Flood Risk Management in Mozambique and Sub-regional Trans-boundary Issues

> UNFCCC regional expert meeting on loss and damage in Addis Ababa, Ethiopia from 13 to 15 June 2012 Ron Cadribo, UNISDR DRR Advisor, AUC

Presentation Outline

BACKGROUND

- FLOOD RISK MANAGEMENT
 - Institutional Framework- Policy and Planning

Early warning

- Information Management during flood events
- Community Level Early Warning
- TRANS-BOUNDARY FRAMEWORKS
- COMMUNITY DISASTER RISK REDUCTION

LESSONS

1. BACKGROUND

Social and Economic Profile

- Population of Approx. 20 million
- 50% of Population live under extreme poverty, high inequality
- Some 80% of population works in agriculture and fisheries both sectors that are highly vulnerable to climate variability and extreme weather events.
- Literacy is about 60% for men and 30% for women. Fewer than 6% of households have electricity, and there are just 16 telephones for every 1000 people.
- Life expectancy is around 40 years in the past decade because of HIV/AIDS.
- Endowed with extensive natural resources
- Since 2001 considered one of 10 fastest growing economic

Risk Factors and Vulnerability

- Tropical Cyclones from east Indian Oceanan average of 3-4 make landfall each year with high winds and heavy rainfall
- Downstream location 9 rivers systems empty into the Indian Ocean via Mozambique
- Estimated 50% of Mozambique's Rivers are from outside the country

Drought

Geographical Location



Zambezi River Basin

General climate issues
Drought
Flooding
Famine
Disease vectors

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Mozambique Climate triggered Disasters Since 1980

	Year	Event	Areas affected	Number of people affected
•	2002–06 Central p	Drought rovinces	43 districts affected in South and 800,000 affected	
•	2001	Floods	Zambezi river	500,000 affected; 115 deaths
•	2000	Floods	Limpopo, Maputo, Umbeluzi, Incomati, Buzi, and Save river basins, caused by record rainfall and 3 cyclones	More than 2 million
			doaths	people affected; 700
•	1999	Floods	Sofala and Inhambane provinces; highest rainfall level in 37 years; EN1 (major road) shut for 2 weeks	70,000 people affected; 100 deaths
•	1997	Floods	Buzi, Pungue and Zambezi rivers; no road traffic to Zimbabwe for 2 weeks	300,000 people affected; 78 deaths
•	1996	Floods	All southern rivers of the country	200,000 people affected
•	1994–95	Drought	South and Central parts	1.5 million people affected; cholera epidemic
•	1991–92	Drought	Whole country affected	1.32 million people severely affected; major crop failure
•	1987	Drought	Inhambane province	8000 people affected
•	1985	Floods	9 rivers in the southern provinces;	
•	1983–84	Drought	worst flooding in 50 years followed by 4 years of drought Most of the country affected	500,000 people affected Many deaths from drought and war; cholera epidemic
•	1981–83	Drought	South and Central provinces	2.46 million people affected
•	1981	Floods	Limpopo river	500,000 people affected
•	1980	Drought	Southern and Central provinces No data available	(No data)

• 7 Drought ans 7 Floods

Disaster Loss and Damage

2000 Floods (Africa Recovery Report Oct. 2000)

- Estimates that about 700 people had died and another 100 were missing. (45,000 rescued from trees, tops of buildings and isolated areas)
- Almost 2 million people (some 12 per cent of the total population) were seriously affected, with half needing food aid.
- Almost 250,000 people lost their homes.
- 140,000 hectares of cultivated and grazing land lost to the floods about 11 per cent of total cultivated area in the five provinces affected –
- Over 113,000 small farm households had lost their livelihoods. Some 20,000 head of cattle were missing and feared drowned, and many more could die of disease.
- The worst agricultural losses were to irrigation, with the government estimating that some 90 per cent of the country's functioning irrigation

- Infrastructure was damaged. Many secondary and tertiary roads were washed away, as were many bridges.
- All the railways in southern Mozambique were badly affected, particularly the Limpopo line from Maputo to Zimbabwe.
- The floods also closed 630 schools, attended by 214,000 pupils
- 42 health units were destroyed or damaged, including Beira Central Hospital, the second largest in the country
- Industry severe damage leading to shutdowns or sharply reduced production in some of Mozambique's most successful factories.
- Virtually all production in the flooded cities of Xai-Xai and Chokwe in the Limpopo Valley came to a halt, largely because the electricity installations in these towns were under water.
- Over a thousand shops and wholesalers in the river basins, and even in low-lying areas of Maputo itself, were damaged.



2. FLOOD RISK MANAGEMENT

Institutional Framework

- 1999 National Policy on Disaster Management
- National Disaster Management Institute replaces
- National Directorate of Water
- National Institute of Meteorology
- Regional Water Administration
- District Governments and Local Authorities
- Regional Cooperation Southern African Regional Climate Outlook Forum (SARCOF)

Early Warning System

- Heart of the flood risk reduction and management
- Coordinated by the National Disaster Management Institute, National Directorate of Water and National Institute of Meteorology (integration of hydrologic and climate information for flood prediction

NIM

- Collects meteorological across the country data and prepares a range of forecasts from Oct – March
- OMonitors Cyclones
- Informs a meeting of water resource experts who assess preparedness for predicted weather
- A Flood team is organized to monitor the system.

