

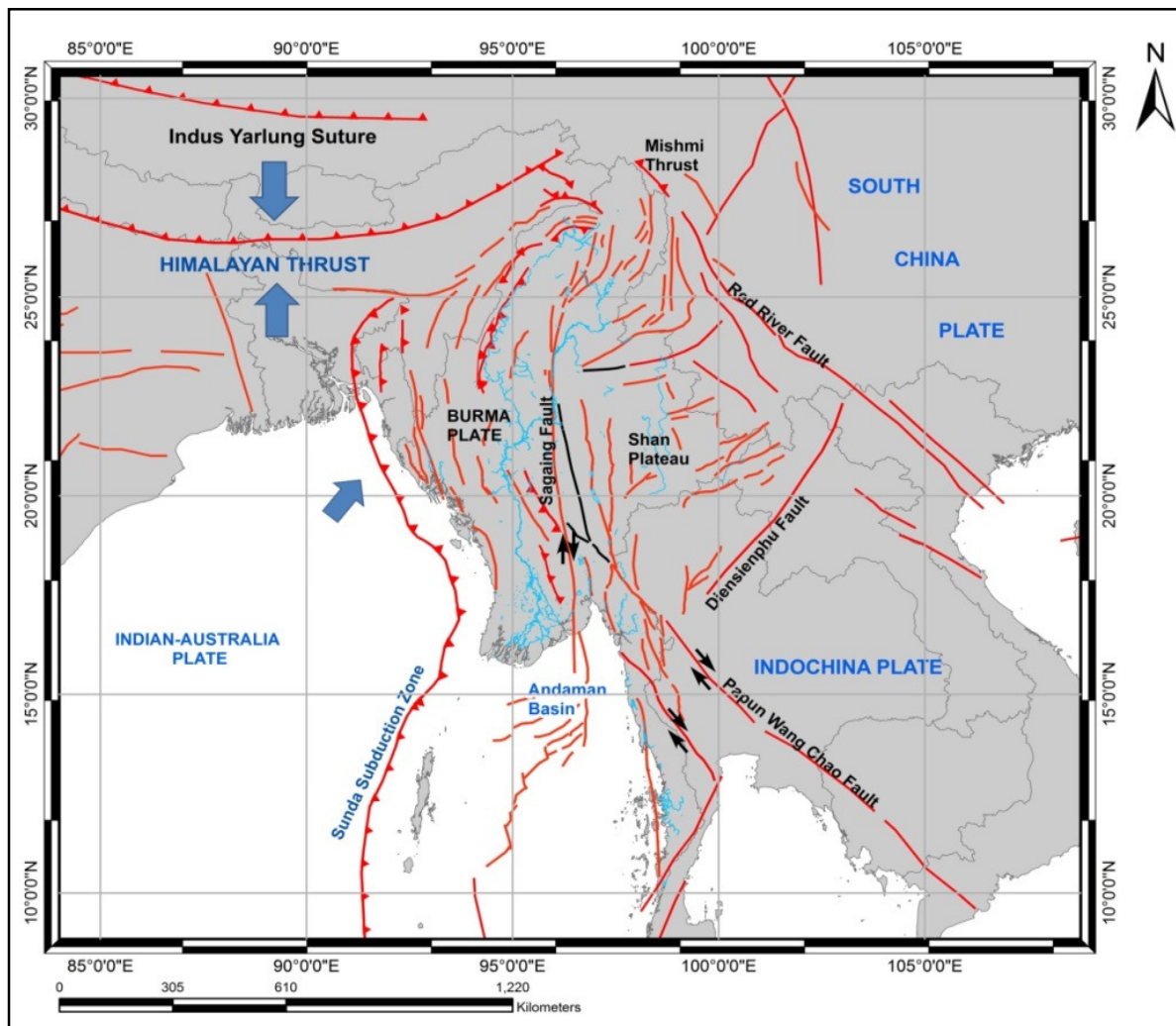
Mandalay Earthquake Scenario Planning Summary

26 February 2015

Background Information on Earthquake disasters and hazard

Mandalay is the second-largest city in Myanmar and located on the east bank of the Irrawaddy River. The city has a population of 1,225,553 according to 2014 census.

Mandalay lies closed to the most active fault in Myanmar along the Sagaing Fault, a tectonic plate boundary between the India and Sunda plates. Several earthquakes happened in and around Mandalay-Amarapura-Innwa-Sagaing region from the beginning of the year of 1400. Among them the most distinct event is the Innwa earthquake struck on July 16, 1839. The biggest earthquake in its history, with a magnitude of 7, occurred in 1956. The devastation was greater in Sagaing region than Mandalay region and it came to be known as the Great Sagaing Quake.



