Graef, F. & Haigis, J. (2001). Spatial and temporal rainfall variability in the Sahel and its effects on farmers' management strategies. *Journal of Arid Environment* 48:221-231.
- Maaten, K. & van, A. (2007). *The impacts of climate change on the risk of natural Disasters*. Netherlands: Red Cross/Red Crescent centre on climate change and Disaster preparedness.
- Smit, B. & Wandel, J. (2006). Adaptation adaptive capacity and vulnerability. *Global Environment change* 16:281-292.