

PROVENTION CONSORTIUM

Community Risk Assessment and Action Planning project

KENYA – Nyando District



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An Investigation into Community Perceptions and Response to Flood Risks in Western Kenya

CRA Toolkit
CASE STUDY

This case study is part of a broader ProVention Consortium initiative aimed at collecting and analyzing community risk assessment cases. For more information on this project, see www.proventionconsortium.org.

Bibliographical reference: Hellen Nyakundi, 'An Investigation into Community and Response to Flood Risks', ProVention/ World Bank Young Researcher report, 2008.

Click-on reference to the **ReliefWeb country file for Kenya:**

<http://www.reliefweb.int/rw/dbc.nsf/doc104?OpenForm&rc=1&cc=ken>

Note:

A Guidance Note has been developed for this case study. It contains an abstract, analyzes the main findings of the study, provides contextual and strategic notes and highlights the main lessons learned from the case. The guidance note has been developed by Ben Wisner in close collaboration with the author(s) of the case study and the organization(s) involved.

Community perceptions and response to flood risks in Nyando district, Western Kenya

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FLOODING IS A recurrent phenomenon in Nyando, one of the 12 districts in Nyanza Province, Western Kenya. The Sondu Miriu, Nyando, Awach and Ombei rivers drain from the Nandi Hills where high rainfall is received to Lake Victoria through the Kano Plains and are a major cause of persistent flooding along their banks as they approach the lake with devastating effects. As per the assessment made after recent floods in the Kano plains, the average annual damage is about USD850,000 with annual relief and rehabilitation measures costing USD600,000.¹ The area supports a large rural population (75 per cent) and the stage of economic growth is undermined by high absolute poverty levels (69 per cent), deteriorating infrastructure and an HIV pandemic (19-29 per cent) over the past decade.²

While most studies in the area have concentrated on the physical aspects of the flood disasters, this study shifted focus and instead chose to explore constructs of flood risk by investigating community involvement in flood management.³ The main objective of the study was to investigate community flood risk perceptions and response in relation to flood disaster management.

Methodology

This was a descriptive cross-sectional study. Both quantitative techniques (questionnaires and structured interviews) and qualitative data collection methods (focus group discussions and key informant interviews) were applied. A list of frequently flooded areas in the region was drawn and two categories, 'most-prone' and 'medium-prone' were selected to give a wider coverage to the sample with a view to accommodating risk level variability.

Based on risk levels, 264 questionnaires were administered in the most-prone areas termed 'high risk', and 264 questionnaires administered in the medium-prone areas, which were termed 'low risk'.

Demographic and socio-economic characteristics

Respondents of all ages (18 to over 60) were represented in the household survey. The survey indicates that the main occupation of most households (63.3 per cent) is subsistence farming, which is fairly typical of the general population. The modal gross family income was below KES2,500 (USD35), which represents 72.8 per cent of households. Only 6.3 per cent earned above KES10,000 (USD140). These low-income levels among the study population may be attributed to low levels of education with only a quarter (24.5 per cent) having gone beyond primary level. This trend could be associated with slow economic progress and low income per capita in the area.

Research findings/results

Data from this study reveals only 8.7 per cent of the respondents first become aware of impending floods through official means. The rest rely on informal flood detection techniques. They predicted floods by observing changes in weather patterns and river levels.

Nearly 96 per cent of respondents reported their most recent flood experience in years 2002 and 2003 (5.8 per cent), 2004 (28.4 per cent), 2005 (47.2 per cent) and the most recent in 2006 (9.5 per cent). The seven emergency flood risks and their response measures considered in this study were damage to shelter, loss of crops, shortage of food, loss of livestock, prevalence of disease,



Nyando community using sand bags to block eroded Nyando river bank

Photo: Flood Control Unit, Ministry of Water and Natural Resources, Kenya



Widening the Nyando river

Photo: Flood Control Unit, Ministry of Water and Natural Resources, Kenya

death and interruption of schooling. Overall results from the study on these key household practices revealed the most notable measures to avoid negative flood effects were:

- Sealing lower door entrances with mud (100 per cent)
- Clearing/digging of trenches (83.7 per cent)
- Piling mud around homesteads (45.3 per cent)
- Raising the floor of houses (28.4 per cent)
- Planting trees/sisal around homes and farms (22 per cent)
- Storing medicine (26.1 per cent)
- Building terraces (10 per cent)
- Evacuating to higher ground (29.2 per cent).

Measures taken immediately after the floods included raising what can be destroyed by flood waters, drilling holes through the wall to allow flood waters to flow through, removing flood waters from the house using containers, cooking on top of tables and other raised surfaces, and de-silting of trenches. It is only during extreme flooding that people evacuated. After the floods subsided, soil was poured on the floor and leaves spread on top to cover damp floors. The two major efforts made to avoid and/or reduce flood-related diseases included buying mosquito nets and treating or boiling drinking water.