Regional Geologic and Tectonic Setting¹

¹ Myanmar Earthquake Committee

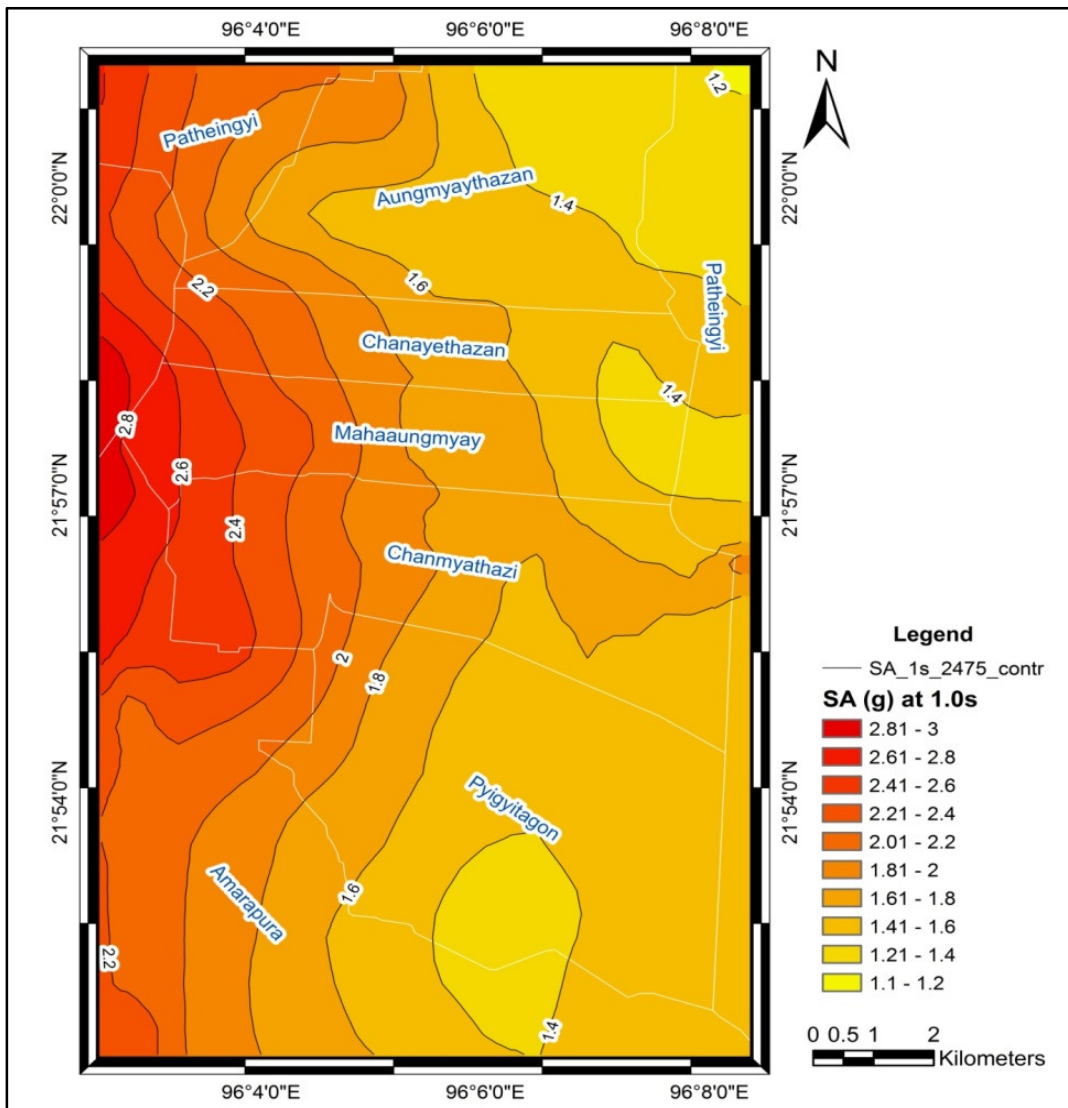
Seismicity of Mandalay Region (from 1429-1956)²

