



# The Impact of Vulnerability and Resilience to Environmental Changes on Mobility Patterns in West Africa

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# Environmental changes in West Africa

- One of the regions projected to be most affected by climate change (IPCC 2014) (with SIDS, coastal and deltaic regions)
  - 19 'climate hot spots' – often cross-border
- Climate change in combination with other man-made environmental degradation
- Coastal & megacities threat
- 28 million people affected by natural disasters in the region from 2010-2014 (CRED 2015)

# Environment and Mobility in West Africa

- Intra-regional mobility a hallmark of West Africa (e.g. ECOWAS)
- Environmental change as a driver of migration and cause of displacement
- Environment is only one driver of intra-regional mobility
- How are populations' *vulnerability* and *resilience* impacting, and impacted by, internal and international mobility?

# Evidence from the field

- Four distinct but complementary case studies:
  - Perceptions of climate change and intention to migrate in West Africa\*
  - Environmental mobility and fishing communities in Saint-Louis (Senegal)\*
  - Migratory responses to agricultural degradation and transformation (Senegal)<sup>+</sup>
  - The settlement dynamics of populations vulnerable to erosion in Cotonou's coastal zone (Benin)\*

*\*The research leading to these results has received funding from the European Union Seventh Framework Programme FP7/2007-2013 under grant agreement n° 603864. [www.belixclimate.eu](http://www.belixclimate.eu)*

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# Perceptions and intention to migrate

- Compared the perceptions of climate variability of local populations to observed climatic trends (surveys, systematic literature analysis)
- Assessed place of migration among adaptation strategies as well as migration intentions related to future climate variability (AMMA Survey)
- Populations' mobility is based on their own perceptions of their vulnerability

# Climate change perception in West Africa

Table 1 - Significant changes in rainfall felt by populations in arid and semi-arid zones of West Africa according to results from focus groups (the 1<sup>st</sup> change is the most important)

		1 <sup>st</sup> change	2 <sup>nd</sup> change	3 <sup>rd</sup> change
<b>Arid zone</b>	(Ouédraogo et al., 2010)	Decrease in rainfall	Changes in the onset and offset of seasons	Increase of dry spells
	(Dieye and Roy, 2012)	Decrease in rainfall	Irregular rainfall	Changes in the onset and offset of seasons
	(Tschakert, 2007)	Lack of rain	Irregular rainfall	Periodic drought
	(West et al., 2008)	Long-term decline in rainfall	Increase in rainfall variability	
<b>Semi-arid zone</b>	(Ouédraogo et al., 2010)	Decrease in rainfall	Changes in the onset and offset of seasons	Irregular rainfall
	(Tambo and Abdoulaye, 2013)	Decrease in rainfall and changes in the timing of rain	Changes in the timing of rain	Decrease in rainfall

Data source: literature

# Intention to migrate in the future

Table 2 - Intentions to migrate in response to rainfall change among adaptation strategies (n=1343)

Migration as an adaptation strategy	% of households who cited migration as one of their strategies	% of households who cited migration as the first strategy	Two main strategies
Temporary migration in case of one drought	29%	24%	Sell livestock
Temporary migration in response to a drier climate	11%	6%	Seek new crop varieties Sell livestock
Permanent migration in response to a drier climate	30%	13%	
Temporary migration in response to a wetter climate	2%	0.4%	Seek new crop varieties Increase cropland area
Permanent migration in response to a wetter climate	4%	1.6%	

Data source: Socio-economic survey, AMMA

→ In all, 51% of the respondents planned to migrate if rainfall conditions worsen in the future

