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## Urbanisation Shapes the Vulnerability of Farmers in the Decentralised Benin

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### ABSTRACT

This paper offers an assessment of farmers' vulnerability to climate risks in relation to the location of farms from farmers' ordinary dwelling place in rural communities of northern Benin. The ongoing urbanisation processes in the district of Banikoara, main cotton production area of Benin and one of the biggest producers of different food crops, is considered to be responsible for the exacerbation of the existing land access problems. Sixty farmers of  $40 \pm 9$  years old, cultivating  $8.4 \pm 6.02$  ha and producing about  $7.3 \pm 6.65$  tonnes per year, supplied empirical data in four different villages: Gomparou, Alibori, Somperkou and Godokpagounou. The key respondents were selected through purposive sampling during fieldworks. At the end of the data collection period, a half-day participatory workshop was organized for all interviewees, including some local stakeholders, in order to draw a jointly validated Sensitivity Matrix and Vulnerability Profile of farmers. Plausible exposure and impact indexes were calculated. The results show that: (i) The urbanisation process has resulted in the geographical remoteness of farms by preventing local farmers from cultivating more land. 85 % of farmers move about 10 km up and down to perform farm works, 12 % commute daily over 45 km to reach their farms and only 3 % live on or closely to their farms. (ii) Five major climate risks with highly sensitive impact indexes affect agricultural production: drought (73 %), floods (66 %), fires (60 %), lack of rainfall (60 %) and high winds (46 %); and three resources having high exposure indexes are most damaged: soil (76 %), water (68 %) and vegetation (64 %). (iii) The distance from farms to residence is a factor of vulnerability to the various climate risks leading to three categories of farmers: "Waterist Farmers" (Agri-BF) shivered up in valley bottoms and most vulnerable to floods regardless of their residence, "Nearist Farmers" most vulnerable to droughts (Agri-CP) and at last "Farist Farmers" (Agri-CE) most vulnerable to wildfires. This vulnerability is likely to affect the national economy which is dependent on agriculture and especially on Banikoara produced cotton. These findings should be used to reframe both environmental and agricultural policies in the context of climate change.

**Keywords:** Agriculture, Benin, climate change, decentralisation, urbanisation, vulnerability

## INTRODUCTION

African agriculture is ruggedly affected by the perverse effects of climate change (Kurukulasuriya et al., 2006; Schlenker and Lobell, 2010). The economy of Benin Republic is too dependent on agricultural productions which employs approximately 50.06% of the labor force and provides about 36% of the GDP (WS, 2013). There is therefore cause for genuine concern about how much production systems are vulnerable to different changes. Our research is devoted to this complex yet rewarding issue.

## THEORETICAL FRAMEWORK

The concept of vulnerability is broadly used and also as differently as it can be by both social and biophysical scholars (Brooks, 2003). Indeed, beyond all schools, the vulnerability could be understood as propensity or predisposition to be adversely affected by weather and climate events (IPCC, 2012). We conducted our research intending to evaluate how farmers are sensitive to climate events by considering dwelling locations and farms' position that become very far from each other in a context of extremely rapid urbanisation. The exposure of farmers is pointed out to encounter their relatively vulnerable conditions to determine impacts. Reducing vulnerability should help avoid or limit the likelihood of disasters (Fig 1).

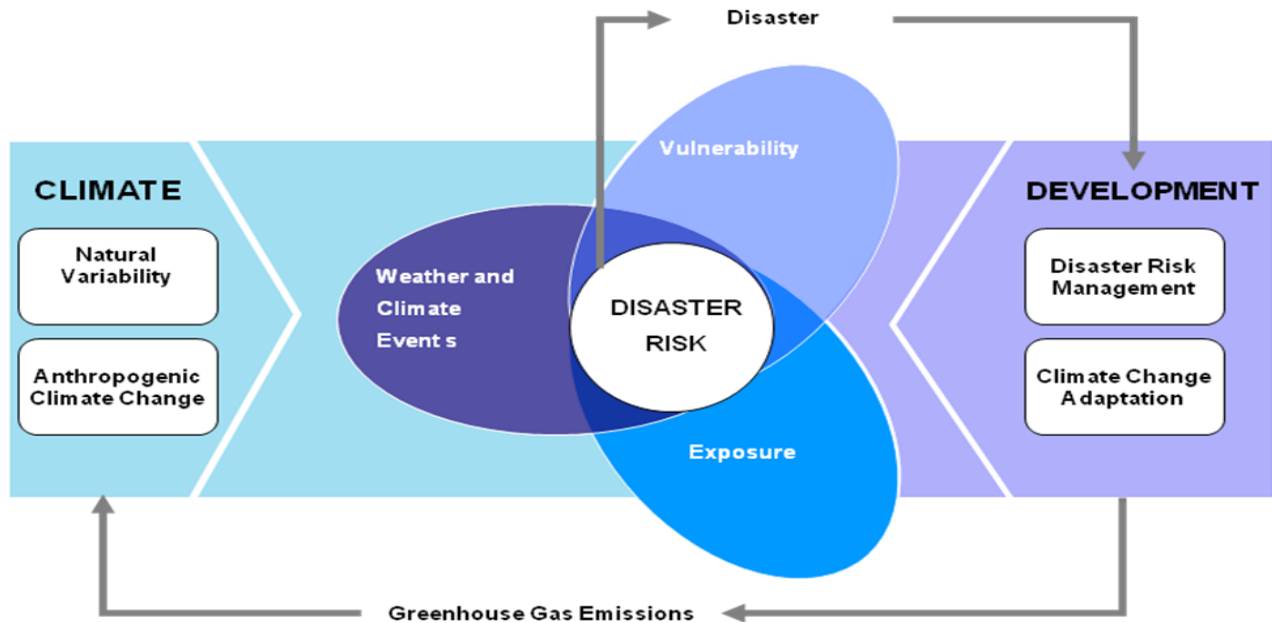


Fig 1. Exposure and vulnerability determine impacts and disasters  
Source: IPCC, 2012

## METHODOLOGY

### Study area

This research was carried out in Banikoara (Fig 2) in northwest cotton agro-ecological zone of Benin. It covers 4,383 km<sup>2</sup> of which about 2148 km<sup>2</sup> (49%) of arable land and 2,235 km<sup>2</sup> (51%) occupied by W Park. The local climate is Sudano-Sahelian characterized by a rainy season from May to October and a dry season from November to April. The average rainfall is 850mm. Banikoara is composed with about thirty socio-cultural groups including up to 70% native Baatombu mostly farmers. Agriculture based on cotton and food crops productions is the main activity of local population. The tenure is traditional, land being distributed by the head of lineage, but the access has become quite problematic in the recent decades.



## DISCUSSION

The urbanisation process in rural Banikoara led to the redistribution in space among farmers' communities in the words of Harris and Lipman (1986). The resulted unequal distribution of productive resources and the progression of planned zones coupled with their pursuit of fertile lands force overwhelmingly farmers on unsafe regions. This draws on vulnerability as consequence (Hamza and Zetter, 1998).

## CONCLUSIONS AND OUTLOOK

This vulnerability is likely to affect the national economy which is dependent on agriculture and especially on Banikoara produced cotton. These findings should be used to reframe both environmental and agricultural policies in the context of climate change.

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