Date	Location	Magnitude or brief description
1429	Innwa	Fire-stopping enclosure walls fell
1467	Innwa	Pagodas, solid and hollow, and brick monasteries destroyed
24, July, 1485	Mandalay	3 well-known pagodas fell
1501	Innwa	Pagodas, etc. fell
6, June, 1620	Innwa	Ground surface broken, river fishes were killed after quake
10, Sept, 1646	Innwa	
11, June, 1648	Innwa	
1, Sept, 1660	Innwa	
3, Apr, 1690	Innwa	
15, Sept, 1696	Innwa	4 well-known pagodas destroyed
8, Aug, 1714	Innwa	Pagodas, etc. fell; the water from the river gushed into the city
15, Jul, 1771	Innwa	
9, June, 1776	Innwa	A well-known pagoda fell
26, April, 1830	Innwa	
21, Mar, 1839	Innwa	Old palace and many buildings demolished
23, Mar, 1839	Innwa	Pagodas and city walls fell; ground surface broken; the rivers' flow was reversed for some time; Mingun Pagoda shattered; about 300 to 400 persons killed
16, July, 1956	Sagaing (Mandalay)	Several pagodas severely damaged
11, Nov, 2012	Thabeikkyin (Sagaing and Mandalay)	Richter Scale 6.8. Death toll 18 and 116 injured. 181 houses, 58 pagodas, 79 monasteries, 20 schools and 9 government buildings were totally collapsed. 2315 houses, 605 pagodas, 527 monasteries and 126 government buildings were damaged. Total lost is 8140.12 million.

Probability of Seismicity in Mandalay Region

The highest seismic zone comprises of the western part of Mahaaungmye Township, and the second-most highest zone consists of the western part of Amarapura, Chanmyathazi and Chanayethazan townships, the western-most part of Patheingyi Township.

² Myanmar Earthquake Committee



10% of Probability of exceedance in 50 years by means of spectral acceleration³

Scenario Definition

There are 16 out of 28 townships in Mandalay that might be affected by an earthquake. Besides the population in the city, townships situated along Ayeyarwaddy River are those at higher risk (7 townships in the region, plus 5 in the city). Total population in these (12) townships are around 2,500,000. Participants agreed on the 10% of the population living in high risk areas (250,000 people) to be severely affected for planning purposes.

Townships in Mandalay City

Sr.	Townships Name	Population
1	Aungmyaythazan	266,365
2	Chanayethazan	197,312
3	Mahaangmyay	240,756
4	Chanmyathazi	283,305
5	Pyigyitagon	237,395
Mandalay City Total		1,225,133

Townships at higher risk in Mandalay Region

Sr.	Townships Name	Population
1	Amarapura	236,748
2	Patheingyi	264,068
3	Singu	157,383
4	Mogoke	166,952
5	Thabeikkyin	162,893
6	Tada-U	137,117
7	Nyaung-U	239,713
Mandalay Region Total		1,364,874

³ Myanmar Earthquake Committee

Planning Assumptions, Main Humanitarian Needs and Population Affected

Planning Assumptions	Main Humanitarian Needs
<ul style="list-style-type: none"> - Loss of lives and people injured. - Buildings(houses, schools, hospital, government building, etc) might be destroyed, schools closed, shelter needs and administration mechanism may affect as the results. - Basic infrastructure (road, bridges, etc) and religious buildings (temples, shrines, churches, mosques) that could be used as temporary shelter affected. - Water resources affected causing water shortages. - River routes might be changed, affecting transportation system - Electricity disrupted - Livelihood activities such as agriculture, local business affected - Food stocks and agricultural land affected causing immediate and longer term food insecurity. - Surface faulting, regional uplift, subsidence and liquefaction - Secondary hazards such as fire, landslides happening in some cases 	<ul style="list-style-type: none"> - Search and rescue - Basic relief provision(Food, WASH, Shelter and NFI) - Health care including mental health, psychosocial support - Education - Transportation systems and electricity - Livelihood, job opportunities (early recovery) - Family tracing - Protection and security

Population affected - Disaggregated

- Male – 62,500 (25%)
- Female – 75,000 (30%)
- Pregnant – 25,000 (10%)
- Elder – 25,000 (10%)
- Child – 50,000 (20%)
- Disable – 12,500 (5%)

Most affected groups

- Pregnant – 25,000 (10%)
- Elder – 25,000 (10%)
- Child – 50,000 (20%)
- Disable – 12,500 (5%)

Some factors exacerbating vulnerabilities of these groups are the difficulties for some of them to be relocated, the challenge in protecting themselves, insufficient awareness, living in buildings without minimum standards or weaker position to advocate for themselves.

