

Capacity Building Workshop on NBSAP, Mainstreaming of
Biodiversity and Integration of Climate Change Nadi Fiji

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CHARM as a tool for managing vulnerability in the face of
climate change

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UPNG

1. Process
2. Steps
3. Examples

CHARM =

**Comprehensive hazard and risk
management tool and/ or process
within the context of an integrated
national development planning
process**



■ CHARM consistent with AS/NZS 4360 - 1999



2.0 STEPS

1. Establish the Context
Sensitise senior political and policy officials
2. Identify Risks
Identify and assess hazards
Identify and assess vulnerability in key sectors
Identify risks
3. Analysis Risks
Determine Likelihood
Determine Consequence
Assign Level of risk

4 Evaluate Risks

Decide on risk acceptability

Set risk priorities

5 Treat Risks

Managing Existing Risk

Managing Future Risk

Coordinate and monitor implementation

Undertake formal progress review

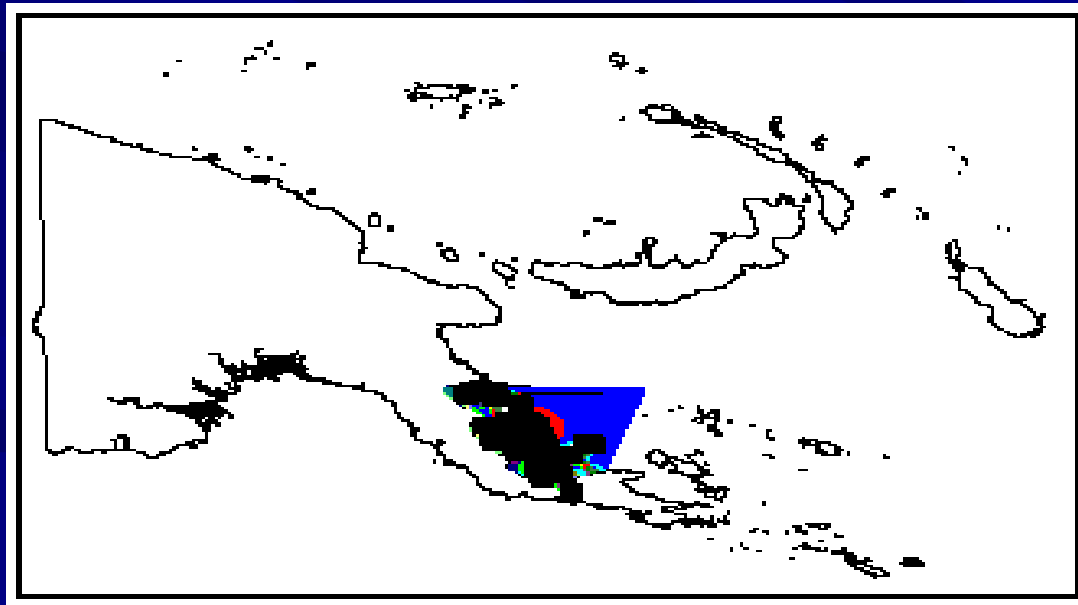
3.0 EXAMPLES

PRIMARY HAZARDS	SECONDARY HAZARDS	VULNERABLE SECTOR	SCOPE OF IMPACT	POTENTIAL RISKS	TREATMENT OPTIONS	DEVELOP PROGRAM (GAP ANALYSIS)	LINK REGIONAL PARTNERS	NEW PROJECTS
LA NINA	DROUGHT	AGRICULTURE	TARAWA	FOOD SHORTAGES	CROP DIVERSIFICATION RELIEF ASSISTANCE	BASED ON GAPS	IDENTIFY EXTERNAL SUPPORT	CLOSE THE GAPS
				WATER SHORTAGES	WATER CONSERVATION AWARENESS			
				PLANT DISEASES	MONITORING EMERGENCY PLAN			