The survey data revealed that half (50.2 per cent) of the respondents who experienced flooding received support from multiple sources. Government disaster programmes accounted for 85.2 per cent of the support received, while 28.1 per cent received help from non-governmental organizations and 6.7 per cent were assisted by relatives, friends and private donations from well-wishers.

Government initiatives at the district are coordinated by the District Disaster Management Committee (DDMC), which has incorporated all key government departments: agriculture, roads, health, and water. The flood control unit under the Ministry of Water and Natural Resources is currently overseeing the construction of a dyke along River Nyando. So far, 3.5 km has been constructed on either side. The DDMC is represented at the location and sub-location levels. These committees, together with the chiefs and sub chiefs, organize, implement and oversee the Food for Work programme introduced by the Government to engage the community in managing floods. The community members dig and clear trenches in exchange for food.

The Red Cross, VIREP, CREPP, World Vision and ADRA have been the major non-governmental contributors during flood disasters. Flood information is mainly obtained by volunteers on the ground, who carry out assessments on the extent of damage. This

information is used to plan the type and amount of support needed. Red Cross, World Vision and ADRA mainly provide temporary shelter and distribute food, blankets, water purifying tablets and mosquito nets. VIREP International has a food-for-work flood initiative that engages the local community in digging proper drainage systems, de-silting existing trenches and digging dams. CREPP encourages tree planting by distributing seedlings to schools and village youths. It has also introduced a micro-enterprise development programme that targets women's groups involved in farming activities and small business enterprises, giving loans of up to KES60,000 (USD845) per group. CREPP has a water and sanitation programme, which involves the sinking of boreholes. It is also involved in training disaster management committees at the community level on how to handle and distribute food for work. In addition, it is encouraging the local community to use mobile toilets.

As a result of the past flood disasters in Nyando, the Government has allocated more funds toward mitigating floods in the area and the World Bank has pledged USD80 million to be disbursed over a seven-year period to mitigate flood related disasters in Western Kenya. Treatment of malaria is now free in government hospitals and dispensaries, and now pregnant women and mothers with children under 5 years of age can buy mosquito nets at a subsidized rate of KES50 (USD0.7) each, down from an average KES500 (USD7). There has also been more community involvement through the formation of disaster committees at the community level. There is now more community involvement in digging and clearing of trenches through the food-for-work programme, which has resulted in a reduction of negative flood effects in the past two years. The chi-square test demonstrated a significant difference of 0.000 of support received between the high risk and low risk areas; this is a positive indication of equitable distribution of support in the study area.

Conclusions and recommendations

There is still a lot of emphasis placed on structural mitigation measures, and very little on non-structural measures that could contribute to reduced vulnerability in dealing with future floods. The majority of the respondents still believe that the area will be risk free once the dyke has been constructed. This perception has led to the local community undermining its own coping capabilities and beginning to rely more on external aid.

There is therefore need for community sensitization on non-structural mitigation measures that require less reliance on external support. This would encourage more community initiatives and a creation of more sustainable programmes.



Photo: Hellen Nyakundi

Children of Kogwedhi village in Nyando district carrying their fishing rods and displaying fish caught from flood waters



Photo: Hellen Nyakundi

A woman in Ayweyo sub location, Nyando district, receiving her share of maize after completing a day's work (clearing trenches) in a food-for-work initiative

Nearly 73% of respondents have been residents for more than 10 Years: hence feel floods are a medium threat 89% and not highly fatal (71%). Nearly 96% agree that flood preventive measures are the best and that the occurrence and impact of floods can be influenced by huge investments and application of modern technology. A majority 93% felt the state should preserve money to assist disaster victims.

Coping behavior

Results indicate that despite government support, most of the community members had to resort back to household level adjustments to compensate for damages caused by the floods. A majority 96% of the respondents have experienced floods in years 2002-2006. Overall results from the study on key household practices revealed the most notable measures to avoid negative flood effects were sealing lower door entrance with mud. Key household practices include: digging trenches, planting trees and sisal around homesteads, rising floor of houses, stocking medicine, escorting children to school and evacuating during extreme conditions

Attitude towards external support

Half of the respondents received support from multiple sources. Government disaster programs accounted for more than 85% of the support received. Government initiatives at the district are coordinated by the District Disaster Management Committee (DDMC) that has incorporated all key government departments. The DDMC is represented at the location and sub location levels. These committees, together with the grass-root government officials organize, implement and oversee the food for work program introduced by the government to engage the community in managing floods. The community members dig/clear trenches in exchange for food. Red Cross, VIRED, CREPP, World Vision and ADRA have been the major non governmental contributors during flood disasters. Nearly 80% felt the support was insufficient. Half of the respondents felt they could cope without help, the other half could not. Majority of the respondents still believe that the area will be risk free once the dyke has been constructed. This dependency syndrome has led to the local community undermining its own coping capabilities and has started relying more on external aid.