Government capacity

With the support from the national government and civil society in the region, the regional government would provide emergency assistance to up to 30% of total caseload (75,000). The regional government has capacity to respond to basic needs such as food and water provision for the immediate response but will be challenged for the very much needed search and rescue due to insufficient technical and/or equipment capacity and trained human resources.

Government emergency response

Earthquake assessment has been done. Coordination amongst Ministry of Social Welfare, Relief and Resettlement, Ministry of Home Affairs, Ministry of Defense, Ministry of Health and related government departments and MRCS will ensure emergency response (Information and Public Relations, Emergency telecommunications, Search and Rescue, Collection of preliminary damages news and emergency aids, Confirmation of damages, Transport and route clearance, Disaster risk reduction and building of emergency tents, Health care, Security and Rehabilitation, Reconstruction).

Existing capacity for health care

- 1,000 bedded General hospital
- 550 bedded Child hospital
- Women's hospital
- Labor hospital
- TB and communicable diseases hospital
- Religious hospital
- Teaching hospital
- Private hospital
- Orthodontic hospitals
- Use of Pyin Oo Lwin and Sagaing hospitals if needed

The main bridges connecting Mandalay (which might be affected)

- Yardanarpon bridge (Sagaing-Mandalay)
- Nga O bridge (Kachin-Mandalay)
- Dohhtawati Bridge
- Inwa Bridge
- MyitNge bridge

Operational Constraints

Theme	Constraints/challenges	How to Address
Search and rescue	Technical, equipment, human resources training	Supporting technologies and equipments from Union Government, international trainings
Communications and Public Information	Technical, equipment, human resources training	Coordinate between governmental departments, between government and social organizations using Television and radio broadcasting, newspaper, online
Road transport	Broken bridges, roads, debris, not enough vehicles, fuel	Engage with the relevant actors Coordination with military
Needs assessment	Technical, equipment, human resources training	Training on preparedness and disaster risk reduction, simulation exercises, coordination
Coordination and Management	Limited coordination	Incident Command Cell Engagement with all actors Identify focal points and contact details
Supporting basic needs including food, wash, health care	Insufficient resources	Coordination Should base on Needs Assessment Stocks
Temporary Shelter	Limited capacity	Pre identify places Stocks (tarpaulin, other emergency shelter material)

Coordination

Key Departments	Contact	Cluster	LNGOs/ CSOs/MRCS	Sector
General Administration Department - GAD	U Win Shein, Regional Administrator, Phones: 02-74003, 02-66660, 02-64222	Inter-cluster	U KyawKyaw, Grade 2, MRCS 0991019704	Needs assessment Transportation
Relief and Resettlement Department - RRD	U Than HtutSwe, Director Phones: 02-67470, 09-43120867	Food, NFI, Shelter, Coordination	U NyiNyiNaing, Brahmaso 0943099923, 09797515610 (represent all	Food, NFI, Shelter, Coordination

			CSOs in Mandalay)	
Myanmar Police Force	Police Lieutenant Colonel Han Tun, Chief Police Officer, Phones: 02-36767, 02-36868, 02-36871			Search and Rescue and Security
Fire Service Department	U Than ZawOo, Chief Officer, Phones: 02-60740		U Kyaw Kyaw, Grade 2, MRCS 0991019704	Search and Rescue
Health Department	Dr. Than Win, Regional Health Officer, Phones: 02-21021, 02-33173	Health	U Kyaw Kyaw, Grade 2, MRCS 0991019704 U Ny Nyi Naing, Brahmaso 0943099923, 09797515610	
Information and Public Relation Department	U Kyaw Than Tun, Deputy Director, Phones: 0280987, 092012871			Information
Road Transport Administration Department	U Nay Lin, Chief Officer, Phones: 02-71870, 02-36569, 02-36116, 09-2000443	Logistics	U Nyi Ny iNaing, Brahmaso 0943099923, 09797515610	Transport and logistic
Public Works Department	U Saw Han, Chief Engineer Phones: 0221093, 0239186, 092001000			Road and bridge
Development Affairs Department	U San MawKhin, Director, Phones: 09-5154657, 09-5154658, 09-5154619~20, 09-2002198	WASH	U Nyi Ny Naing, Brahmaso 0943099923, 09797515610	WASH
Education Department	U SoeMyintTun, Director, Phones: 02-39170, 02-39173, 092003236	EiE	U Ny iNyi Naing, Brahmaso 0943099923, 09797515610	Education

