

## 31. Climate change, flooding and economic well-being in Nigerian cities

by  
Isaac B. Oluwatayo

*Climate-induced flooding has a severe effect on the livelihoods and economic well-being of households in urban Nigeria. Data from 350 households in urban Nigeria reveals that education levels, household size, poverty, membership of co-operatives and distance from canals are important determinants of vulnerability. Education and information sharing are two important ways to help households face or reduce climate-induced risk.*

### Introduction

The intensity and frequency of natural disasters such as flooding and landslides have been increasing for several decades. This has resulted in loss of life, damage to property and destruction of the environment. The number of people at risk from natural disasters in developing countries has continued to increase because of increasing poverty and limited income opportunities (ISDR, 2004).

Poor people, according to Grunfest (1995), have become more vulnerable to natural disasters because they live in hazardous areas such as slums, flood plains and steep hills. They have fewer resources to cope with such shocks and to reduce the losses they cause, which in turn makes them even more vulnerable. They are also less likely to receive warning signals because of their poor access to basic weather information and infrastructures.

Nigerian cities have a long history of flooding (Odemerho, 1988), with devastating effects on lives and properties. Urban Nigeria is particularly vulnerable to climate change and flooding because of its geography, the increasing influx of people and the inadequate capacity of its drainage facilities. Changes in its ecosystem, resulting from soil being replaced with concrete and from the deforestation of hillsides, have led to increased runoff of water, increased erosion and the silting up of drainage channels (Adedeji, Odufuwa and Adebayo, 2012). According to ActionAid (2006), flood hazards are natural phenomena, but damage and losses from floods are the consequences of human activities.

Nigeria has a 5.5% annual urbanisation rate (Babanyara, Usman and Saleh, 2010), which, together with the increasing rural–urban drift, means that its cities face serious problems in relation to the changing climate (Adefolalu, 2007; Gupta, 2007). It is therefore important to examine the impact of climate-induced flooding on the livelihood, security and economic well-being of Nigeria’s urban dwellers.

### Household vulnerability to flooding

Climate change leads to dangerous increases in sea levels that threaten many urban coastal areas (Dodman, 2009). This risk is exacerbated because in an urbanising environment like Nigeria, the land’s ability to absorb water is reduced by the replacement of ground cover with water-resistant urban surfaces (Odemerho, 1988). According to the UN International Strategy for Disaster Reduction (ISDR) (2009), urbanisation and a lack of good local governance are the main causes of urban flooding.

The findings presented in this article are based on data collected from a random sample of 350 households in two cities in Nigeria, Ado-Ekiti and Ibadan. The survey covered 130 households in Ado-Ekiti and 220 in Ibadan, where there are more residents. Analysis of the data revealed that flooding had been reported in these cities, especially within the past two years, with devastating effects on the inhabitants’ well-being. Artisans in Ado-Ekiti and Ibadan lost an average of NGN 81 070.29 (Nigerian nairas; USD 529) and NGN 273 000.55 (USD 1 750) respectively to flooding. Farming households in the two cities lost an estimated NGN 125 210.67 (USD 816) and NGN 105 321.08 (USD 675) respectively. These disparities indicate the relative importance of these types of livelihood in the study area. Besides climate change making the weather less predictable, rains more uncertain and heavy storms more likely (ActionAid, 2006; Darteh, 2010), notable contributors to flooding include blocked drains, poor channelling of water, building along waterways, uncontrolled deforestation (because of the high cost of cooking fuel), the poor economic circumstances of residents, and reservation areas or forest belts being turned into event and recreation centres. All this leads to flooding, which has led to the loss of livelihood opportunities, wastage, and the destruction of lives and properties.

Once the causes of household vulnerability to flooding had been determined (measured by the difference in their income before and after the shock), the results of the statistical analysis (in the form of a Tobit model<sup>1</sup>) revealed the following aspects as important:

- level of education attained
- household size
- poverty (expenditure below two-thirds of mean per capita expenditure)
- membership of co-operatives
- awareness of and distance from canals.

The coefficients for education, membership of co-operatives and awareness were negative, meaning they reduce household vulnerability to climate-induced flood risk as they enable respondents to prepare for it. Poverty, household size and the distance of their homes from canals were positive, so that these increase household vulnerability.

### Conclusion and recommendations

Climate-induced flooding is a major environmental challenge for urban Nigeria and for other countries in sub-Saharan Africa. Nigerian cities are particularly vulnerable

because of their geography and their poor infrastructure, which can no longer cope with the increasing influx of rural people. The deteriorating economic situation has made matters worse for many urban dwellers, with negative consequences for their livelihood, security and economic well-being.

The government and other relevant agencies need to provide residents in high-risk areas with information on climate change and flooding patterns to allow them to prepare properly and take preventive measures to reduce, or at least mitigate, the negative impacts of climate change. In particular:

- Local and state governments need to build the capacity of urban Nigeria's residents to understand and interpret simple weather forecasts. This will make them more active in managing or at least mitigating the negative impacts of climate change. This would in turn translate into improved standards of living.
- Urban dwellers should be encouraged to form or join co-operative societies which can help provide up-to-date information on the weather and on risk sharing, especially in the absence of accessible social protection or social safety nets.
- Urban residents should be constantly sensitised to the dangers of blocking waterways and dumping refuse in streams and water bodies. The government and relevant agencies should enforce and prioritise the rules and regulations governing urban planning and construction work to curb indiscriminate building of houses, shops and kiosks along waterways.

### Note

1. A Tobit model is an econometric model in which the dependent variable is censored; in the original model of Tobin (1958), for example, the dependent variable was expenditures on durables, and the censoring occurs because values below zero are not observed.

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**Isaac B. Oluwatoyo** is a senior lecturer in the Department of Agricultural Economics and Animal Production, University of Limpopo, South Africa. He is an agricultural and development economist with teaching and research experience in welfare analysis, development policy, and social protection issues. His current research interests include climate change and rural and urban livelihoods.



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