1.1.3 Research Outcome

The first set of results generated from the data collected have so far met the need of the original research objectives.

1.1.4 : A. Research contribution to the knowledge and reduction of disaster risk and vulnerability:

The study area:

- It has highlighted gaps in the flood control mechanisms that include lack of proper flood warning systems, lack of transparency in distribution of relief aid, underutilization of community based systems.
- The study provides baseline data on current community initiatives.
- Most emphasis is on structural methods which are costly; hence the need for community sensitization on measures that are low cost, have low maintenance requirements and are sustainable.

At the national level

- The need to address underlying factors like the glaring poverty levels as a result of poor infrastructure and collapsed industries.
- The need to involve communities at management level by providing leadership and management skills to build their confidence and to enable them make well-informed decisions.
- The need to use the traditional knowledge collected to invest in an integrated flood warning system that the local community would have more confidence and control over.

At international levels

- Facilitate development of community based services and provide supervision and monitoring at both national and grass roots level and.

B. What the research adds that was not previously known

- Traditional knowledge on flood forecasting, warning, and behaviour associated with flood control.
- Reveals gaps in knowledge and lack of proper frameworks at community level; to facilitate planning on establishing systems and capacity building initiatives that would best reduce vulnerability and improve response to flood risks in the study area.

C. How the research advance the aims of the Hyogo Framework in the country

Reduction of vulnerability

- Integration of traditional knowledge into current flood control measures
- Strengthening of community based service delivery systems that are currently underutilized.
- Address underlying factors that compound flood disasters: poverty, disease and illiteracy.

1.2. SUMMARY OF RESEARCH PROJECT IMPLEMENTATION

1.2.1. Overall research method /approach

This was a descriptive cross sectional study. Review of secondary data, structured interviews, Focus Group Discussions and key informant interview data collection methods were applied. A list of frequently flooded areas in the region was drawn and two categories, high prone and low prone were selected to give a wider coverage to the sample with a view to accommodate risk level variability. As is standard with similar studies, informed consent was sought from the respondents.

1.2.2. Key research activities undertaken

- Review of Secondary data
- A list of frequently flooded areas in the district was drawn and most prone and least prone categories selected for a comparative study.
- Training of field personnel
- Pilot study
- Household interviews,
- Focus group discussions and
- In-depth individual interviews

- Review of morbidity data from dispensaries and health clinics
- Data entry and analysis
- Report writing

Methods that were most effective

Focus group discussions and indepth interviews were the most effective data collection tools because they focus on psycho-social factors and draw out in-depth responses from participants about what they think and how they feel. These techniques provide depth of understanding about their response mechanisms and highlight barriers and motivators to use these measures.

1.2.3 Constraints or difficulties encountered

- Difficulties reaching interior villages due to poor roads and heavy rainfall.
- Community reluctant to be involved once they realized it would not result in immediate assistance

1.2.4 Opportunities and any interesting or surprising “discoveries”

Opportunity

- The results highlight underutilization of community based service delivery systems and therefore presents an opportunity to strengthen these systems through capacity building initiatives

Surprising discoveries-

- The level of attachment people have to their land and customs that would make them endure extreme conditions to safeguard their heritage.
- Wealth of traditional knowledge and the confidence people have in it.

1.2.5 Implementation of the research

There were delays at the start of the project and this has set back implementation of some activities like feed back to the community and submitting of my final thesis report. These activities will be undertaken in the months of July and August.

I am happy with how the project has turned out and would only suggest timely disbursement of project funds to grantees and funding of further areas of research intervention initiatives in the area.

Annex

Publication of project findings

Project Summary

AN INVESTIGATION INTO COMMUNITY PERCEPTIONS AND RESPONSE TO FLOOD RISKS IN NYANDO DISTRICT, WESTERN KENYA

By: Hellen Nyakundi

Key words: Flood Risk, Flood control, Flood warning, Perception of risk

Abstract: Constant flood threats have shaped communities perception of flood risks and response. Poverty, illiteracy and disease have impaired coping capabilities resulting higher dependence on external support.

Results from the research outline traditional knowledge and warning systems, behavior associated with flood control, perceptions and attitudes towards current flood control initiatives and external support. Results indicate that despite government support, most of the community members had to resort back to household level adjustments to compensate for damages caused by the floods. Only about 9% become aware of impending floods through official means therefore notable measures to predict floods were by observing changes in weather pattern and river levels. Half of the respondents received support from multiple sources but nearly 80% felt the support received was insufficient.

Survey has highlighted gaps in knowledge and service delivery and recommends strengthening of the existing systems as well as improving coping capacities at household level through training. The survey has also revealed a wealth of traditional knowledge that can be integrated into the current flood management strategies.