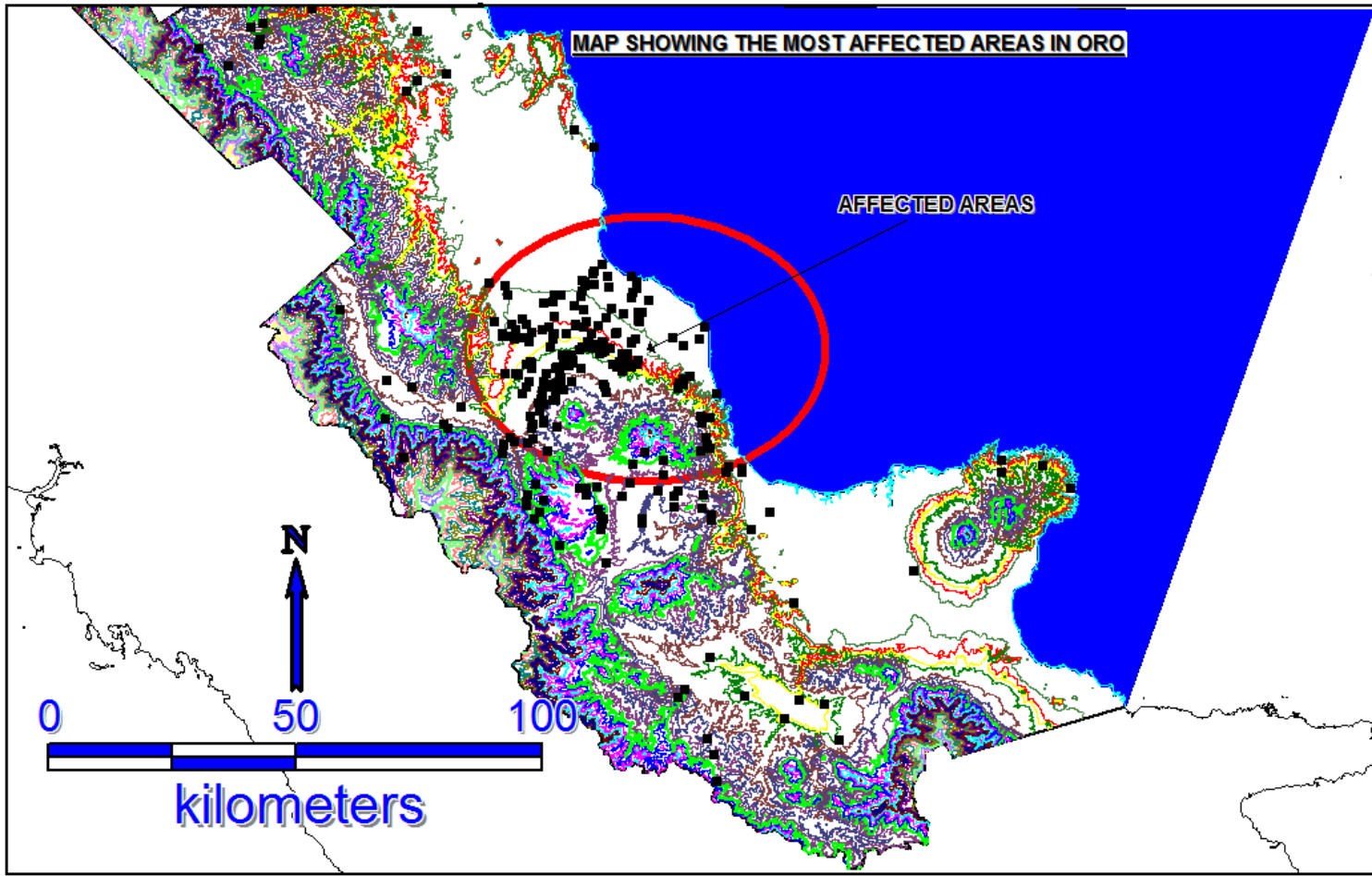
NB: Primary and Secondary hazards may produce a risk that should be considered as a new hazard, Coastal Erosion with further potential impacts

ORO Province - PNG

- On the 12-16 November 2007, Category 1 Tropical Cyclone Guba struck Papua New Guinea bringing torrential rains and high tides which caused severe flooding in Oro province.
- Some 143,000 people were affected,
- 164 casualties, with at least 13,000 displaced.



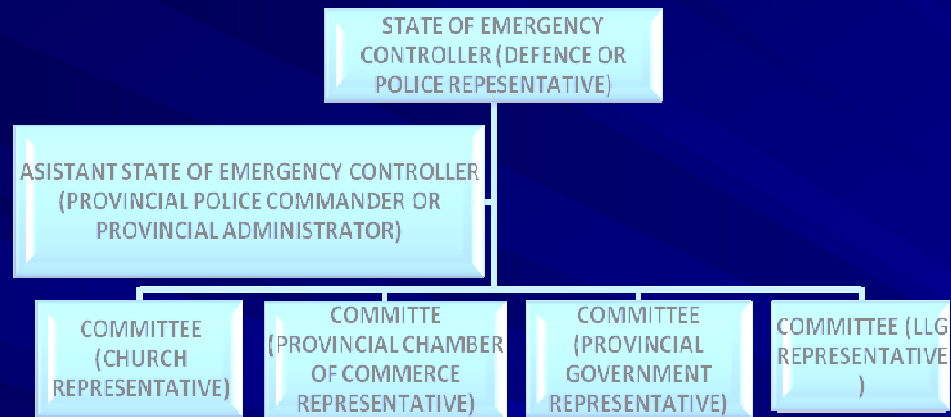
MAP SHOWING THE MOST AFFECTED AREAS IN ORO