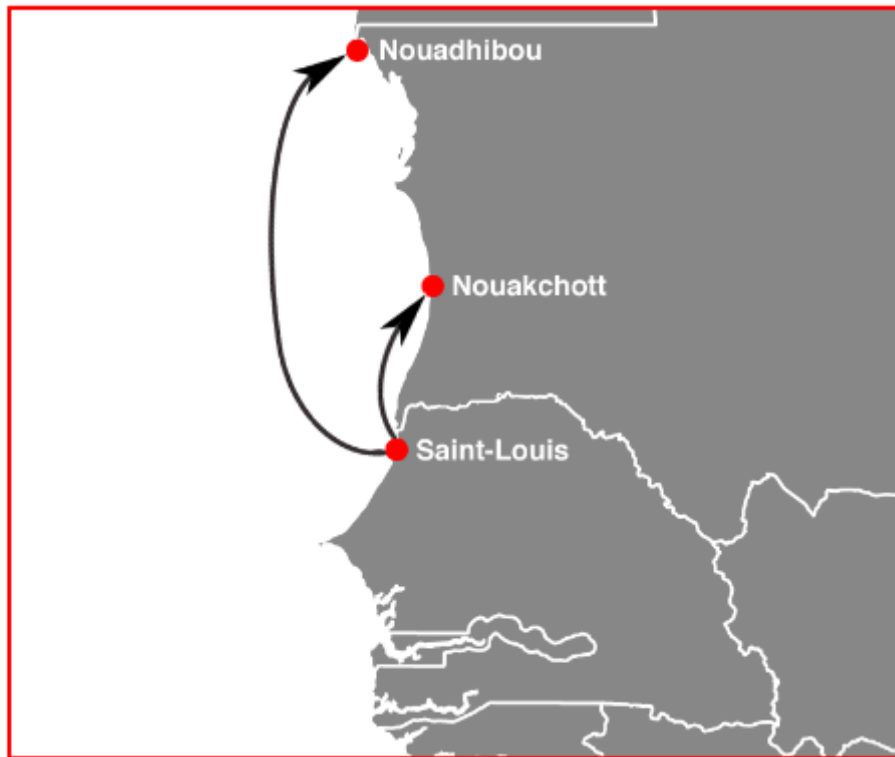
# Senegal

- Environmental degradation threatening livelihoods of 600,000 people working directly or indirectly in fishing sector
- Saint-Louis designated by UN-Habitat as the city most threatened by sea level rise in Africa
- Fishing communities' homes and livelihoods threatened by coastal erosion and by depletion of fish stocks on top of other pressures (e.g. demographic)



# Guet Ndar





1) Fishing migration to Mauritania → 2) Relocation to the mainland

However, **differentiated mobility and vulnerability**

# Migratory responses to agricultural degradation and transformation in Senegal

- Separate case study investigating the impacts of large-scale land acquisitions on the environment and on population movements
- 17% of nation's arable land has been acquired by foreign and national investors since 2008 (Sy et al. 2013)
- One of the drivers of the land rush: climate change mitigation policies (e.g. biofuels)
- Large-scale land acquisitions are increasing the vulnerability of local populations, by restricting access to customary land and through pollution/environmental transformation

# Migratory impacts of large-scale land acquisitions

- Disruption of pastoralist mobility
- Continuation and increase of out-migration of the locals to urban areas (Saint Louis/Dakar/Nouakchott)
- In labor migration from more environmentally vulnerable rural areas in the country
- Differentiated mobility patterns depending on demographic variables and differentiated vulnerabilities
- Need for longitudinal research to assess the long-term impacts of land acquisitions on mobility

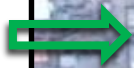
# Benin

- Case study of vulnerable populations in the coastal zone of Cotonou
- Heavy coastal erosion
- Out-migration, in-migration and successive displacement
- Increasing vulnerability of three groups:
  - Fishermen
  - Other groups living in the zone that cannot afford to move
  - Poor populations that moved into the zone

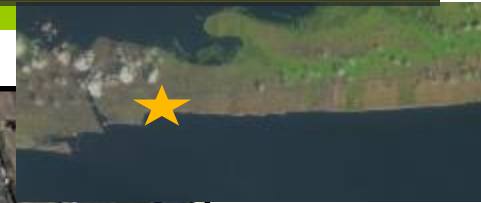
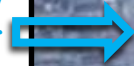
# Two processes of habitat loss that induce migration



Houses destroyed by the authorities



Houses destroyed by the encroachment of the sea



# Policy Implications

- Need for holistic policy responses that treat:
  - A) the *cumulative* vulnerability of systems
  - B) the particularities of livelihoods, climatic threats, and populations -- i.e. *differentiated* vulnerabilities.
- Communication between compartmentalized ministries, departments, and levels of government necessary

# Conclusions

- Perceptions do not always match reality:
- Assessing vulnerability and subsequent mobility responses' effects on resilience must therefore consider local populations' perspectives
  - Communication of risks for informed mobility decisions
  - Local populations' perceptions may illuminate systemic vulnerabilities and capacities resilience, thereby informing policy responses