
Annexes

The purpose of the Annexes is to increase awareness and knowledge of the disaster managers and the general public of relevant disasters to Timor-Leste. The underlying idea is to share the knowledge what has been learned by those who will utilize the Plan; knowing the right information may save many lives.

Consequently, the Annexes includes the relevant tools to be used in the implementation of this plan, in addition to comprehensive explanations on the factors of what causes the disasters that directly affects Timor-Leste. Tsunamis and its relationships with earthquakes is explained in great detail since it is one of the hazard's risk Timor-Leste is vulnerable.

The tools included in the Annexes allows for adaptation to the specific needs of Timor-Leste. Possible applications of the Annexes could be according to the phases -
Before the disaster as a capacity building preparedness/contingency tool;
During the disaster for emergency interventions;
After the disaster to maintain skills and competency in management personnel.

The National Disaster Risk Management Plan and its Annexes is action-oriented, in that it will be necessary to implement the Plan in conjunction with other disaster-related institutions. For example, contingency planning should be part of detailed preparedness plans in key areas such as Health, Food Security and Civil Protection.

ANNEX 1. Differences between emergency assistance and disaster reduction strategy

Different management approaches: crisis management versus disaster risk reduction		
Emergency assistance, crisis management		Disaster risk reduction strategies
1. Primary focus on hazards and disaster events	Emphasis	1. Primary focus on vulnerability and risk issues
		2. Dynamic, multiple risk issues and development scenarios
2. Single, event-based scenarios		3. Fundamental need to assess, monitor and update exposure to changing conditions
3. Basic responsibility to respond to an event.	Operations	
4. Often fixed, location-specific conditions		4. Extended, changing, shared or regional, local variations
5. Responsibility in single authority or agency		5. Involves multiple authorities, interests, actors
6. Command and control, directed operations		6. Situation-specific functions, free association
7. Established hierarchical relationships		7. Shifting, fluid and tangential relationships
8. Often focused on hardware and equipment		8. Dependent on related practices, abilities, and knowledge base
9. Dependent on specialized expertise		9. Specialized expertise, squared with public views, priorities
10. Urgent, immediate and short time frames in outlook, planning, attention, returns	Time horizons	10. Comparative, moderate and long time frames in outlook, planning, values, returns
11. Rapidly changing, dynamic information usage, often conflicting or sensitive	Information use and management	11. Accumulated, historical, layered, updated, or comparative use of information
12. Primary, authorized or singular information sources, need for definitive facts		12. Open or public information, multiple, diverse or changing sources, differing perspectives, points of view.
13. Directed, 'need to know' basis of information dissemination, availability		13. Multiple use, shared exchange, inter-sectoral use of information
14. Operational, or public information based on use of communications		14. Matrix, nodal communication
15. In-out or vertical flows of information		15. Dispersed, lateral flows of information
16. Relates to matters of public security, safety	Social, political rationale	16. Matters of public interest, investment and safety
Source: T. Jeggle, 2001.		

Source: UNISDR (2004). page 13. www.unisdr.org/about/

Annex 2. HAZARDS AND THREATS THAT CAN AFFECT TIMOR-LESTE

Table 1. Potential impact of natural, human-induced and technological hazards and risk reduction management in Timor-Leste.

Note: table should be read as a draft since input from other agencies are needed.

Event	Frequency Scale 1-10 (1 is lowest)	Potential Impact			Risk reduction	Environmental management
		Mortality (persons)	Affected Population	Probability of occurrence		
Natural Hazards						
Landslide hazard	Very High for Baucau, Viqueque and Lautem: Medium for Cova Lima)	Less than 50	100 to 1000 people	70% or higher in rainy season; it can be created for high magnitude earthquakes affecting Dili	Avoid settlements in unconsolidate d materials surrounded by limestone's caps	Forestation, Water management in rainy season
Flooding hazard	High to Medium of Inundation and Overbank types mostly in the south except Los Palos, Gleno/Ermer a and Aileu	1-50	100 to 1000 people	70% or higher in rainy season	Avoid settlements in low –lying coastal plain near rivers areas	(To be added)
Earthquake hazard	South coast of Timor is	100-1000 if occurs at night	1000-3000 people	10% chance with 8-9	Enforcement building	(To be added)

Event	Frequency	Potential Impact				Environmental management
		Mortality (persons)	Affected Population	Probability of occurrence	Risk reduction	
Natural Hazards						
	100 Km away from	in populated areas such as Dili;		intensity Mercali scale will occur in 50 years; magnitude 5 to 9 in 10 years in Alor/Wetar area	codes; training population in emergency action in schools, hospitals etc.	
Tsunami hazard	In all stretches of northern coast with high population density; southern coastline,	100-10000	1000-3000 people	80% in north coast, due to the proximity of TL of the active subduction zones	Emergency preparedness plans for coastal populations	Points of shelter in higher grounds; Climb a tree or go to 2 nd floor of a building
Drought/ENSO /El Nino	Baucau and Covalima	50-100	100-1000	4 -7 years cycles of ENSO	Early warning indicators (EW)	Reduce food insecurity by monitoring early signs of EW
Marine Flooding	Northern coast	10-50	50-100	Varies with event, significant marine pollution potential	Monitoring	
Flash Flooding	Steeps areas	50-100	100-1000		Emergency	Settlements away from risk areas;

Event	Frequency	Potential Impact				Environmental management
		Mortality (persons)	Affected Population	Probability of occurrence	Risk reduction	
Natural Hazards						
	and dry beds low lands				preparedness plans for coastal populations	Population education
Tropical storm	Monsoon periods in all country particularly Ainaro, Covalima	1-50	100-1000	Yearly, (no major event in 25 years but 3 storms passed close enough to cause strong winds)	EW operational procedures	(See ISDR guidelines for flood risk management)
Forest Fire	4 depending on intensity of drought	1-10	50-1000	Coinciding with ENSO cycles	Environmental education (reducing sources of human fire)	(To be added)
Human Induced/ Technological Hazards						
Human epidemic	5 HIV/AIDS, malaria and dengue fever	50-100 or higher if there is risk factors	50-1000	(To be added)	Sanitation	Health Education
Industrial Accident	4, related to Urbanization	10-100	50-1000	Higher in areas of high	Enforcement of safety	Preparedness and emergency-operational response plans ready for training and

Event	Frequency	Potential Impact				Environmental management
		Mortality (persons)	Affected Population	Probability of occurrence	Risk reduction	
Natural Hazards						
(chemical spills & explosions, construction, munitions and bomb explosions)	and overall industrial development			population density and industrials districts	measures	implementation
Crop pests and diseases	In agricultural areas	Less than 10	50-1000	NA	(To be added)	Research
Urban/village fire	In areas of high population density or earthquake prone	10-100	50-1000	Higher in areas of high population density	Emergency plans for mass casualties with emergency responders	Safety education and risk communication to population
Terrorism	Government targets; militia in border areas	10-100	10-100	Higher in areas of high population density	Counter terrorism measures for Embassies in Dili and exterior	
Exotic animal disease	Manufahi, Viqueque	NA				
Air accident	Dili and	10-100	10-100	Active	Emergency	Decontamination of leakages, fire and

Event	Frequency Scale 1-10 (1 is lowest)	Potential Impact				Environmental management
		Mortality (persons)	Affected Population	Probability of occurrence	Risk reduction	
Natural Hazards						
	others			airports or flight paths	operational procedures	clean up debris
Maritime accident	Dili and surrounding sea	Less than 10			Emergency operational procedures, involving Maritime Police, and private sector assistance	(To be added)
War and conflicts	Border areas due to militias action	50-1000	1000-2000	NA	See Sub-plan F-FDTL operational procedures	(To be added)

Source: Adapted from UNDP/NDMO (2002). Preliminary Hazard Mapping for Timor-Leste. Prepared by Langeraar, Wine. February/March 2002. Dili.

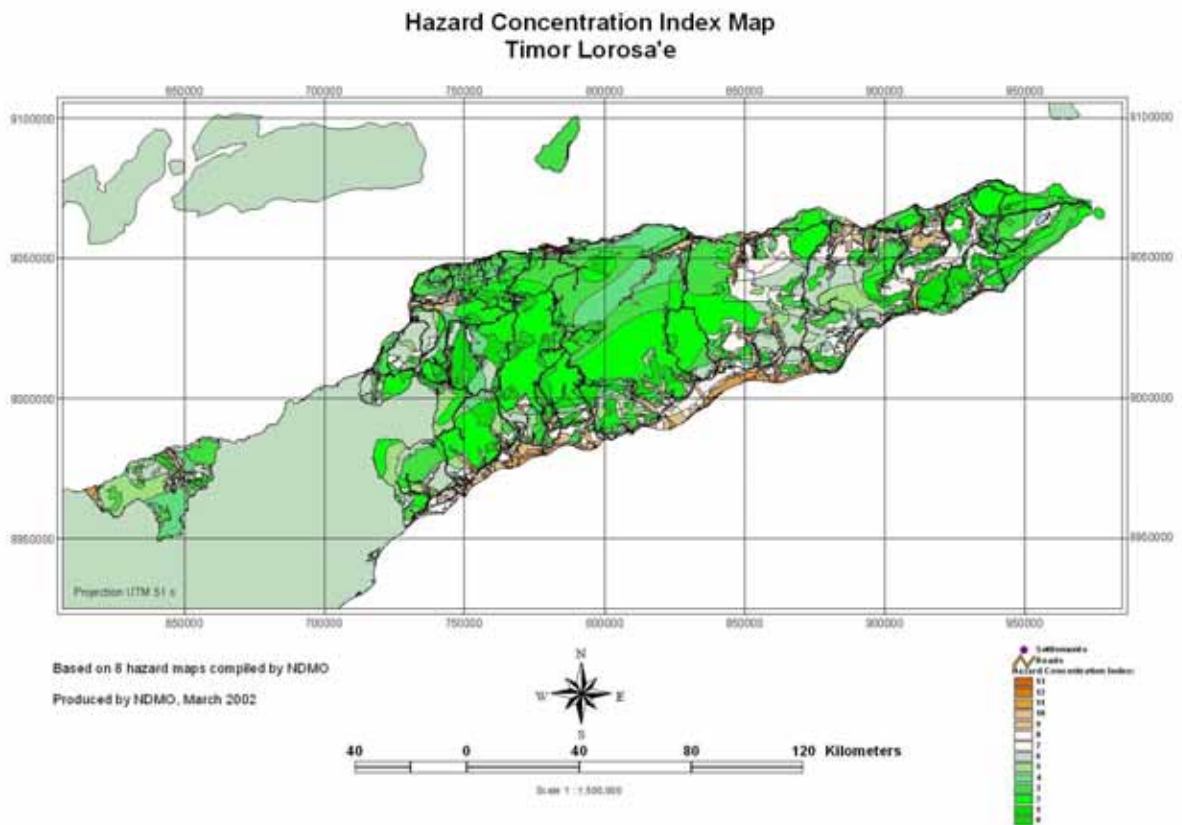
ANNEX 3. ISSUES TO BE ADDRESSED CONCERNING DISASTER RISK MANAGEMENT

(updated March 16 2005)

<i>1. Policy issues</i>	
Actual	Standard
No Act in place	Disaster Management Act
No Council in place	National Security Council (various Ministries)
No Framework in place	National Crisis Framework to guide districts
In place, but critical to enlist the involvement of all line ministries incorporating risk reduction measures linked to development programmes	Inter-ministerial Working Group for Natural Disasters and Executive Working Group for Emergencies
Available but weak, existing capacity needs to strengthened and equipped, little longer term capacity in order to adequately coordinate risk management activities and procedures	NDMO
Not available	National Disaster Committee
Available	Linkages with NGOs to reduce duplicity efforts in risk reduction
Not available	Health Disaster Risk Management Plan
<i>2. Organizational Issues</i>	
Actual	Standard
Not available	National Disaster Management Committee
Not in place	District Administrator should be formerly empowered as a District Disaster Coordinator (DDC)
Not in place	Communities Representatives DM
Not in place	District Disaster Management Committee (DDMC),
The function exist at NDMO in information gathering, but the system do not perform at standard level in information sharing, dissemination and risk communication	National Disaster Management Information System
Not in place	Women training in disaster risk reduction
<i>3. Preparedness and Training Needs</i>	
Actual	Standard
Not available	Training emergency responders
Not available	Schools for earthquake preparedness (national, district, sub-district)
Limited	Sub-plans (e.g., Health)
Not available	Tsunami, earthquakes and relevant hazards' community guidelines
<i>4. Vulnerability, Hazards Analysis and Monitoring</i>	