- National Disaster Management Institute coordinates a high level committee of Ministers chaired by the PM
- The high level committee is supported by a technical committee comprising experts from the Ministries of Public Works and Housing, Transport and Communications, Health, Agriculture, Environment, Defense, and Foreign Affairs
- Structures Replicated at Regional and District Levels

Information Management

- The Flood team monitors the situation, receives and analyzes information, recommends responses, ensures collaboration between the different bodies involved, and coordinate activities at central and local levels.
- Regional Water Administration issues warnings to district and local government when necessary in collaboration with Red Cross and other NGOs
- Red Cross and NGOs are responsible for the dissemination of information, and in particular warnings, at the local level, and for the evacuation of people before the floodwaters rise.
- At regional level SADC Southern African Regional Climate Outlook Forum (SARCOF) holds a regional meeting to exchange data and to prepare the seasonal forecast for SADC countries. This forecast feeds into Mozambican flood prediction.

Community: Flood Early Warning System in Case of Sofala, Buzi River

Effective and simple

- At various points in the catchment area of the Buzi River, selected individuals in the villages are entrusted with the job of measuring precipitation levels.
- At the same time, easy-to-read gauges of the river's level are checked regularly.
- If the level rises above a certain point, trained assistants from the local population immediately send a radio message.
- A central coordination point in Buzi assesses whether or not a flood warning should be issued.
- Assistants then spread the flood warning rapidly, using megaphones or radio announcements.
- Local committees have been set up in the villages and members are being trained to carry out evacuation

3. TRANS –BOUNDARY WATER MANAGEMENT

Regional Water Management Frameworks

- SADC Treaty,
- Regional Indicative Development Plan (RISDP), \
- Regional Water Policy,
- Climate Change Adaptation Strategy
- Protocol on Shared Watercourses,
- River Basin agreements,
- Regional Water Strategy and the
- 3rd phase of the Regional Strategy Action Plan (RSAP III) on Integrated Water Resources
- SADC Regional Strategy on Disaster Risk Reduction



Regional Water Policy

Regional cooperation on in water resources management

- Water for development and poverty reduction
- Water for environmental sustainability
- Security from water-related disasters
- Water resources information and management
- Water resources development and management
- Regional water resources institutional framework
- Stakeholder participation on and capacity building
- Financing integrated water resources management in the region.

Regional Climate Change Adaptation Strategy

- The main goal improve climate resilience in Southern Africa through integrated and adapted water resources management at regional, river basin and local levels.
- The objective is to promote further the application of integrated water resources management as a priority tool to reduce climate vulnerability and to ensure that water management systems are well adapted to cope with increased climate variability.

Shared Protocol on Water Courses

- the Protocol calls for the establishment of shared watercourse agreements and shared watercourse institutions (SWI) to facilitate and coordinate the joint management of shared watercourses..
- As determined by the respective parties, SWI can be established as River Basin Commission, Joint Water Commission/Technical Committee or Joint Water Authority.
- Since the Protocol came into force, SWI have been established on all shared watercourses in the region

Benefits of Trans-boundary Frameworks for Water Management

- Provide the institutional and legal basis.
- Basis for sound joint institutional structure.
- Assist in understanding of mutual benefits and threats, common goals and shared interests.
- Provide options for cost recovery and redistribution of benefits and costs.
- Facilitate participatory approach.
- Create basis for Long-term engagement and commitment.

Importance of trans-boundary Early Warning system

- Emphasis of data collection and information transfer However
- Encourage information exchange that is also essential for flood prevention strategies in the sphere of integrated land and water management
- Facilitates the planning of protection measures such as the realization (or removal) of dams, and bypass channels.
- Joint monitoring programmes enhance the options for information exchange.
- Public awareness and preparedness for flood events.
- Proper communication to the public It is essential that people recognize that flooding is part of their environment.
- Enhances communities awareness of risk, which means that they know about flooding and take it into account appropriately when acting.

Building Local Resilience

Living with Floods

- UN HABITAT- MOZAMBIQUE Sustainable Land Use Planning for Integrated Land and Water Management for Disaster Preparedness and Vulnerability Reduction in the Limpopo Basin
- Implemented in Chilaulene, Mabalane, and Maniquenique
- Living with floods' approach floods are an integral part of the hydrological cycle – Building Residence
- Participatory community planning
- Minimize risk of asset destruction
- Structural disaster reduction
 - A community agricultural centre during normal periods and as a safe haven for the community during floods. Similar to the community agricultural centre at Chilaulene,
 - Classroom block at Maniquenique was also designed as a dual purpose building, serving as a classroom during normal periods and as a safe haven during floods.

Architectural design of the Elevated Primary School of built with wooden poles, cemented pillars and lateral structures, corrugated iron sheets with a reinforced roof.



Strengthening Local Risk Management), UNDP Mozambique and (BCPR) and Joint Programme Strengthening DRR and Emergency Preparedness

- The overall goal of the Programme is to strengthen national capacities at all levels, to reduce the risk of disasters and mitigate their impacts on the vulnerable populations in the country.
- Builds on the government and institutional capacity in the country
- A focus on information sharing systems and processes.
- There are three key best practices: \
 - (i) INGC Climate Change Report on the impact of climate change on disaster risk in Mozambique urban and rural coastal areas, which will be most affected by cyclones and raising of sea level;
 - (ii) A risk information management and assessment system (GRIP) is in process of implementation with a database that allows inter-country comparisons; and
 - (iii) A large scale disaster simulation conducted in 29 districts and 10 provinces of the central and northern regions of Mozambique, testing the level of readiness and response of the INGC and all players in the management of national emergencies caused by floods, cyclones and earthquakes, with the purpose of strengthening the national disaster risk management system.

Key Lessons from Mozambique

- Effective National Policy and Strategy
- Effective Coordination through National Disaster Management Institute
- High level of stakeholder participation
- Effective Early Warning System and Public Awareness
- Decentralized management
- Capacity Building at all levels
- Community Participation
- Trans-boundary Approach



THANK YOU FOR YOUR ATTENTION