Way forward

Proposed preparedness activities	Focal (leader)
Required training for the government departments and other organizations	Regional government and sub committees
Networking	RRD
Fund raising	RRD, Brahmaso
Awareness Raising	RRD, MRCS, Health, Fire Service, Education and other concerned departments/organizations (women, cross-cutting)
Provision of equipment and developing procedures and standards	Science and Technology Ministry Department of Meteorology and Hydrology Department of Development Affairs Department of Agriculture and Irrigation Donors (JICA, KOICA) UN, INGO and LNGO

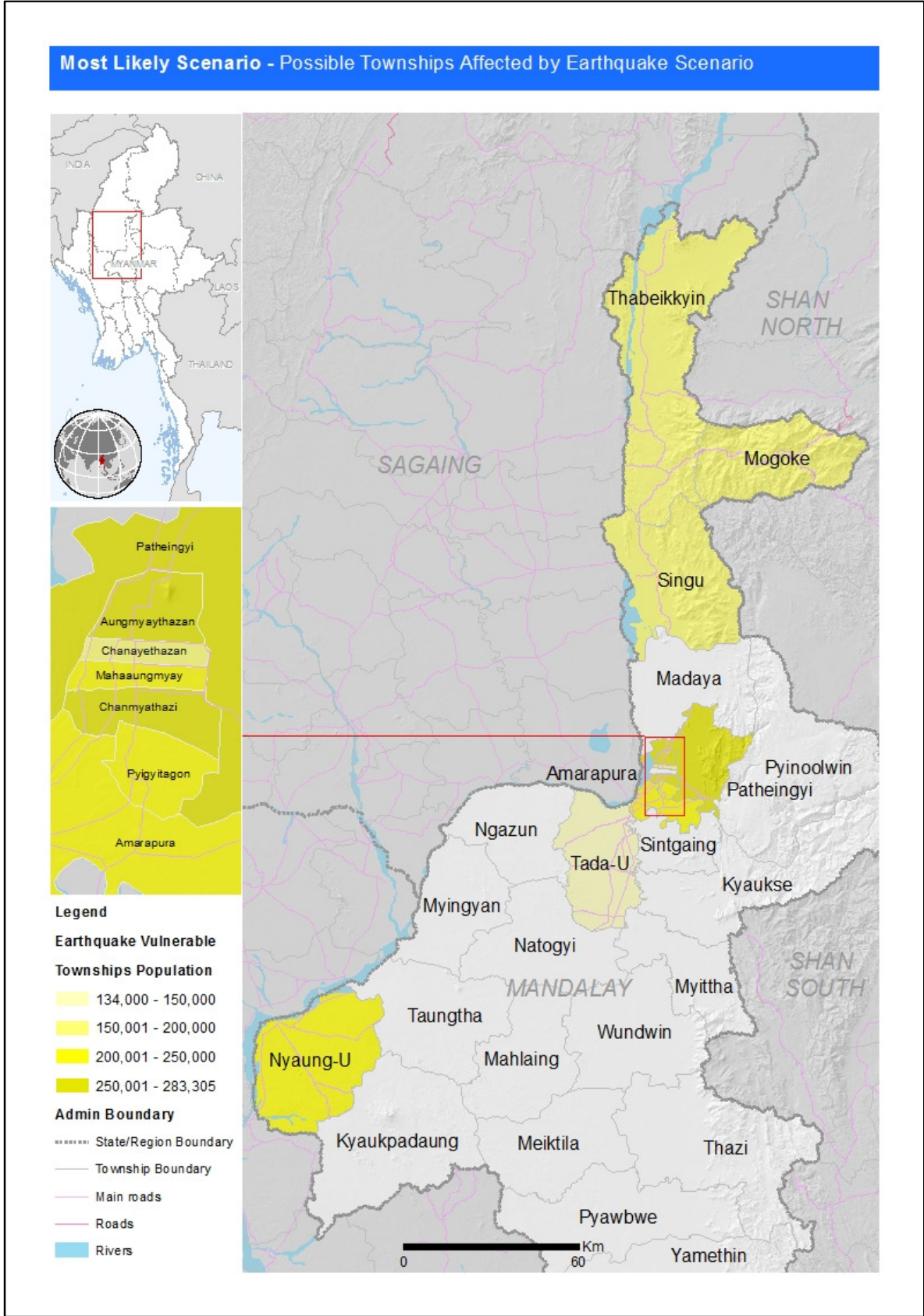
Form a working group for sharing information, share contact of focal person and train volunteers	RRD, MRCS, Brahmaso
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Annexes