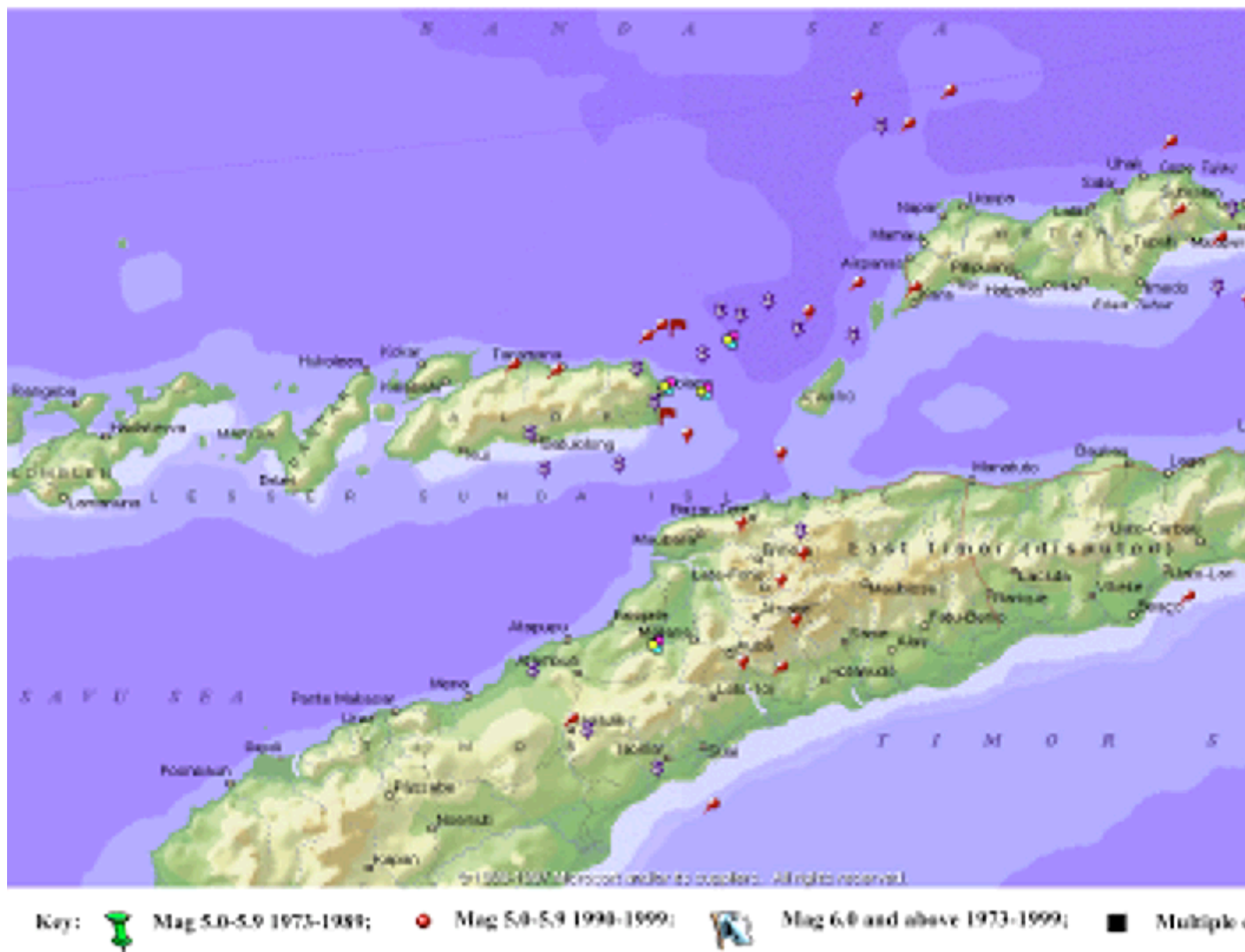
Actual	Standard
Not available	Hazard Monitoring: community based capacity building
Not available	Community alerting systems
Not available	Emergency risk communication at national, district and sub-district levels
Limited in technical expertise and information dissemination	National Disaster Management Information System (NDMO)
Limited and not integrated into a information network for all hazards agents	Warning systems
<i>5. Emergency Management</i>	
Actual	Standard
Limited and should be expanded; Maps needs to be acquired and training in how to read a map needs to be given	FAMU expanded functions to District & Sub District Disaster Coordinators
Not available	Joint National Disaster Operation Center (DOC)
Not available	National Activation System
Limited	Mapping Assets
Limited	Emergency Communication and Maintenance at Districts-Sub-district levels
Limited at NDMO, needs to be strengthened and empowered	Crisis/disaster Information/coordination Centre or similar
Not available	SUMA (disaster supply management) for health and other warehouse items

Annex 4. Hazard Concentration Index Map

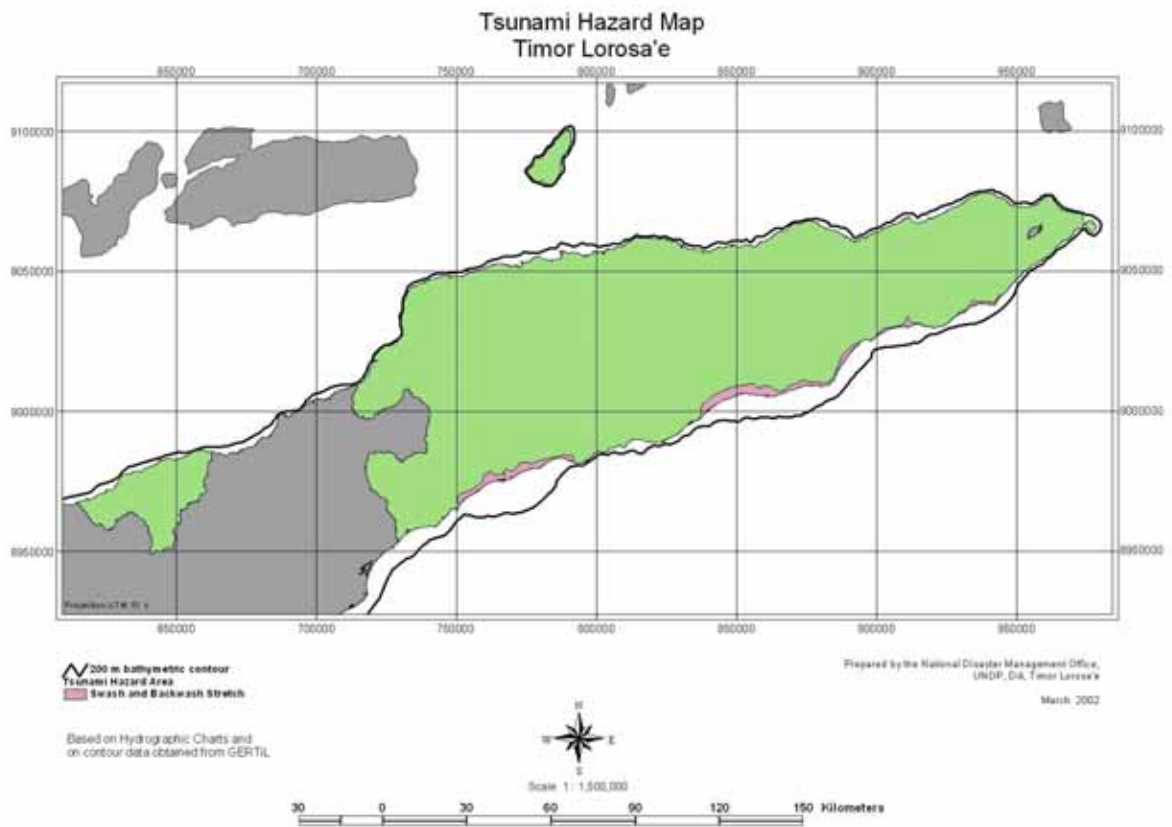


Annex 5. EARTHQUAKE EPICENTRES TIMOR-LESTE AREA 1973-1999

Earthquake Epicentres, East Timor Area 1973-1999.



Annex 6. Tsunami Hazard Map



ANNEX 7. NATIONAL ACTIVATION SYSTEM

The effectiveness of procedures under this plan will depend on effective and timely reaction from participating organizations. The following stages of activation are designed to establish a graduated and controlled mechanism which, when utilized correctly, will ensure that the level of staffing and reaction will be appropriate to the level of threat being posed.

This maximum protection - minimum disruption process is designed to avoid over response, and serve as a means of regulating action. Within this context, most disaster response operations of the type needed in Timor-Leste, can be handled by the Joint National Disaster Operations Centre and NDMO with assistance from appropriate departments and agencies without full activation of system described below. The stages of activation will also serve as a guide to departments and agencies on the stages they need to consider in the development of their internal response and preparedness plans. An outline of action within these stages is described below:

Stage One – Alert

This stage is declared by the National Disaster Coordinator, the Disaster Operations Centre (DOC) the NDMO Head, Disaster Management Operation Coordinator or Duty Officer as authorised by the Coordinator, when a warning or information is received that an event that could cause casualties or damage to Timor-Leste may occur. NDMO will advise relevant District Disaster Coordinators, members of the CCG and appropriate organizations that the Alert Stage has been declared and the reasons for activation.

The DOC/NDMO will be staffed, or a Duty Officer will be immediately contactable, at all times after the Alert Stage has been declared.

Checklist for Stage One – Alert

NDMO will

1. Advise Disaster District Coordinator (District Administrator);
2. Advise relevant lead agencies;
3. Advise the Minister responsible, who is also the National Disaster Coordinator;
4. Advise members of the CCG and Interministerial Commission for Natural Disasters;
5. Link with relevant scientific agencies (meteorology, geology etc) and request urgent updates/forecasts;
6. Confirm DOC is available and equipped for operations;
7. Confirm emergency vehicles are available and fuelled;
8. Check communications, charge battery-powered radios etc.;
9. Ensure warnings are being broadcast to the general public and that they include advice on actions to be taken;
10. Request stockpile holders to check stock levels.

Stage Two – Standby

This stage is declared by the National Disaster Coordinator or the NDMO Head as authorised by the National Disaster Coordinator, when a warning or information is received that an event that could cause casualties or damage to Timor-Leste is likely to occur. At Stage 2, the NDMO will provide a continuous staff presence aligned with other relevant agencies. All members of the Interministerial Commission for Disaster and response members and representatives of other relevant organizations will be advised that the Standby Stage has been declared and requested to place resources on standby.

The Commission will meet at the first available opportunity, if required by the NDC, to discuss preparatory actions and any special arrangements required.

Arrangements should be made to pass information on the threat to the public by every available means and to keep the community informed by regular updates.

Disaster Coordinators of Districts likely to be affected will be advised of the Stage Declaration. Relevant Committee Members should meet as soon as possible to consider any preparatory action necessary and to confirm that advice has reached Sub-Districts and villages.

Note 1: In some circumstances there may be no warning or insufficient warning of an impending threat and it may not be possible to progress through the Alert and Standby Stages.

Note 2: Should the threat not materialise, the Alert or Standby Stages may be terminated and the Stand Down Stage declared.

Checklist for Stage Two – Stand By

1. Advise Disaster District Coordinators suggesting that District Disaster Management Committees in threatened Districts meet as soon as possible to finalise preparations;
2. Advise appropriate lead agencies;
3. Advise the Minister responsible;
4. Advise members of the NDMC/Interministerial Disaster Commission ;
5. Arrange appropriate level of staffing at DOC if it is necessary by the magnitude of disaster;
6. Advise relevant scientific agencies (meteorology, geology etc) and request urgent updates/forecasts be sent to DOC and NDMO;
7. Complete any Stage One measures not completed;
8. Arrange an Interministerial Disaster Commission Meeting if necessary to discuss other preparatory measures;
9. Open emergency communications nets and place any necessary restrictions on radio and other traffic;
10. Position emergency vehicles in safe and responsive areas;
11. Ensure warnings are being broadcast to the general public and that they include advice on actions to be taken.

