



Why Early Earnings Fail at the Last Mile: Barriers to Inclusive Flood Early Warning System in Kolwa East Ward, Kisumu County, Kenya

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Introduction



- Extreme weather events increasing in severity and frequency.
- Early Warning Systems (EWS) are vital for disaster risk reduction.
- Kenya experiences frequent floods causing displacement, food insecurity, and economic losses.
- Kolwa East Ward is highly vulnerable to floods due to location and poverty levels.





The Problem?



Importance of EWS

- Crucial for disaster risk reduction
- Help strengthen preparedness and reduce impacts

Current Situation in Kenya

- Weak integration of EWS in flood-prone, last-mile communities



Research Questions



1. What are the barriers to accessing early warning messages?
2. Which factors impede comprehension and inclusivity of early warning messages?
3. What are the effects of the flood on the community?





Methods



Mixed-methods approach, integrating GIS and remote sensing with a descriptive research design



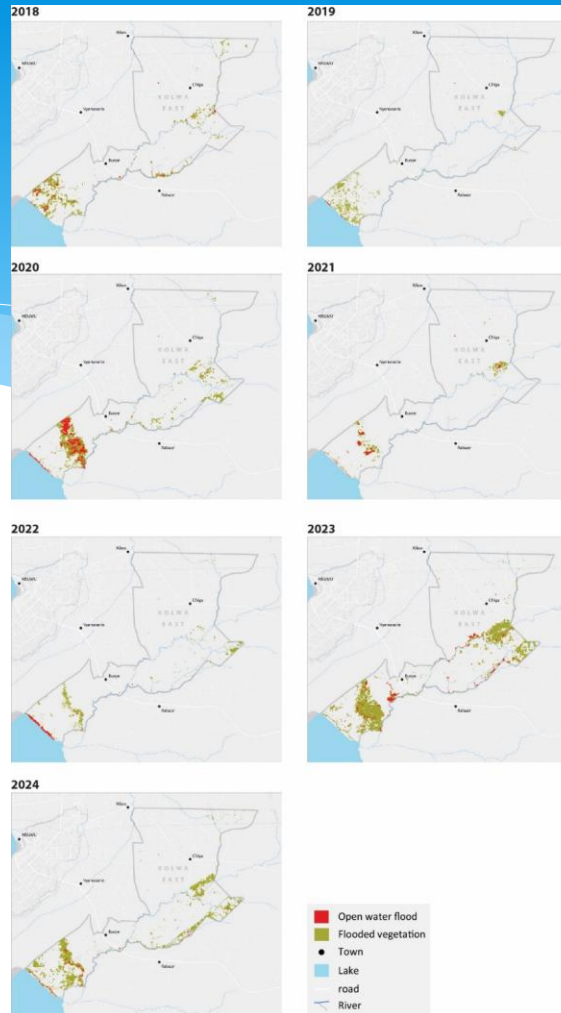
Tools: Key Informant Interviews (16), Focus Group Discussions (4 groups, 78 participants)



Analysis: Thematic analysis + GIS flood mapping (2018–2024)