Annex 1: Scenario Planning Map

Annex 2: Participants list

Possible Townships Affected by Earthquake Scenario



Annex 2:

Emergency Response Preparedness Planning Workshop Agenda

Time	Session	Topics covered	Focal Point
08:30-09:00	Arrival of participants	Registration	RRD and OCHA
09:00-09:10	Introduction of the workshop	- Workshop components, - Objectives	OCHA
09:10-09:30	Session 1: Summary of Emergency Response Preparedness Activities	Briefing on CPs, ERPP	OCHA
09:30-09:50	Coffee Break		
09:50-10:30	Session 2: Risk Assessment	- Hazards in Mandalay - Earthquake Risk	MEC
10:30-12:00	Session 3: Scenario definition	- What will happen? - Where will it happen? - Who will be affected? - Which is government existing capacity to cope with this scenario?	OCHA
12:00-13:00	Lunch		
13:00-14:00	Session 4: Planning Assumptions and Humanitarian Consequences	- Which are the anticipated effects of the affected population - Which will be the priority needs and which sector? - Which will be the most affected groups and which factors may exacerbate vulnerabilities? - Which support local/national government will require? Which sectors?	OCHA
14:00-15:00	Session 5: Operational Constraints and how to address them	- Which actions need to be taken as an immediate response? - Which factors may impede the relief operations? - Which main challenges will face local and national governments? - What can be done to address the mentioned challenges?	OCHA
15:00-15:20	Coffee Break		
15:20-16:20	Session 6: Coordination Mechanisms	- Regional government disaster management structure - How humanitarian organizations will support government efforts?	RRD OCHA
16:20-16:45	Session 7: Identification of main gap	- Which actions are required to enhance preparedness? - Who will lead the actions?	OCHA
16:45-17:00	Way Forward and closing remarks	Wrap up Awarding Training Certificate Closing	OCHA RRD/Regional Minister

Emergency Response Preparedness Planning Workshop Attendance List

No	Name	Designation	Organization	Contact No./email
1	Daw Khin Soe Htay	AD	Department of Agriculture	09-33307461
2	U Kyaw Thein	Staff Officer	Department of Irrigation	09-6804083
3	U AungKo Min	Staff Officer	Department of Meteorology and Hydrology	09-403713532
4	Daw Khin Htay		Department of Social Welfare	
5	Daw Khaing Yi Mon Lin	Staff Officer	Department of Environmental Conservation	09-2130494
6	U Mang Kho Hao	Staff Officer	General Administration Department	09-33275800
7	Daw Myint Myint Than	Township Officer	Department of Information and Public Relations	09-33040012
8	Dr Soe Min		Myanmar Earthquake Committee	09-428197075
9	U Than Htut Swe	Director	Relief and Resettlement Department	
10	Daw Phyu Phyu Aung	Staff Officer	Relief and Resettlement Department	09-420744932
11	U Moe Sai	Secretary	AungTakon	09-259233481
12	U Shwe Win	Executive Officer	Brahmaso	09-2015032
13	U Nyi Nyi Naing	Executive Officer	Brahmaso	09-43099923
14	Daw Thidar San	CEC	EXPP	ayeminmin6@gmail.com
15	U Than HtunAung		Flying Freedom Little Birds	09-36013646
16	Daw Chaw Su Hlaing		Mandalay Affairs Team	09-970700375
17	Daw Phyu Phyu Chaw		Mandalay Affairs Team	09-91025222
18	U AungZaw Lin		Mandalay Youth	mr.greenjade@gmail.com
19	DawKhinThuzar		Simple Life	khinthuthuzar75@gmail.com
20	Daw San San Aye	Duty Officer	YadanarKoeThwel	09-30131740
21	U Aung Myint Oo	Patron	YadanarKoeThwel	09-43120549, 09-797291778
22	Daw Naw Aye Mya Mya Nyein	Info and Communication Manager	LRC	lrcyangon@lrcmyanmar.org
23	Daw Su LattZaw	Program Associate	LRC	lrcmandalay@gmail.com
24	U KyawKyaw	Staff Officer	MRCS	09-91019704
25	Daw Ni Ni Win	Program Officer	UN-Habitat	09-421053178
26	Daw Khaing Khaing Shwe	Chief	Unicef	kkshwe@unicef.org
27	Daw Mary	Education Field Monitor	Unicef	marycool2007@gmail.com
28	U Saw Tar Ma LarHtoo	Staff	World Vision	09-5006336
29	U Mg MgGyi	Secretary	World Vision	09-798143446