Stage Three – Activation

This stage is declared by the National Disaster Coordinator, or the Head of the NDMO, as authorised by the NDC, when a serious threat is imminent or when a disaster or emergency has

already occurred.

At Stage 3, the JNOC will be continuously staffed by NDMO staff, if it is activated. The JNOC or NDMO will advise relevant District Disaster Coordinators and all NDMC members that the Activation Stage of the plan has been initiated. The NDMO may also mobilise a team to go to the affected area and assist District response activity.

The CCG will meet and operate from the JNOC if both are activated. It will arrange provision of assistance to meet the needs of the situation relayed by District Disaster Coordinators. The NDMC will meet as necessary in a room close to the JNOC- preferably not in the JNOC itself – to provide policy and operational advice to the CCG.

District Disaster Coordinators will convene Committee meetings of relevant parties to coordinate response operations within the District. They will collect information on the impact of the disasters and organise formal surveys, the results of which will be used for their own coordination purposes and relayed to the JNOC or NDMO.

District response operations will be conducted with the use of all available resources to meet assessed needs. When District resources are unable to meet needs, the District Disaster Coordinator will forward requests to the National Disaster Coordinator, through the NDMO via the JNOC for national assistance. The NDMO may be brought in to assess a disaster, either at the request of the District Administrator or by its own initiative.

Sub District Disaster Coordinators will coordinate response operations in their Sub-Districts according to need and using resources available within the Sub-District. When local resources are unable to meet assessed needs, assistance is to be sought from the District Disaster Coordinator.

Checklist for Stage Three – Activation

1. Contact District Disaster Coordinators in affected Districts, requesting situation reports;
2. Advise the relevant lead agencies;
3. Activate JNOC fully, including CCG; if both are required;
4. Initiate damage and needs assessments (UNDAC protocols adapted);
5. Convene the NDMC if needed;
6. Confirm availability of emergency vehicles and vehicles for relief purposes;
7. Confirm stockpile status;
8. Open emergency communications nets and place any necessary restrictions on radio and other traffic;
9. Ensure information is being made available to the general public including advice on actions to be taken.

Stage Four – Stand Down

The National Disaster Coordinator will give the order for organizations to stand down once a full assessment has been made, the threat has abated, and/or disaster relief operations are well advanced. This will be a graduated process with organizations with limited involvement in the operations being stood down first. The Stand Down Stage will be the normal stage of this plan when **no threat exists**.

Checklist for Stage Four – Stand Down of the whole plan activation

1. Advise Disaster District Coordinators;
2. Advise the relevant agencies;
3. Advise the NDC;
4. Advise members of the NDMC;
5. Advise relevant scientific agencies (meteorology, geology etc);
6. Collect all records, copy map info, board info, computer disks etc. and file;
7. Return any borrowed equipment;
8. Check stationery and equipment, arrange any maintenance and restocking;
9. Prepare a final Situation Report and include advice that the response operation is closing down and that no further reports will be issued;
10. Prepare a final media release for public distribution containing a summary of final activities and confirming that the Plan is deactivated;
11. Request stockpile holders to check remaining stock levels and restock;
12. Organize a debrief with GTL and non-government stakeholders within a month of the close of responses to the disaster;
13. Plan recovery needs of the disaster. If required recommend the establishment of a Recovery Committee to coordinate assessments and recovery activity.

DISTRICT LEVEL ACTIVATION

On first hearing of a disaster in the District, a District Disaster Coordinator may activate similar stages of activation at District level. The National Disaster Coordinator is to be advised, through the NDMO or JNOC, when any Stage of Activation is declared at District level.

ANNEX 8. CONSIDERATIONS RELATING TO DISASTERS AND EMERGENCIES CAUSED BY SPECIFIC HAZARDS

A. FLOOD

Timor-Leste is affected by flooding. **Rain-induced flash floods** can occur in any part of the country during and after heavy rain. These floods are most likely to occur in the monsoon season between November and March each year and in the south between May and August although floods have been recorded outside these periods. In general they rise and fall quickly but the speed of the flood current is as significant as the depth of the water in causing casualties and damage.

- Flash flooding usually subsides in a matter of hours.
- Flash flood casualties and damage are often caused by water speed and debris as much as water depth.
- Wide-area flooding is more pervasive and slower to subside but also gives more time for action.
- Water-borne disease can be a serious secondary risk – people should be advised to boil water for drinking and to prevent children from playing in flood waters.
- Insect-borne diseases (malaria, dengue etc) can increase in the periods after floods.

Priorities for Action

- Search and rescue of survivors.
- Assessment of the affected area for casualties, damage, and needs.
- Identification of available helicopters, high clearance vehicles for rescue of stranded people.
- Rapid medical response to deal with injured.
- Evacuation of people if necessary to safer areas.
- Provision of emergency shelter.
- Environmental health team to check for secondary risks of disease.
- Provision of safe drinking water.
- Restoration of roads, communications, and other infrastructure.
- Provision of supplementary food rations.
- Provision of seeds and planting material for replanting of affected crops.

Before the Flood
Permanent precautions

1. The easiest way to avoid a flood is to rent or purchase property that is above the flood plain. If you are in question as to the location of the flood plain, local insurance representatives or government officials should have the information available.

2. If you cannot avoid using property on the flood plain, the following precautions should be taken:

- (a) Keep on hand materials like sandbags, plywood, plastic sheeting and lumber;
- (b) Install check valves in building sewer traps to prevent flood water from backing up in sewer drains; and
- (c) Keep your automobile fuelled; if electric power is cut off, filling stations may not be able to operate pumps for several days.

When you receive a flood warning and are likely to be affected

If you receive a flood warning and are likely to be affected, take the following steps:

- a. Act on any warning and instructions given over the radio or by the Designated Official, Civil Defence officials or the Local Law Enforcement Agency;
- b. Disconnect electrical appliances;
- c. Move all valuable personal and household goods, food, clothing, etc. out of reach of water;
- d. Remove weed killers, insecticides, etc. out of likely reach of water, as these could cause dangerous pollution; and
- e. Store clean drinking water in various containers. Water service may be interrupted.

If you have to evacuate

If you are forced to leave your home, the following steps should be taken:

- a. Move essential items to safe ground; fill tanks to keep them from floating away; grease immovable machinery;
- b. Turn off electricity, gas, central heating oil; lock doors and windows;
- c. Do not leave any perishable food items in the refrigerator or freezer -- they shall only spoil and destroy the appliance;
- d. Move to a safe area before access is cut off by flood water; and
- e. Take with you food, drinking water, warm clothing, personal and family documents, any essential medicines and infant care and personal toiletry items.

During the Flood

During the flood it is important to take the following measures:

- (a) Do not attempt to cross a flowing stream where water is above your knees. Be particularly careful of culverts into which you or children might be pulled and dams over which you could be swept;
- (b) Do not attempt to drive over a flooded road or stream crossing -- you can be stranded and trapped or, even worse, swept downstream;
- (c) Keep listening to the instructions given over the radio;
- (d) Avoid unnecessary exposure to the elements;
- (e) Do not drink flood water -- it is polluted; and
- (f) Keep away from places where a landslide may occur (steep slopes, etc.).

B. STORM SURGE FLOODING

Storm-surge flooding may also occur in low-lying coastal areas when a low barometric pressure system coincides with heavy on-shore winds and waves. Although such flooding is often associated with tropical cyclones, it can also occur during less severe storms.

- Storm surge, or tidal surge, occurs when a deep low pressure centre is close to or crossing the coast.
- The sea level can rise by as much as five metres in some parts of the world but is likely to be smaller, perhaps one to two metres, in this region.
- A storm surge can flood low-lying coastal areas, particularly if it coincides with high tide.
- A storm surge is usually accompanied by strong winds and waves which can cause additional damage to exposed coastal areas.

Potentially, the most destructive phenomenon associated with tropical cyclones that make landfall is the storm surge. Storm surge is a raised dome of water about 60 to 80 km across and typically about 2 to 5m higher than the normal tide level. If the surge occurs at the same time as a high tide then the area inundated can be

quite extensive, particularly along low-lying coastlines.

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Source: Adapted from Emergency Management Australia (2005) in consultation with State/Territory Emergency Services.

Priorities for Action

- If a gale warning, storm warning, or cyclone warning contains a warning that abnormal tides may be experienced, ensure that this warning is passed to the public.
- Discuss the warning with NDMO which is in contact with forecasters for Timor-Leste and decide whether to recommend evacuation of vulnerable areas.
- After the event follow the appropriate flood actions listed above

C. TROPICAL CYCLONE and STORMS

Although Timor-Leste lies close to tropical cyclone formation areas, there is no record of a tropical cyclone having crossed the coast in the last 30 years. Three tropical cyclones that have passed close to the country since 1973 (in 1973, 1983 and 1991) would have caused gale-force winds and heavy rain and such events could occur at any time in the future. Darwin Tropical Cyclone Warning Centre issues tropical cyclone warnings for the region in accordance with the procedures established by the World Meteorological Organization (see www.wto.int)

Tropical storms of lower intensity than tropical cyclones can occur in Timor-Leste. In addition to bringing heavy rain, these storms can bring locally strong winds and gales. In 1993, a tropical storm damaged or destroyed about 400 houses. In the absence of a Timor-Leste meteorological service, the Australian Bureau of Meteorology office in Darwin prepares general weather forecasts for Timor-Leste twice daily and issues warnings of the likely occurrence of extreme weather events such as tropical storms (see www.agso.gov.au/bin/list).

- Tropical cyclones form in tropical oceanic waters at sea water temperatures greater than 26C when there is high relative humidity and atmospheric instability.
- Because the rotational movement of cyclones is the result of Coriolis force, the storms can only form at latitudes greater than 4-5 degrees north or south of the Equator.
- In the southern hemisphere, tropical cyclones rotate in a clockwise direction.
- The influences on the movement of tropical cyclones are still not fully understood. While movement forecasts are provided by meteorological services, they contain a margin of error and precautions must be taken at any time that a tropical cyclone is active in the area.
- In general, tropical cyclones that form and move in Timor-Leste's region will move west and south and will still be growing in intensity.

SEVERITY CATEGORIES

The severity of a tropical cyclone is described in terms of categories ranging from 1 to 5 related to the zone of maximum winds. An estimate of cyclone severity is included in all tropical advices. Remember that the Warning Service is not designed to give an exact statement of conditions at individual locations but will give a general idea of the expected worst conditions. Using this severity scale, communities will be able to assess the degree of cyclone threat and take appropriate action. Damage will vary depending upon factors such as:

- How far you are from the zone of maximum winds;
- How exposed the location is;

- Building standards;
- Vegetation type; and
- Resultant flooding.

The category does not refer to the amount of flooding or storm tides. If a storm tide is expected it will be mentioned separately in the cyclone warning.

Error! Unknown switch argument.

Source: Emergency Services Australia (2005).

Priorities for Action

- Search and rescue of survivors.
- Rapid medical response to deal with the injured.
- Re-establishment of communications with the affected area.
- Identification of available helicopters, vehicles, plant, skills and other resources for relief operations.
- Assessment of the affected area for casualties, damage, and needs.
- Check for secondary risks.
- Provision of emergency shelter.
- Provision of safe drinking water.
- Provision of supplementary food rations.
- Provision of other supplies to meet community needs.
- Restoration of roads, communications, and other infrastructure needs.
- Encourage early cleanup of debris, salvaging useful items, and repair of damaged buildings etc using stronger methods of construction in the repair.
- Provide seeds and planting materials for restoration of crops.
- Throughout, keep the community informed by whatever methods reach them most effectively.

Tropical storms are known as hurricanes, typhoons and cyclones. If **strong winds** and **storm surges** are phenomena that accompany a tropical cyclone, it should be kept in mind that **river floods** also constitute a high risk. Actually, **most of the damage is usually caused by the action of water and not wind**. Therefore, the instructions given above for floods also apply in the case of a tropical storm.