Findings from Remote Sensing and GIS Analysis



**Figure 1 Flooded covered region during the March April May (MAM) Seasons
between 2018 – 2024**

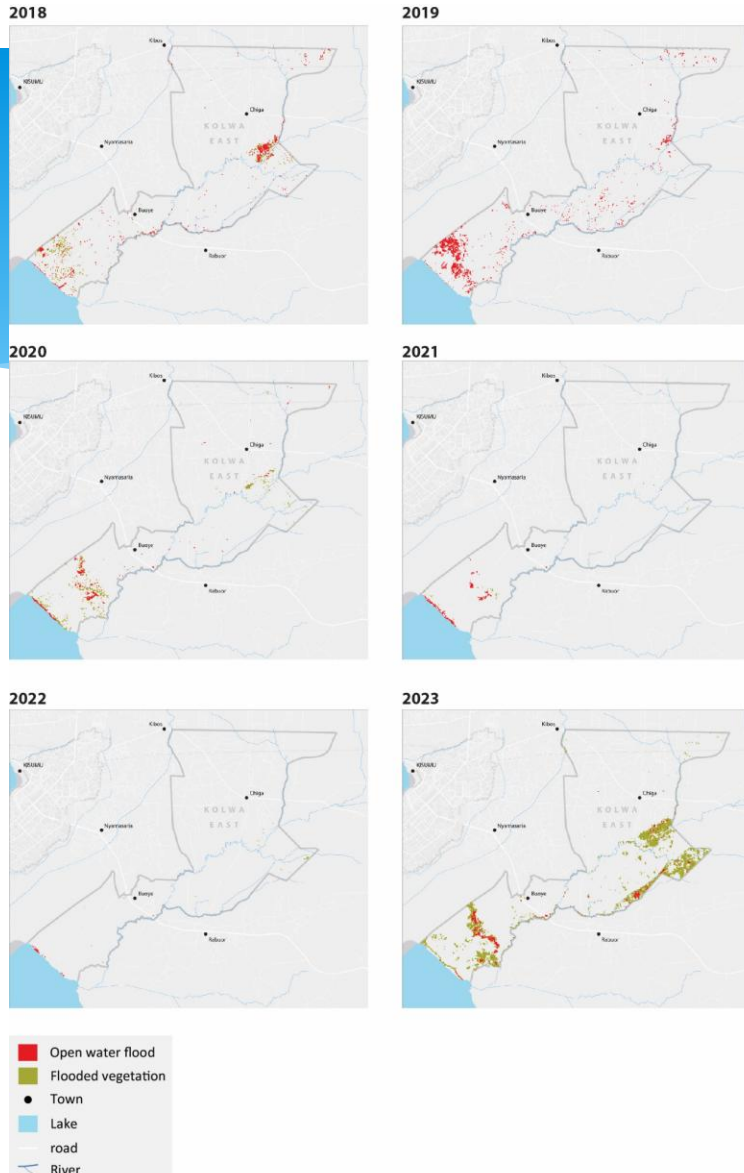


Figure 2 Flooded covered region during the October November December (OND) Seasons between 2018 – 2023



Findings from Qualitative Analysis



Theme	Key Findings
1. Knowledge of Climate Risk	Communities highly aware; attribute floods to heavy rainfall, poor drainage, waste disposal, deforestation, encroachment, and siltation. Floods are becoming more frequent, unpredictable, and variable.
2. Climate Change Effects	Aware of changing temperature and weather patterns. Impacts include displacement, disrupted planting, frequent floods/droughts, food insecurity, health issues, livelihood loss, family separation, mental stress, GBV, cultural disruption, and home destruction.
3. Early Warning Awareness	Receive EWM from KALRO, KMD, Red Cross, and apps (Digifarm, iShamba) via SMS, radio, and TV. Gaps include limited government guidance, unclear relocation info, disparities in access, and exclusion of Indigenous Knowledge.
4. Community Involvement in Flood Management	Communities willing to participate, citing past food-for-work success. Cultural norms and gender roles hinder evacuation. Excluded from EWS design and unaware of disaster management committees.
5. Disaster Response Capacity of County Government	County has a preparedness plan, but NGOs, CSOs, and private sector unaware. Disconnect caused by reliance on climate change committees for message dissemination.
6. Marginalized & Vulnerable Groups	PWDs, illiterate, widows, and elderly excluded due to lack of tailored messages (no sign language/braille). Women and children relocate while men stay behind. GBV, exploitation, and added burdens for women rise during floods.



Conclusion



Barriers:

- * **1. Governance & Coordination**
- * **2. Communication Gaps**
- * **3. Infrastructure & Preparedness**
- * **4. Funding & Resources**
- * **5. Inclusivity & Social Barriers**



Recommendations



- * Codevelop and localise early warning messages with the local communities.
- * Strengthen community based preparedness and evacuation capacity.
- * Improve FEWS through strengthening coordination, data and monitoring.
- * Adopt a GESI approach in disaster planning and communication.



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