AFFECTED AREAS

LEGEND
ELEVATION (m)

100 m	(82)
1000 m	(134)
1200 m	(86)
1400 m	(106)
150 m	(102)
1600 m	(69)
1800 m	(44)
200 m	(193)
2000 m	(29)
2200 m	(27)
2400 m	(28)
2600 m	(35)
2800 m	(51)
3000 m	(25)
3200 m	(38)
3400 m	(26)
3600 m	(8)
3800 m	(6)
400 m	(145)
50 m	(63)
600 m	(163)
800 m	(190)



Structure of Emergency Committee

- Stakeholders in the flood hazard framework were:
- Affected communities
- Local Level Government (LLG)
- Churches
- Business Houses
- Provincial Government
- National Government
- Community Based Organisation (CBO)
- NGOs

- **2. IDENTIFY THE RISK**

- **2.1. Categories of hazards**

- **2.1.1. *Primary hazard***

- The primary hazard is the **Cyclone Guba**. The cyclone is made possible from the combination of strong spiralling winds, heavy rainfall and storm surge. It is from this primary hazard that made possible many of those minor hazards that are listed below.

- **2.1.2. *Secondary hazard***

- The secondary hazard associated with the primary hazard specified above includes;

- Flood
- Landslide
- Soil erosion

■ **2.2. Risk Associated with hazard**

■ The risk associated with the hazard are categorised into primary and secondary risks according to the impacts caused to the vulnerable sectors.

■ **2.2.1. Primary Risks**

- Destruction of food gardens
- Loss of fertile soil
- Fresh water pollution
- Loss of lives
- Damage to infrastructures
- Destruction of villages

■ **2.2.2. Secondary Risks**

- Starvation
- Outbreak of epidemic diseases
- Existence of water-logged areas
- Loss of fertile soil
- Economic loss due to rebuilding of infrastructure
- High inflation in price of essential items
- Land dispute due to relocation of people

■ **2.3. Scope of Impact**

- The scope of flooding covers both the areas and sectors vulnerable to the hazard.

■ **2.3.1. Vulnerable Areas**

- Lowland areas
- Floodplain areas
- Coastal areas
- Land use areas
- Areas on unstable land

■ **2.3.2. Vulnerable Sectors**

- Agricultural sectors
- Health and Education
- Transportation and communication
- Industrial
- Settlements
- Fisheries

- **3. ANALYSE THE RISK**

- **3.1. Primary Hazard**

- **3.1.1. Cyclone (Guba)**

- **Table 1. Likelihood of the Primary hazard (Cyclone Guba)**

LIKELIHOOD	DESCRIPTION
VERY LIKELY	Exposure to hazard likely to occur frequently [daily-weekly]
LIKELY	Exposure to hazard likely to occur not frequently [weekly-monthly]
UNLIKELY	Exposure to hazard unlikely to occur [monthly-yearly]
VERY UNLIKELY	<i>Exposure to hazard so unlikely that it can be assumed that it will not occur [25 -50 years]</i>

- **5.1.1. PRE EVENT PHASE**

- **5.1.1.1. Preventive Measures.**

- Set up and improve early warning system in cyclone prone areas.
- Improve information and communication system
- Carry out educational awareness about cyclone to the general public.

■ **5.1.1.2. Mitigation Measures**

- Plant mangroves along the coastal areas to reduce the effects of storm surges and strong winds.
- Move settlements 500 metres in land from the coast.
- Plant rows of Casuarina trees 50 meters from the first house.

■ 5.1.1.3. Preparedness

- Proper maintenance and training of emergency services to minimize impacts
- Set up emergency and evacuation plans so that easy and safest routes are identified and known to the public if anything happens.
- Ensure that the communities are aware of their roles and responsibilities and also all stakeholders in disaster preparedness

■ EM TASOL