Before the storm strikes

At the beginning of the typhoon/storm season

As for any natural disaster, preparation is the ultimate defence against injury and damage. The following steps shall help to reduce both:

- (a) Make a thorough check of your shutters, hooks and latches;
- (b) Check that the galvanized sheeting or other material of the roof of your house is properly fastened;
- (c) Keep nails, hammers, wire, rope and pliers handy;
- (d) Keep a supply of timber in order to board up windows and doors;
- (e) Keep a sufficient supply of kerosene oil available for domestic purposes;
- (f) Keep a flashlight, hurricane lamp, candles and matches in your house, together with simple first-aid equipment such as iodine, bandages, eye lotion, etc. and keep them handy;

- (g) See that there are adequate water storage facilities such as tanks, drums, barrels, etc. If possible, tanks should be available in your house well in advance of the hurricane season;
- (h) Re-stock your supply of non-perishable foods, especially things which can be eaten readily without cooking or with very little preparation; and
- (i) See that you have a transistor radio with enough spare batteries.

When you hear the first typhoon/storm advisory

Listen for weather bulletins, announcements and future messages; this shall prepare you for a hurricane emergency well in advance of the issuance of watches and warnings.

When your area is covered by a typhoon/storm watch

Continue normal activities, but stay tuned to radio or television for all weather service advisories. Remember, a hurricane watch means possible danger within 24 hours; if the danger materializes, a hurricane warning shall be issued. Meanwhile, remain alert and **Ignore rumours**.

When your area receives a typhoon/storm warning

The best defence against a typhoon or hurricane is to leave the coastal area, if possible. Should evacuation not be possible, take the following steps:

1. **Stay calm.** Your ability to meet emergencies shall inspire and help others;
2. **Plan your time** before the storm arrives and avoid the last-minute hurry which might leave you marooned or unprepared;
3. **Keep calm** until the emergency has ended;
4. Listen to the radio. If you live in isolated parts of the country, make sure that your neighbours are aware of the latest situation reports;
5. Pay no attention to rumours. Rely on official advice and warnings;
6. Get away and stay away from low-lying beaches or other locations which may be swept by high tides or storm waves (storm surges). If your only passage to high ground is over a road likely to be under water during a severe storm, then leave early. Do not run the risk of being marooned;
7. If your house is out of danger of high tide and storm surge and is well-built (securely anchored to a foundation with a good roof also securely fastened), then it is probably the best place to weather out the storm if you are unable to evacuate the area;
8. Store extra food. Remember that electricity may be cut-off and you may be without refrigeration;
9. Store a several-day supply of drinking water, as cisterns and wells may become polluted from salt water and other causes. Sterilize the bathtub and fill it with water. Also sterilize and fill all jugs, bottles, cooking utensils and other containers, as water services may be interrupted;
10. Disconnect the intake of your cistern and block the outlet as tightly as possible, since the water in the cistern may become contaminated with salt water;
11. **Board up windows** or protect them with storm shutters and/or tape. When you board up, use good wood, which can be securely fastened. Danger to small windows is mainly from wind-driven debris. Larger windows may be broken by wind pressure;
12. Secure outdoor objects, which might be blown away or be uprooted. Garbage cans, garden tools, signs, porch furniture and a number of other harmless items become missiles of destruction in hurricane winds. Anchor them or store them inside before the storm strikes;
13. Heavy foliage of fruit trees should be lightened;
14. Moor your boat securely before the storm arrives, or evacuate it to a designated safe area. When your boat is moored, leave it and do not return once the wind and waves are up; and
15. Make certain you have gasoline in your car.

- **ON WARNING OF LOCAL EVACUATION**

Based on predicted wind speeds and storm surge heights, evacuation may be necessary. Official advice will be given on local radio/TV regarding safe routes and when to move.

- Wear strong shoes and tough clothing for protection.
- Lock doors; turn off power, gas, and water; take your evacuation and emergency kits.
- If evacuating inland (out of town), take pets and leave early to avoid heavy traffic, flooding and wind hazards.
- If evacuating to a public shelter or higher location, follow police Civil Protection directions.
- If going to a public shelter, take bedding needs and books or games for children.

Leave pets protected and with food and water.

During the passage of the typhoon/storm

1. **Stay indoors.** Keep off the streets during the passage of a hurricane unless it becomes absolutely necessary.

2. **Stay in a safe place.** If the eye of the storm passes over your area, there may be a lull lasting from a few minutes to half an hour or more. Only make emergency repairs during the lull **if necessary**, but remember the wind shall return suddenly from the opposite direction, frequently with even greater violence (remember to check that a window or door can be opened on the new leeward side of the house and board up the one you kept free before).

After the typhoon/storm has passed

1. Do not touch loose or dangling electrical wires or power lines. Report such damage directly to the electricity authority, nearest police office or office of the public works department.

2. Don't go outside until officially advised it is safe. Listen to local radio for official warnings and advice.

2. Report broken sewer or water mains directly to the sewerage or water authority, or to the nearest police office or any available authority.

3. Do not empty water stored in bathtubs or other receptacles and boiled drinking water until you are sure that a safe water supply has been restored.

4. Be alert to prevent fires. Lower water pressure or broken mains make fire-fighting very difficult.

5. Guard against spoiled food in refrigerators if the power has been cut off for any length of time.

6. Beware of broken trees. Pick up fallen branches and other debris and pile them where they can be most easily collected. If you have to evacuate, or did so earlier, don't return until advised. Use a recommended route and don't rush.

7. Drive motor vehicles cautiously. Debris-filled streets and roads are dangerous. In addition, where a road passes near the edge of a cliff or a riverbank, the soil may be washed away underneath and the road may collapse under the weight of vehicles.

D. LANDSLIDE

The steep slopes and unstable soils that exist in Timor-Leste pose a significant landslide risk in most areas. Landslides may be triggered after heavy rain or by seismic activity and the speed of the slide will be affected by the gradient on which the slide occurs as well as soil composition. Deforestation and vegetation destruction by fire or other causes, as well as inappropriate agricultural activity, can make areas more prone to landslides.

- Landslides can be caused by heavy rain, by water breaking the bond between layers of subsoil, or by earthquakes.
- They can occur immediately after the rainfall or earthquake.
- The speed of movement can be as slow as few centimetres per year or as fast as an avalanche.
- Slides can vary in volume from a few kilograms of light soil to millions of tonnes of rocks, soil, vegetation and other debris.
- Landslide debris can travel a few metres or many kilometres.
- The surface left behind after a landslide may in itself be unstable.

Priorities for Action

- Identification of available helicopters, vehicles, plant, skills and other resources for rescue of any buried people.
- Stabilisation of the slope.
- Search and rescue of survivors.
- Rapid medical response to deal with the injured.
- *Assessment of the affected area for casualties, damage, and needs.*
- Check for secondary risks.
- Provision of emergency shelter.
- Provision of safe drinking water.
- Provision of supplementary food rations.
- *Provision of other supplies to meet community needs.*
- Restoration of roads, communications, and other infrastructure needs.

E. EARTHQUAKE

An earthquake is the ground shaking caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up and the rocks slips suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that we feel during an earthquake. An earthquake occurs when plates grind and scrape against each other (see also Table XX ? and Appendix www.usgs.gov/about_us.html).

The magnitude of an earthquake is related to the length of the fault on which it occurs -- the longer the fault, the larger the earthquake. To generate an earthquake of 10.5 magnitude would require the rupture of a long fault. No fault long enough to generate a magnitude 10.5 earthquake is known to exist. The largest earthquake ever recorded was a magnitude 9.5 on May 22, 1960 in Chile on a fault that is almost 1,800 km long. The magnitude scale is open-ended, meaning that science has not put a limit on how strong an earthquake could be, and scientists are only been measuring earthquakes for 100 years, a blink of an eye in geologic time.

Foreshock" and "aftershock" are relative terms. Foreshocks are earthquakes that precede larger earthquakes in the same location. Aftershocks are smaller earthquakes that occur in the same general area during the days to years following a larger event or "main shock". So if an "aftershock" is bigger than its "main shock", we change the names and call the first one the foreshock and the large "aftershock" becomes the main shock. Most aftershocks occur on the same fault as the main shock, but other faults nearby and extensions of the main shock fault will also produce aftershocks. Historically, deep earthquakes are much less likely to be followed by aftershocks than are shallow earthquakes.

Timor-Leste lies close to the boundary between the Indo-Australian and Eurasian tectonic plates – an area of high seismic activity. The extent to which regional earthquakes affect the population depends on the magnitude of the earthquake, the depth at which it occurs and the geology of the areas in which it occurs as well as the geology of the surrounding area. There is no regular pattern to earthquake activity although clusters of events do occur periodically and a major earthquake is usually followed by a series of aftershocks of declining magnitude. No reliable earthquake warning technique has been identified internationally.

The US Geological Survey Earthquake Data Base lists 60 earthquakes of magnitude 5.0 or greater that occurred within 150 km of central Timor-Leste between March 1973 and December 1999. Most of the significant earthquakes occurred between Alor and Wetar islands, including the four events with a magnitude greater than 6.0. Only one event, on 14 May 1995, appears to have caused significant damage in Timor-Leste. The map in Appendix XX shows the location of the epicentres of these events. It can be seen that the epicentres that lie under Timor-Leste itself nearly all occurred either south or southwest of Dili.

- Earthquakes usually occur without warning and may be followed by a series of aftershocks that can last for hours, days, or weeks.
- Aftershocks are usually of lesser magnitude than the original event but may still be significant in their impact.
- The motion in an earthquake can be lateral, or vertical, or a combination of the two.
- The magnitude of an earthquake (usually measured on the Richter scale) does not indicate the intensity of the effect at a particular location.
- Earthquake damage depends on a variety of factors, including the depth of the original event, the geological structure of the area, distance from the event, and the type of structure affected. For example, a magnitude 7 earthquake 600km deep will usually have little impact whereas a magnitude 4 event close to the surface can cause damage. Results at a particular location are usually measured on one of a variety of scales, of which the modified Mercalli Scale is most commonly used in this region. This scale measures the effect of the earthquake at a particular site. For further information see Annex XX on the relationship of plate tectonics and earthquakes, earthquakes and tsunamis, and tsunamis earthquakes).

Priorities for Action

- Initiate search and rescue action.
- Locate the epicentre (within 30 minutes of earthquake occurrence) by contacting the NDMO which will be in link with the Duty Epidemiologist at the Australian Seismology Centre. Information will be also placed with the US Geological Survey Near Real Time Earthquake Bulletin (<http://neic.usgs.gov/neis/bulletin.html>) or the Edinburgh University Global Earthquake Locator (<http://www.geo.ed.ac.uk/quakexe/quakes>).
- If substantial building damage has occurred and significant numbers of people are trapped, consider seeking international urban search and rescue assistance through the UNDP

Resident Representative who will contact UNOCHA Geneva. This is URGENT, as the first 24-48 hours are critical for rescue. If seeking assistance indicate the size of the problem or Timor-Leste may be overwhelmed by the response if it is not controlled.

- Identification of available helicopters, vehicles, plant, skills and other resources for rescue of any buried people.
- Initiate rapid medical response to deal with the injured.
- Assessment of the affected area for casualties, damage, and needs.
- Identify engineers and begin surveys of damaged buildings.
- Check for secondary risks.
- Provision of emergency shelter.
- Provision of safe drinking water.
- Provision of supplementary food rations.
- Provision of other supplies to meet community needs.
- Restoration of roads, communications, and other infrastructure needs.

Before the Earthquake

The exact timing of the earthquake cannot be predicted. People living in earthquake-prone areas can take a number of safety measures to minimize the effects. It must be kept in mind that very often the number of casualties and damage are not caused by the earthquake itself but by the fires that often follow. Thus, particular attention should be paid to reduce the risk of fire (from open flames, stoves, electrical wires and appliances).

At home

1. ASK AN ENGINEER about the seismic safety of your home and/or business. It's well known that unreinforced masonry structures can fail quickly during earthquakes. An inspection by a structural engineer now can help you decide if retrofitting will help your property withstand shaking.
2. Check that your house is built on solid ground, not fill.
3. Check every part of the house for fire prevention:
 - (a) Put bottles of benzene or thinner firmly on the back of a shelf so that they shall not fall;
 - (b) Do not store on shelves items, which are likely to fall;
 - (c) Ensure propane gas cylinders cannot fall over;
 - (d) Make a habit of checking the safety of cooking stoves;
 - (e) Get a fire extinguisher with appropriate capacity;
 - (f) Put lids on buckets to prevent overflowing; and
 - (g) Choose stoves designed not to turn over, and do not keep any flammable articles beside the stove.
4. Identify an emergency exit and ensure it is free of any obstacles. If possible, avoid staircases. If this is not possible, they should have banisters on each side and should be kept clear of any kind of obstacles such as toys, bottles, boxes, etc.
5. Ensure that all doors to the emergency exit always have a key in the interior lock
6. Make sure each member of your family knows what to do no matter where they are when earthquakes occur;
7. Establish a meeting place where you can all reunite afterward;
8. Find out about earthquake plans developed by children's school;
9. Remember transportation may be disrupted, so keep some emergency supplies--food, liquids etc.
10. KNOW where your gas, electric and water main shutoffs are and how to turn them off if there is a leak or electrical short. Make sure older members of the family can shut off utilities;
11. LOCATE your nearest fire and police stations and emergency medical facility;

12. TALK to your neighbours--how could they help you, or you them after an earthquake?
13. MAKE your disaster supply kit. Beyond the usual flashlights, batteries and radios, include a first-aid kit; work gloves; sturdy shoes or boots; a week's supply of any prescription medications you or your family might need; cash; personal identification; extra set of keys; matches in a waterproof container; map of your area; phone numbers of family and other important people; important documents; three gallons of water per person; three-day supply of food per person; hand tools; a portable ABC fire extinguisher; sanitation supplies for you and your family;
14. BOLT bookcases, china cabinets, tall furniture, file cabinets, etc. to wall studs. Brace or anchor heavy electronics and other heavy items. Secure items that might fall. Move heavy or fragile items to lower shelves. Fasten drawers and cabinet doors with latches or locks. Brace overhead light fixtures. Strap your water heater to wall studs and bolt down any gas appliances. Look for other non-structural steps you can take in your home and workplace to reduce your chances for injury and loss.

At your place of work

- Allow tasks to each person in case of earthquake, such as a group responsible for fire-fighting, a group in charge of emergency evacuation, and a rescue group;
- Have a earthquake simulation for office staff highlighting escape routes, self-protection aspects avoiding being hurt and making the wrong decision in attempting to escape from a earthquake;
- Designate an assembly point, outside and a safe distance from the building, where staff can assemble after the earthquake for a roll-call to determine if any individuals are trapped in the building. This procedure is the same as it would be for a fire drill.

What to do during the earthquake:¹

In modern homes doorways are no stronger than any other parts of the house and usually have doors that will swing and can injure you.

- **YOU ARE SAFER PRACTICING THE “DROP, COVER, AND HOLD”** manoeuvre under a sturdy piece of furniture like a strong desk or table.
- **If indoors**, stay there. Drop to the floor, make yourself small and get under a desk or table or stand in a corner.
- **If outdoors**, get into an open area away from trees, buildings, walls and power lines.
- If in a high-rise building, stay away from windows and outside walls, stay out of elevators, and get under a table.
- **If driving**, pull over to the side of the road and stop. Avoid overpasses and power lines. In the countryside: stop the vehicle in the closest safe place, away from slopes where landslides may occur, and, if possible, from trees. Remain inside your vehicle until the shaking stops; in a city or town: stop as quickly as safety permits (far from tall buildings, if possible) and stay in the vehicle until tremors subside.
- **If in a crowded public place**, do not rush for the doors. Crouch and cover your head and neck with your hands and arms. You should practice the “DROP, COVER AND HOLD” method at work and at home at least twice a year.

After the earthquake:

¹ Source: <http://earthquake.usgs.gov/bytopic/megaqk.html>

At your place of work

1. Act in accordance with the emergency role assigned to you.
2. Check that there is no fire where you are. Fight fires as they start.
3. Obey the instructions of the person responsible for fire prevention.
4. The use of dangerous objects or equipment with flame should be stopped immediately.
5. Lead evacuees to the designated safe place for the roll-call.

If you are indoors

1. You should first take care of fire at home. If a fire starts, put it out promptly.
2. Do not use candles, matches or other open flames, **either during or after the tremor.**
3. Check your utilities, but do not turn them on. Earth movement may have cracked water, gas, and electrical conducts.
4. If you smell gas; open windows and shut off the main valve, then leave the building and report gas leakage to authorities. Do not re-enter the house until a utility official says it is safe.
5. If water mains are damaged, shut off the supply at the main valve.
6. If electrical wiring is damaged, close the switch at the main meter box.
7. Turn on your radio or television (if conditions permit); information and instructions shall be passed by radio.
8. Stay off the telephone except to report an emergency.
9. Calmly leave the building (do not run) and go to open spaces. Look out for falling debris. If you are in town, keep away from buildings (for a distance of at least half the height of the tallest one).
10. Do not go sightseeing.
11. Stay out of severely damaged buildings; after-shocks can shake them down;

If you are outdoors

- Stay outdoors and go to open spaces.
- If you are driving, slow down and listen for radio information (if available).

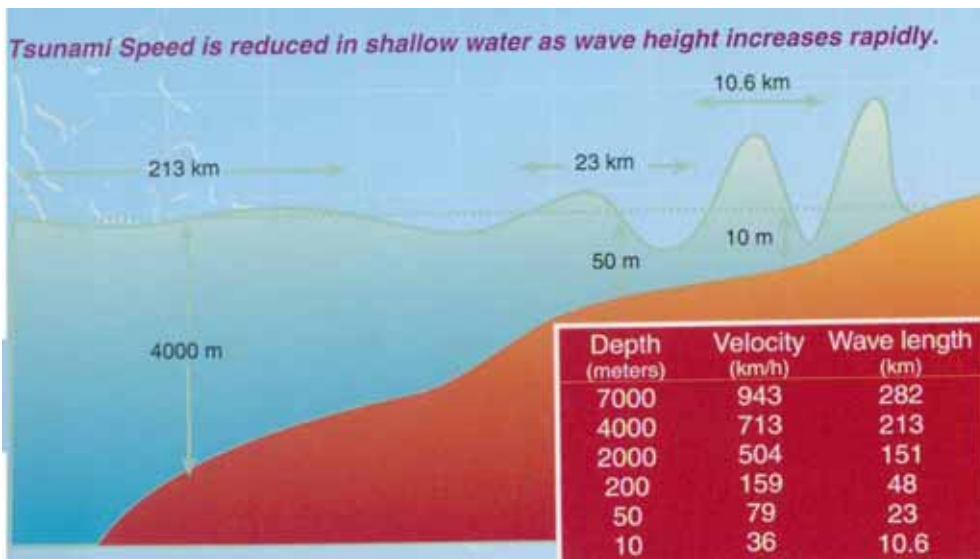
When you take shelter

- In a severe earthquake, roads shall be broken up, traffic signals shall not work and there shall be confusion. It may be better to evacuate on foot than by car, as it could be dangerous. False rumors are apt to circulate after tremors and more so after a severe earthquake. Await instructions from the NDMO, which shall probably come by radio or through the warden system, before evacuating;
- Take with you minimal personal belongings that you would need in case of emergency (15 Kilos bag). Pieces of furniture or large luggage carried onto the road shall get in the way of evacuees and rescue teams; and
- Avoid walking along a wall, under a cliff or by a river. Be careful of broken electrical wires hanging down. Take a cushion with you to protect your head from falling objects.

F. TSUNAMIS

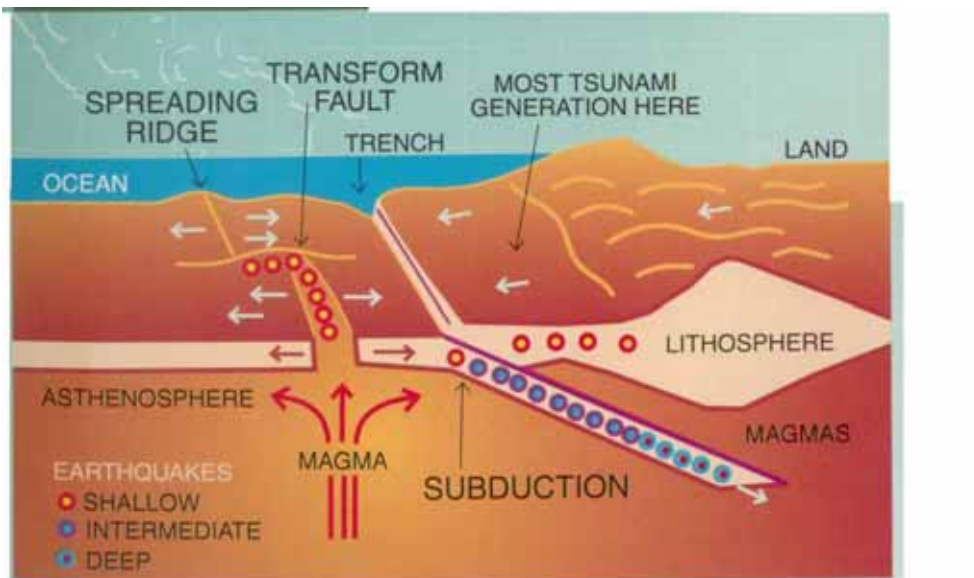
A tsunami is a series of travelling ocean waves of extremely long length waves generated primarily by earthquakes, occurring below or near the ocean floor. Underwater volcanic eruptions and landslides can also generate tsunamis. In the deep ocean, the tsunami waves, propagate across the deep ocean with speed exceeding 800 kilometres per hour (up to 500 miles per hour, and a wave height of only a few tens of centimetres (1 foot or less). Tsunami waves are distinguished from ordinary ocean waves by their great length between wave crests, often exceeding a 100 km (60 miles) or more in deep ocean, and by the time between these crests, ranging from 10 minutes to an hour. Figure XX shows the speed when is reduced in shallow water.

Figure 1 Tsunami speed and wave height increase



As they reach the shallow waters of the coast, the waves slow down and the water can pile up into a wall of destruction tens of meters (30 ft) or more in height. The effect can be amplified where a bay, harbour or lagoon funnels the wave as it moves inland. Large tsunamis have been known to raise over 30 meters (100 ft). Even a tsunami 3-6 meters high can be very destructive and cause many deaths and injuries. Figure 2. below shows the relationship between the two hazards².

Figure 2. Earthquakes and tsunamis



An earthquake can be caused by volcanic activity, but most are generated by movements along fault zones associated with the plate boundaries. Most strong earthquakes representing 80% of the total

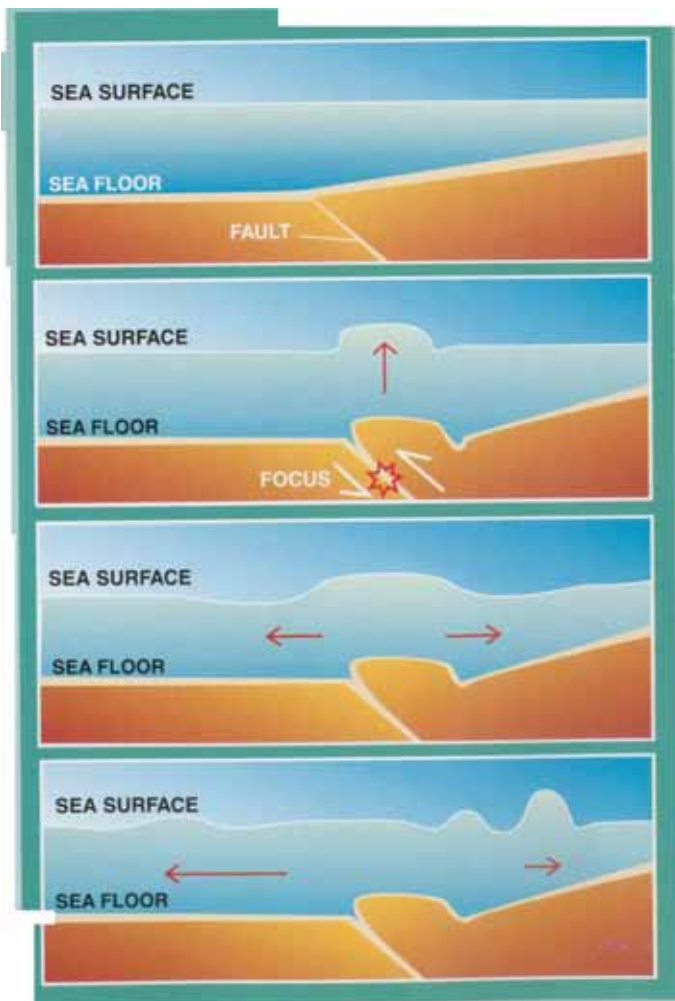
² Information and graphics based on a Brochure produced by UNESCO, US Department of Commerce, International Tsunami Information Center and Laboratoire de Geophysique, France (2002).

energy released worldwide by earthquakes, occur in subductions zones where an oceanic plate slides under a continental plate or another younger oceanic plate.

Not all earthquakes generate tsunamis. To generate a tsunami, the fault where the earthquake occurs must be underneath or near the ocean, and cause vertical movement of the seafloor (up to several meters) over a large area (up to a hundred thousand square kilometers). Shallow focus earthquakes (depth less than 70 km or 42 mi) along subductions zones are responsible for most destructive tsunamis. The amount of vertical and horizontal motion of the sea floor, the area over which it occurs, the simultaneous occurrence of slumping of underwater sediments due to shaking, and the efficiency with which energy is transferred from the earth's crust to the ocean water are all part of the tsunami generation mechanism.

There is a relationship between tsunami and the seismic source. Figure XX shows magnitude, epicenter and focus.

Figure 3 The relation with the seismic source



Source: ISDR Brochure (2005). Kobe, Japan

The earthquake **focus** is the point in the earth where the rupture first occurs and where the first seismic waves originate. The **epicenter** is the point on the Earth's surface directly above the focus. The magnitude is the logarithm of the maximum amplitude of one of the seismic waves (P, S, Rayleigh or Love surface waves) recorded by the seismometer; and increase in one unit of magnitude corresponds to a factor of 10 increase in amplitude.

Earthquakes that occur in the region around Timor-Leste, and are most likely along the north coast may generate tsunamis. As warning time is short, public information campaigns that enable people to recognize the possibility of tsunamis and their potential effects are important. The only tsunami

in Timor that is recorded in the international tsunami database followed an earthquake in south-eastern Alor on 14 May 1995. It generated a tsunami that reached a height of 4 metres along the north coast of Timor. Smaller local tsunamis may also have occurred but are not recorded.

Notable Tsunamis

December 26th 2004: The earthquake generated a large tsunami that traveled rapidly throughout the Indian Ocean, striking beachfront areas in many countries with catastrophic results in Indonesia, Thailand, Sri Lanka, India and Bangladesh, as well as other Asian and East African countries. More than 250,000 people died only in Indonesia with many more still missing, while infrastructure, productive activities and the natural environment were either destroyed or damaged. The tsunami traveled at high speeds. BMG estimates the tsunami took 45 minutes to reach places 120 kilometers from the epicenter; in 2 hours, it had traveled 1000 kilometers. Without effective early warning systems, people were unaware of the incoming tsunami, and the death toll was extremely high as a result.

July 17, 1998: An offshore quake triggers a wave that strikes the north coast of Papua- New Guinea, killing some 2,000 people and leaving thousands more homeless.

August 16, 1976: A tsunami kills more than 5,000 people in the Moro Gulf region of the Philippines.

March 28, 1964: The Good Friday earthquake in Alaska sends out a wave swamping much of the Alaskan coast and destroying three villages. The wave kills 107 people in Alaska, four in Oregon and 11 in California as it sweeps down the US West Coast.

May 22, 1960: A wave reported as up to 35 feet high kills 1,000 people in Chile and causes damage in Hawaii, where 61 people die, and in the Philippines, Okinawa and Japan as it sweeps across the Pacific.

April 1, 1946: An Alaskan quake generates a tsunami that destroys North Cape Lighthouse, killing five. Hours later the wave arrives at Hilo, Hawaii, killing 159 people and doing millions of dollars in damage.

January 31, 1906: A devastating offshore quake submerges part of Tumaco, Colombia, and washes away every house on the coast between Rioverde, Ecuador, and Micay, Colombia. Death toll estimated at 500 to 1,500 people.

June 15, 1896: The Sanriku tsunami strikes Japan without warning. A wave estimated at more than 70 feet high hits a crowd gathered to celebrate a religious festival, killing more than 26,000 people.

August 27, 1883: The eruption of the volcano Krakatau (also spelled Krakatoa) generates a massive wave that sweeps over the shores of nearby Java and Sumatra, killing 36,000 people.

If you live in low-lying coastal areas, an earthquake may be your only warning that a tsunami is about to strike. As soon as the shaking stops, start for high ground or inland as far as possible and stay there until officials have sounded the all-clear signal.



The following steps should be taken:

- (a) Tune in to your nearest operating radio station and follow instructions;
- (b) Keep away from streams flowing into the sea;
- (c) If the sea recedes, do not go down to the beach; the water can return rapidly when the tsunami strikes; and
- (d) If time permits, act as for a flood (see below).

For additional information on tsunami warning system see www.prh.noaa.gov/itic/ and www.ioc.unesco.org/itsu

G. Terrorism

Bomb Incident Emergency Action Plan

Bomb Incidents comprise of threats and devastation arising out of Car bombs, “suicide” bombers, hand grenades, and other IED’s and incendiary devices.

PNTL is primarily responsible for responding to all Bomb Incidents throughout Timor-Leste. Hence PNTL shall remain lead agency for Incident Scene Management by providing security, crowd and traffic control, assisting with building searches and evacuations, and the prosecution of persons responsible for such acts in Bomb Incidents as per the “National Security Plan.”

PNTL will manage Bomb Incident scene with the help of Bombeiros and implement actions detailed in “National Security Plan.’ PNTL will initiate action as per PNTL “Critical Incident Plan”.

During the course of responding to and handling of BOMB Incidents, PNTL, Bombeiros, and F-FDTL work together in order to bring the incidents to a swift and safe conclusion.

Chemical and Biological Incidents

Currently, there is a low chance of having chemical and biological incidents (CBI) in Dili. Terrorism actions³ face difficulties due to the fact that Timor-Leste is not an easy target, as preferred by terrorists. Daily reports are provided and arrival of strangers in the country is easily identifiable by these reports. Additionally, there are difficulties in accessing bomb materials as fertilizers stocks are well monitored by authorities. CBI threats will be communicated to the Mayor of Dili and he/she will call the Prime Minister. The Crisis Office will be activated. However, in the highly unlikely event of any CBI incident, the following basic procedures shall be followed:

1. Immediately upon discovery of a CBI incident, the local Emergency Response Units shall be notified and activated. Further, the DO shall be notified and shall convene the Crisis Office.
2. Response to a CBI incident involves three basic phases designed to minimize the amount of contamination of the CBI agent into the community and environment.
 - a. Containment of the CBI incident.
 - i. Identification of the CBI agent and the area of contamination or “hot” zone.
 - ii. Containment of the “hot” zone and the surrounding areas.
 - b. Evacuation, quarantine, and medical treatment for personnel from the “hot” zone.
 - c. Decontamination of the “hot” zone

Anthrax

³ UNMISSET (2002). Crisis Management Plans fro East Timor. Security Section. Mass Casualties. Dili.

Owing to the negligible threat of an Anthrax incident, only minimal detection and decontamination equipment is available in Timor-Leste. However, eight members of the Emergency Services Unit (Bombeiros) received basic response training to an Anthrax or similar threat.

If an item is suspected of being contaminated with Anthrax, the following procedures should be implemented.

1. The suspected item must be covered.
2. The Crisis Office should be immediately notified comprised of Police and Defence. The Emergency Services Unit will be notified.
3. The facility in which the suspected item was located should be evacuated and quarantined, and all doors and windows should be closed and the Air ventilation / conditioning systems shut down.
4. All individuals possibly contaminated by the suspected item should receive a thorough medical check-up by the medical unit.
5. The Emergency Services Unit should remove the suspected item and decontaminate the facility.

Distinguishing features of biological and chemical incidents

It may be difficult to distinguish between a biological and chemical emergency. As a general rule, chemical attacks are more likely to produce simultaneous and similar symptoms in a relatively restricted area near the point of release relatively soon after the release. Biological attacks are more likely to result in the appearance of ill individuals at medical centres and/or doctors's surgeries over a longer period of time and a much larger area. Symptoms resulting from exposure to chemicals with delayed effects will obviously be much more difficult to distinguish from those of an infectious disease. Some indicators are presented in the table 1 below.

Table 2 Differentiation of biological and chemical release

Indicator	Chemical Release	Biological Release
Epidemiological features	<p>Large number of patients with very similar symptoms seeking care virtually at same time (especially with respiratory, ocular, cutaneous or neurological symptoms, e.g., nausea, headache, eye pain or irritation, disorientation, difficulty with breathing, convulsions and even sudden death)</p> <p>Clusters of patients arriving from a single locality</p> <p>Definite pattern of symptoms clearly evident</p>	<p>Rapidly increase disease incidence (over hours or days) in a normally healthy population</p> <p>Unusually increase in people seeking care, especially with fever, respiratory, or gastrointestinal complaints</p> <p>Endemic disease rapidly emerging at an unusual time or in an unusual pattern</p> <p>Large number of patients with rapidly fatal illness (agent dependent)</p> <p>Patients with a relatively uncommon disease that has bioterrorism potential (e.g.,</p>

		pulmonary anthrax, tularemia, plague)
Animal indicators	Dead or dying animals Absence of insects normally present	Sick or dying animals or fish Unusual swarms of insects
Devices, unusual liquid spray or vapour	Suspicious devices or packages Droplets, oily film Unexplained odour Low clouds or fog unrelated to weather	Suspicious devices or packages

Source: WHO (2004), Public health response to biological and chemical weapons: WHO guidance. Second Edition, August. Geneva. For complete guidelines see www.who.int

Specialized teams are not readily available immediately in the early stages of a chemical or biological emergency, particularly in Timor-Leste. Normally, the emergency responders, including emergency health services and civil defence, will be the first responders on the scene. In such situations an emergency manager must deal with key issues:

- i. Information on how to effectively respond to the emergency, and
- ii. How information on further risk will be communicated to the public. Communication on the risk is part of the public health risk management process. The exchange of information on health and environmental risks between interested partners will allow more informed decisions.

The role of the press in public health risk communication is fundamental during the release of chemical, biological or toxic agents (whether or not these are related to weaponry). It is a unique and powerful role both from a health and certainly psychosocial viewpoint and it should be part of a risk communication strategy for an effective emergency preparedness action (planned well in advance). Such a strategy also entails identifying how communities and individuals respond to public information. A crucial element, that needs to be inserted in preparedness is the planning for management of **hoaxes**. Hoaxes require a rapid response that is making use of pre-planned public communication strategy.

Other Hazards

Drought. Outside the monsoon season, rainfall is very low in many areas. The driest season occurs in the months from July to September with least rainfall expected north of the mountain range. An extended dry season or a shortened wet season can lead to drought in parts or all of the country. There is a recurrent risk every few years of the occurrence of an El Nino/ENSO event, which can bring significant drought risk.

Rural Fire. Rural wildfires can be ignited by lightning or other natural causes but human influence is also significant. Fire is commonly used to clear land for agriculture in Timor-Leste. Wildfires can burn out of control in dry periods, destroying vegetation and even standing crops. Currently Timor-Leste does not have the resources to control such fires but a coordinated effort to create firebreaks or to evacuate people living in the path of a running fire may be valuable in reducing damage and casualties.

Urban Fire. Urban fires can be started in many ways, accidentally or otherwise, and if not managed quickly, can pose serious risks to lives and property. Housing fires are usually extinguished or controlled by the Bombeiros in Dili and by the local community in other areas. Larger urban fires could occur in fuel storage sites, petrol stations or large cargo handling areas. Coordinated response to support the Bombeiros while they are fighting major urban fires may be needed.

Human Induced: Technological Hazards

Land. Most road crashes can be handled by the established police, fire, ambulance and medical services but it is possible that a major crash involving vehicles carrying large numbers of people or hazardous cargo could require wider coordination and involve more agencies.

Air. Air crashes are fortunately rare but it is possible for an air crash to occur in almost any part of the country. A coordinated response of the limited available resources may be needed to support search and rescue activities, particularly if there are numerous casualties.

Sea. The risk of a major marine accident is increasing as coastal traffic increases, particularly in the wet season when road movement is difficult. Coordinated support for search and rescue arrangements may be needed.

Chemical Hazards

Marine pollution. If a ship sinks or there is a leakage of marine fuels or toxic cargo, there is significant risk to reefs, marine life and fisheries. Containment and cleanup of the pollution requires a coordinated response in which the technical experts are supported by a variety of other resources.

Chemical Spills. As increasing amounts of potentially toxic chemicals are brought into the country for industrial, agricultural and pest control purposes, the level of threat of toxic spills with effects on health and the environment will increase. Response to such events is a specialised activity but coordinated support for the operation may be required.

Medical Hazards

Epidemics. Major disease outbreaks are possible in any part of the world despite the best efforts of medical authorities. While the management of the response to epidemics is the responsibility of health and medical authorities, the support of other agencies may be required during the response. In Timor-Leste, where medical and health resources are still limited, this support may be vital in order to free medical staff to carry out their professional tasks.

Mass Casualty Situations. The major impact of some of the hazards listed above could cause large numbers of casualties. These could severely task available medical resources and could require support from other agencies to accommodate, support or evacuate casualties.

Agricultural Hazards

Exotic Animal Diseases. Outbreaks of certain exotic animal diseases, particularly those that are highly infectious, could have a devastating impact on agriculture in Timor-Leste. Outbreaks of certain diseases could lead to death or serious weakening of animals on which rural communities rely for food or work. Combating outbreaks of such diseases could require a range of agencies to provide support for agricultural officials as well as providing relief for affected communities.

Crop pest infestations and disease outbreaks. Similar requirements may exist in the event of major infestations of crop pests or outbreaks of crop disease. These could affect both subsistence and commercial crops and have a significant impact on the economy.

ANNEX 9. Tools⁴:

TOOLS: Flash Report and Reports

1. if officials responsible for organizing post-disaster relief operations are to make effective decisions about the deployment of resources it is essential that they be properly informed. They must have appropriate and timely information about what has happened, what needs to be done, and what resources are available. Their decisions can save lives, minimize injury damage and loss, prevent escalation, prevent secondary hazards and inform people who need to know. Well-organized response will also help to build confidence and enhance credibility.
2. Relief operations are, in essence, the management of information and resources, based on assessment and report. Information is needed at all levels of administration but the nature of the information required will vary from one level to another. Good assessment and reporting require forethought; the assessment and reporting system should be established in preparedness planning.
3. Some of the data required is already available in form of *baseline data* (maps, population statistic etc), which must however be accessible, but this baseline data must be supplemented by *real-time information* (mostly in the form of incoming reports from various sources after the disaster)¹
4. There is a clearly defined sequence to the process of managing information-converting raw data to useful information
 - Information “in”
 - Sorting (grading, collating, discarding what is unreliable)
 - Evacuation
 - Decision making
 - Information “out” (dissemination)
 - Action
5. Passing on information is every bit as important as receiving it.

TYPES OF ASSESSMENT

⁴ This document incorporates the outputs of the ADPC Workshop on Post-Disaster Assessment and Needs Analysis, Bangkok 24-28 April 2000 from documents produced by participant in the Workshop, and also draws on a variety of other publications including the US Office of Foreign Disaster Assistance Field Operations Guide, the United Nations Disaster Assessment and Coordination Field Handbook, the SPHERE Project, and South Pacific Disaster Reduction Program’s Guide to Successful Damage Reporting Damage Reporting. Permission to incorporate material from these sources is gratefully acknowledged.

¹ Data is a structured collection of words, figures and other character; information is useful data.

6. There are two types of assessment:

- **Situation (damage) Assessment:** a description of *what has happened*;
- **Needs Assessment:** a statement of *what needs to be done*

REPORT

7. **A FLASH Report** (sometimes called a SOS Report) should be submitted *very quickly*. Its purpose is simply to confirm that the disaster has actually occurred, that steps are being taken to cope with it, to give a first indication of the short of external relief that might be required, and to inform the recipient that further report will follow shortly. A suggested format for a FLASH Report is at ANNEX.

8. **An INITIAL Report** should follow the flash report as soon as possible (within a matter of hours). Its purpose is to inform the recipient of the severity of the disaster and, more importantly, by relating the severity of the disaster to coping capacities, provides the information needed to start mobilizing resources from outside the affected area to help. The report should therefore *briefly* summarize:

- The severity of the disaster (without necessarily providing precise figures);
- Actions being taken locally;
- Local coping capacities (including locally available resources);
- The immediate priorities for external relief, where it required and in *approximately* what quantities; and
- Possible, if there are alternatives, suggest the best logistical means of delivering that relief.
- A forecast of possible future development including new risk.

9. A suggested format for an initial Report is included in this Annex.

10. The situation, needs and priorities will change over time. An assessment only describes the state of affairs at the time that the assessment is made. An initial assessment should, therefore, also establish the system for subsequent report.

11. **An interim Report** should build on earlier report providing *additional* and more precise information. To begin with interim report should be submitted every 24 hours at the same time every day (the time being determined by the recipient according to *his* needs) and thereafter at intervals decided by the recipient. As time goes by, the emphasis of interim report will shift from the needs for relief to the needs for rehabilitation and reconstruction (e.g. repairs to damaged structures, restoration of agriculture, animal husbandry, fisheries and industrial production). It is not necessary to repeat what has already been said in earlier report unless the earlier details require updating. Interim report should provide forecasts (with inputs from specialist and people who have experience of previous disasters) and highlight information which may not otherwise be obvious to the recipient e.g.:

- Potential problems;
- Change, patterns, trends and indicators;
- Particulars of specially vulnerable groups, and any other special concerns

12. **Specialist or Technical Report** will provide supplementary technical details for specialist (e.g. engineers and official responsible for emergency health care.)

13. **A Final Report** will be a summary of:

- What happened
- How the response was managed
- Lessons learned

14. In preparing a report the writer should put himself in the position of the people to whom he is reporting and ask himself “what do *they* need to know in order to meet their responsibilities and to make the right decisions?”

15. A report should not be packed with unnecessary data, nor should it be delayed because of insufficient information. It is better to say “*we do not have as much information as we would like but, on the basis of what we do know and our experience, in broad terms the situation is as follows and we estimate the needs to be in following range... We shall provide more details as soon as we can*”.

16. The details provided in report should be as consistent. Conflicting reports from different sources can cause confusion. Desirably, reports from one level of administration to another should be consolidated.

FORMAT OF REPORT

17. Given that reports will be received from many sources, it is essential that their formats are standard so as to facilitate the process of analysis and collation. Likewise, there should be common understanding of the terminology used. It is, therefore, better that the information is presented in a way that is most helpful to the people who have to act upon it. Reports should be a balance of narrative and tables and they should be formatted so that they can be transmitted electronically.

18. Format should be as simple as possible and should, like check lists, guide the reporter (who may be inexperienced in organizing disaster response operations) through the sequence of stating the problem → identifying the current status of response → identifying unmet needs (shortfalls or gaps) → decision-making.

19. To keep the formats simple it is better that they are presented in a series of separate parts. This will also make it easier for the recipient to distribute the parts for action by different desk officers. Suggested parts might include:

1. Search and rescue;
2. Evacuation;
3. Protection;
4. Medical and Health;
5. Shelter and clothing;
6. Food (including cooking utensils and cooking fuel);
7. Water;
8. Sanitation
9. Lifeline system (communications, power supplies, transport, etc)

20. The person responsible for completing each part should be clearly designated. Each part should indicate the need for relief workers, supplies and relevant logistical requirements. Unless otherwise stated, the provider should assume that the relief workers, transport and drivers, fuel, storage, maintenance, etc). It is often helpful to indicate what is *not* needed (which also shows that particular item has not been overlooked).

QUANTIFYING NEEDS

21. At some stage it will be necessary to quantify needs. Do not assume that everybody is a “helpless victim” requiring every sort of assistance. Helping people to help themselves is an important part of their rehabilitation. Initial assessment should concentrate on the effect of the disaster and not attempt to rectify chronic needs². In quantifying needs it is sometimes appropriate to use internationally accepted standards³ and planning factors. Examples of planning factors are:

- X Search and Rescue Teams per Y missing people
- X items (plastic sheeting or cooking sets) per family
- Shelter for x% of homeless people (on the assumption that many will have found their own shelter with neighbors or family members further a field)
- X grams of staple food per person for Y days
- X grams per child per day for Y days (for supplementary feeding)
- X liters per person for Y days
- X tins/liters to create reserves.

22. ***With Flash an Initial Assessment speed of reporting is more important than precise figures.***

² subsequent report may help to identify unacknowledged problems in society which can be addressed later during rehabilitation.

³ Examples of international standards are to found in UNHCR’s Emergency Training Program “Tools and Resources” and the SPHERE Project.

TERMINOLOGY

23. Imprecise terminology, or different interpretations of it, can cause confusion. After a disaster terminology relates primarily to the classification of the victims and the damage to structures and/or services. What is an “affected” person? What does “damaged” mean? The meaning of terms to be used report must be clearly defined and standardized in the pre-disaster planning period.
24. **Victims.** It is not necessary to give the total populations of the towns/villages in the affected area since these figures will already be known with sufficient accuracy from population censuses. It is better to describe victims in terms of *needs* e.g. those in need of evacuation, shelter, water, etc.
25. **Damage** can best be described in terms usability e.g.⁴:

% Damaged	Meaning
100	Structure is unusable. Cannot be repaired.
> 75	Major structural damage unsafe for use. Repairable within 1 month.
> 50	Significant structural damage. Unsafe for use. Repairs will take more than 1 week.
> 25	Some structural damage but safe for limited use. Repairable within 1 week.
< 25	Minor structural damage. Usable.

26. The tracking of resources will be crucial to effective response. A suggested format for an inventory of resources is at Annex J

PRIORITIES

27. Experience has shown that there is a consistency of priorities for relief items after certain types of natural disasters. These are shown at Annex J.

INTERNATIONAL DONORS

28. Consideration must also be given to the needs of the providers of international relief. They will be pressing to be told what has happened and what they can do to help. For them timing is critical. They will also require assistance in facilitating immigration, exemption of taxes on relief supplies, and help in integrating their relief personnel into the overall relief effort (interpreters, methodologies, equipment and administrative support).

⁴ Based upon WHO Damage Assessment Form

TRAINING

29. Officials responsible for conducting assessment and acting on them require regular training.

SUGGESTED FORMAT FOR A FLASH REPORT

PART 1-SITUATION

- 1.1. Type of disaster
- 1.2. Date and time
- 1.3. Affected area
- 1.4. Possibility of after effects

PART 2-INITIAL ESTIMATE OF EFFECTS

Very Approximate Numbers

- 2.1. Dead
- 2.2. Injured
- 2.3. Missing
- 2.4. In need of shelter and/or clothing
- 2.5. In need of food
- 2.6. In need water
- 2.7. In need of sanitation
- 2.8. Damage to lifeline systems

PART 3-POSSIBLE NEEDS FOR EXTERNAL ASSISTANCE

- 3.1. Search and Rescue Yes/No
- 3.2. Evacuation Yes/No
- 3.3. Protection Yes/No
- 3.4. Medical and Health Yes/No
- 3.5. Shelter and Clothing Yes/No
- 3.6. Food Yes/No
- 3.7. Water Yes/No
- 3.8. Sanitation Yes/No
- 3.9. Repair of lifeline systems Yes/No

PART 4-NEXT REPORT

The next report, with more details, will be sent at(date/time)

SUGGESTED FORMAT FOR AN INITIAL REPORT

PART 1-SITUATION

- 1.1. Type of disaster
- 1.2. Date and time
- 1.3. Affected area
- 1.4. Number of dead (approx)
- 1.5. Next Report will be sent at (date/time)

PART 2-SEARCH & RESCUE

Serial Number	Location (district, town or village. Say if the sites are "deep rescue"*)	Total number of people missing (approx)	Response Status (local S&R resources deployed)	Unmet needs for which additional S&R resources are requested (give details e.g. teams, rescue boats, special expertise heavy equipment)	Priority
(a)	(b)	(c)	(d)	(e)	(f)
2.1					
2.2					
2.3					
etc					
Total					

*"Deep rescue" is underground, sometimes associated with a risk of further collapse and/or breathing difficulties.

PART 3- EVACUATION

Serial Number	Location (district, town or village.	Total number of people to be evacuated (approx)	Response Status (number of people being evacuated under local arrangement)	Unmet needs for which additional evacuation assistance is requested	Priority
(a)	(b)	(c)	(d)	(e)	(f)
3.1					
3.2					
3.3					
etc					
Total					

PART 4-PROTECTION (if applicable)

Serial Number	Location (district, town or village.	Total number of people Needing protection (approx)	Response Status (number of people being protected under local arrangement	Unmet needs for which additional protection arrangements are requested	Priority
(a)	(b)	(c)	(d)	(e)	(f)
4.1					
4.2					
4.3					
etc					
Total					

PART 5-SHELTER AND CLOTHING

See page 12

PART 6-SHELTER AND CLOTHING

Serial Number	Location (district, town or village.	Total number of people requiring shelter or clothing	Response Status (number of people being provided with shelter or clothing under local arrangement)	Unmet needs (number of people for whom external assistance is requested (specify <i>type</i> of assistance required e.g. tents, plastic sheeting, blanket, mosquito nets, clothing)	Priority
(a)	(b)	(c)	(d)	(e)	(f)
6.1					
6.2					
6.3					
etc					
Total					

PART 7-FOOD

Serial Number	Location (district, town or	Total of people requiring	Response Status (number of	Unmet needs (number of people for whom external	Priority
---------------	-----------------------------	---------------------------	----------------------------	---	----------

	village.	food	people being provided with food under local arrangement)	supplies of food are requested. Say if cooking equipment and cooking fuel are required)	
(a)	(b)	(c)	(d)	(e)	(f)
7.1					
7.2					
7.3					
etc					
Total					

PART 8-WATER

Serial Number	Location (district, town or village.	Total number of people potable water	Response Status (number of people being supplied with portable water local arrangement; condition of supply system and repair status; availability of surface water)	Unmet needs (number of people for whom external supplies of water are requested. Say if treatment supplies, containers or trucks are needed)	Priority
(a)	(b)	(c)	(d)	(e)	(f)
8.1					
8.2					
8.3					
etc					
Total					

PART 9-SANITATION

Serial Number	Location (district, town or village.	Total number of people without adequate sanitation	Response Status (number of people being provided with adequate sanitation under local arrangement	Unmet needs (number of people for whom external arrangement for sanitation are requested. Say what arrangement are needed e.g. latrines, soap,	Priority
---------------	--------------------------------------	--	---	--	----------

				detergents, chlorine powder insecticides, sprayers)	
(a)	(b)	(c)	(d)	(e)	(f)
9.1					
9.2					
9.3					
etc					
Total					

PART 10-LIFELINE SYSTEM*See page 13***PART 5- MEDICAL & HEALTH**

Serial Number	Location (district, town or village)	Injured		Response Status (condition of medical facilities, hospital wards, casualty rooms, operating theaters, laboratories, water supply, ancillary equipment	Unmet Needs (List personnel, supplies and equipment required from external sources	Priority
		Serious	Walking wounded			
(a)	(b)	(c)	(d)	(e)	(f)	(g)
5.1						
5.2						
5.3						
etc						
Total						

PART 10-LIFELINE SYSTEM

Serial Number	Location (district,	Response Status (Condition of Systems)	Unmet Needs (List	Priority
------------------	------------------------	---	----------------------	----------

	town, or village, or place to place)					personnel, supplies and equipment requested from external sources)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
10.1							
10.2							
10.3							
etc							
Total							

ANNEX J

INVENTORY OF RESOURCES
(personnel, materials, financial)

Serial Number	Resource	Location	Contact Address	Available?	Committed to	Notes

ANNEX J**MOST COMMON PRIORITY NEEDS
AFTER DISASTER IN ASIA**

Need	Typhoons	Floods	Earthquakes
Search & Rescue	Marine SAR	Rescue boats with engines (inflatable and sturdy)	Usually <u>NOT</u> external SAR Teams
Medical	Supplies	Bandages, gauze, Splints <u>NOT</u> medicines	Surgical sets Splints Bandages Sutures <u>NOT</u> medicines
Water supply	Treatment supplies: - Chlorine tables - Treatment units - Household containers (20 – 25 Liter) - Community tanks or bladders (5,000-8,000 Liter) - Water trucks	Treatment Supplies: ditto	Treatment Supplies: ditto
Shelter	Tents Plastic sheeting Blankets or sleeping Bags Mosquito nets	ditto	ditto NOT Clothing
Expertise			Structural engineers
\$	\$\$\$	\$\$\$	\$\$\$
Other			Electric generators (5-10 KVA)

Community Baseline Survey checklist for disaster management ⁵

(including assessment of vulnerability, and capacities for response to disaster events)

Categories and information needs
I. Location of community
⑩ Department
⑩ Municipal
⑩ Community
⑩ Rural
⑩ Sub-urban (within 5k of urban services)
⑩ Urban
⑩ Other Names or special notes:
II. Physical Description of community
⑩ Location is mountainous
⑩ Includes floodplain or flash flooding hazard
⑩ Coastal
⑩ Elevation above sea level
⑩ Ease and ability to access this community during floods, landslides, post-hurricane damage
III. Climactic conditions
IV. Demographics of the community
⑩ Total number of residents in the community
⑩ Total Adults (>20 years)
⑩ Total Youth (13 years plus 1 day-20 years)
⑩ Total children (5 years to 13 years)
⑩ Infants, toddlers and young children (Under 5 years)
⑩ Average family size (related family members under same roof)
⑩ Gender make-up of the community

⁵ Taken from InterWorks (2001): *Community Vulnerability and Capacities Assessment*, Wisconsin, <http://www.InterWorks.com>

V. Local contact information
⑩ Mayor, name and contact information
⑩ Head of emergency committee and contact information
⑩ Cooperative primary contact
⑩ Other key community leaders and contact people.....
VI. Local authorities, organizations
⑩ Who has the highest level of authority in this community
⑩ Who has highest level of government affiliation or authority in this community
⑩ Who has highest authority for Church or other non-governmental or political authority
⑩ What NGOs and local community based organizations exist in the community? What are their areas of programming and expertise?
VII. Human vulnerability to disasters
⑩ What people are most at risk during disasters (ages, gender, occupation?)
⑩ In what specific ways are they vulnerable?
VIII. Health and nutritional conditions
⑩ Malnutrition rate for children under 5 in this community?
⑩ Infant mortality rate for this community
⑩ Most common illnesses for the general population
⑩ Measles, pneumonia, malaria, meningitis, diarrhea, intestinal parasites
⑩ Most common illnesses of the youth and children?
⑩ Measles, pneumonia, malaria, meningitis, diarrhea, intestinal parasites
⑩ Public education about health issues? Yes or No?
⑩ Public education received by _____ on which of the following?
⑩ sanitation, disease, diarrhea, nutrition, pre-natal care, HIV/AIDS?
IX. Health services
⑩ Clinic type(s)
⑩ Total number of beds available at clinic(s)
⑩ Average number of free beds available
⑩ Number of Physicians resident in community
⑩ Number of Nurses resident in community

⑩ Number of public health, or maternal and child health care extension agents, in the community
⑩ How far is the nearest health clinic? Where is the nearest health clinic?
⑩ What health services are provided at the community level?
X. Physical vulnerability of the community
⑩ Trees
⑩ Heavily wooded
⑩ Mixed wooded and open agricultural areas
⑩ Mainly open areas with only occasional tree cover
⑩ Grade
⑩ Buildings are built on level ground (0-2% grade)
⑩ Buildings are built of low slope (3-5% grade)
⑩ Buildings are built on medium slope (5-10% grade)
⑩ Buildings are built on high slopes(> 10% grade)
⑩ Situation of community on or near streams that do or may flood
⑩ River bank, not elevated structures
⑩ River bank, but with elevated structures
⑩ Flood plain
⑩ High ground
⑩ Important physical structures, buildings and infrastructures most vulnerable to disasters
⑩ List types and the kinds of disasters they are vulnerable to

XI. Infrastructure and Access
⑩ Roads to access the community
⑩ Concrete
⑩ Asphalt
⑩ Macadam / Gravel/Limestone
⑩ Unpaved / Dirt
⑩ Vulnerable to flooding, mudslides?
⑩ Bridges
⑩ Are there bridges leading to the community?
⑩ Type of bridges?
⑩ Vulnerable to flooding?
⑩ Weight limit
⑩ Nearest Airstrip
⑩ Location of nearest airstrip_____
⑩ distance from community_____
⑩ Paved
⑩ Unpaved

⑩ Marked
⑩ Unmarked
⑩ Description
⑩ Power
⑩ Overhead electricity distribution
⑩ Local generator and network
⑩ Individual power only (individual generators)
⑩ No electrification
⑩ Communications
⑩ Radio (type, who, where)
⑩ Telephone (type, who, where)
⑩ Fax (type, who, where)
⑩ E-mail/internet (type, who, where)
XII. Food
⑩ Typical food stocks/type consumed
⑩ How families acquire their food
⑩ Typical food distributed for short-term emergency
⑩ Food reserves at family level
⑩ Food reserves at community level (shops, warehouses, programs, etc.)

XIII. Housing and Shelter
⑩ Basic house construction type (describe)
⑩ Other prominent construction types in the community (Describe)
⑩ Average house size (per family in m2)
⑩ Availability of emergency shelter
⑩ Condition and construction type of emergency shelter
⑩ Location of mass shelter
XIV. Water
⑩ Water source for community (describe)
⑩ Water source vulnerable to flooding
⑩ Water source dependent on electrical pumps?
⑩ Quality of the drinking water source
⑩ Potable
⑩ Non-potable, but not polluted
⑩ Polluted source

XV. Sanitation
⑩ Typical sanitation n use by individual families/shelters (describe)
⑩ Sanitation arrangements in place for mass shelter
⑩ Are sanitation arrangements adequate for number of people to be housed in the mass shelter?

XVI. Planning / Preparedness			
⑩ Preparedness planning			
⑩ Is there an emergency preparedness and response plan in place?			
⑩ When was it written and who is primary contact			
⑩ Early Warning			
⑩ Is there an early warning system?			
⑩ Are community members familiar with this system and what it means?			
⑩ If yes, do community members consider it to be a reliable system?			
⑩ Has this early warning system been used successfully in the last five years?			
⑩ Evacuation			
⑩ Are there evacuation procedures?			
⑩ Does the community understand these evacuation procedures and evacuation routes?			
⑩ Does the community recognize and respect those with the authority to announce an evacuation?			
⑩ Have these evacuation procedures been used successfully in the last five years?			
⑩ Response skills and resources			
⑩ What emergency response skills and resources exist in the community? (example: first aid, search and rescue, public health)			
⑩ Have community members participated in emergency response or evacuation drills and simulations?			
XVII. Emergency response resources			
⑩ Is there a stockpile of emergency :			
⑩ Food (describe)			
⑩ Blankets(#)			
⑩ Tents(number , type)			
⑩ Stretchers (number)			
⑩ First aid kits/bandaging material (# kits)			

⑩ Ambulance			
⑩ Other vehicles that could be used in emergency response (describe)			

XVIII. Local Capacities for disaster mitigation and response			
⑩ Physical/Material resources and capacities			
⑩ Technical skills/Human resources in the community			
⑩ Social/Organizational capacities in the community			

