Overview of the Sagaing Earthquake and Current Loss Inventory Survey in Inle Lake (UNESCO World Heritage)

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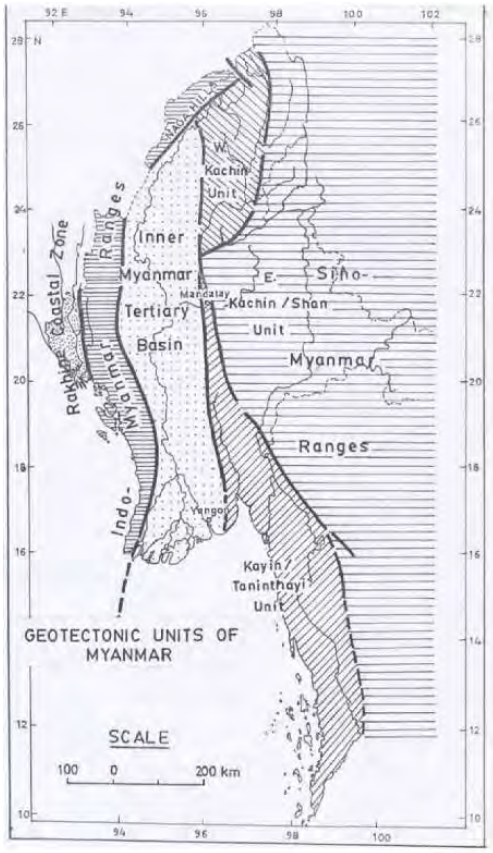
Overview of Myanmar Tectonic Setting and Seismicity



Myanmar has four tectonic zones. From east to west –

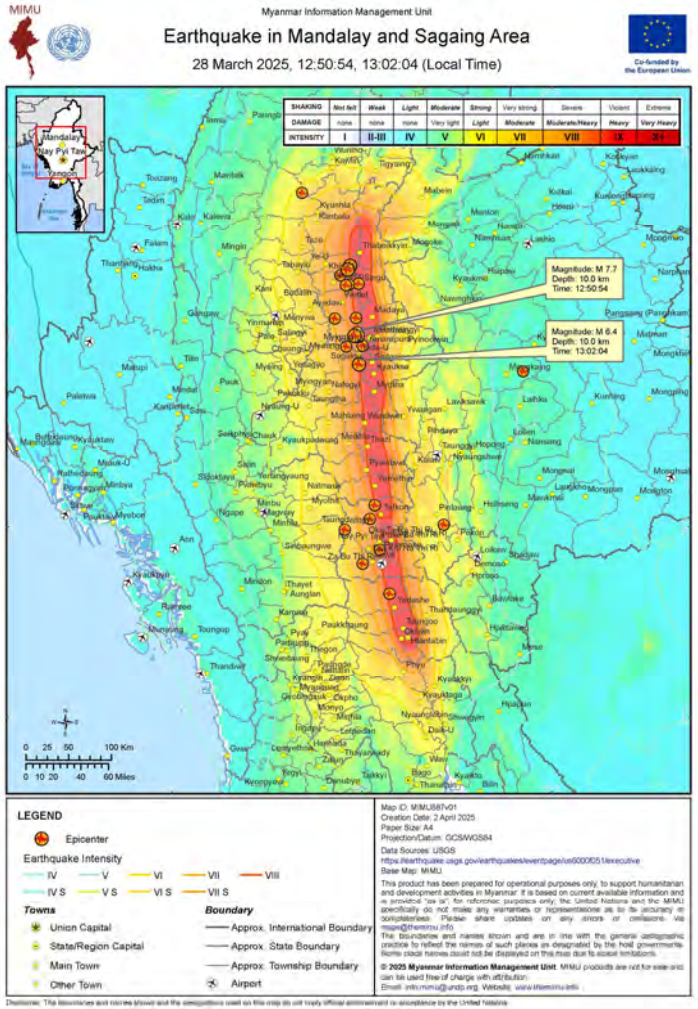
1. Shan-Tanintharyi Block
2. Central Cenozoic Belt
3. Western Fold Belt
4. Rakhine Coastal Belt

(Mitchell (1973-1977))

Seven active faults triggered earthquakes in Myanmar, caused by collision of India Plate and Burma Sub-plate.

1. Kabaw Fault
2. Sagaing Fault
3. Kyaukkyan Fault
4. Shweli Fault
5. Golden Triangle Fault zone
6. Three Pagoda Pass Fault, and
7. Ranong Fault

Overview of Sagaing Fault and Sagaing Earthquake (2025)

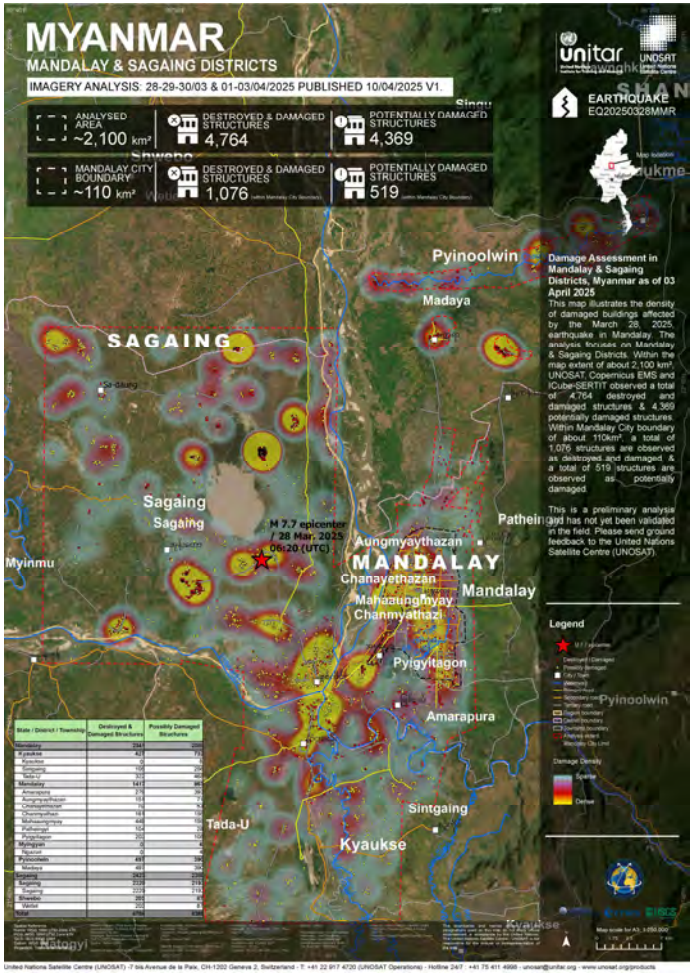


Sagaing Fault is the most hazardous fault because it distributes high magnitude and high frequency earthquakes among other active faults.

Moreover, most of the cities with dense population located along the Sagaing Fault. Myitkyina, Sagaing, Mandalay, Naypyidaw and Bago Cities are State Capitals and other significant cities such as Shwebo, Meiktilar, Yamethin, Taungoo, Phyu are located along the way of Sagaing Fault. Yangon, the commercial capital of Myanmar is only 35 km east of Sagaing Active Fault.

Loss Inventory of Sagaing Earthquake (2025)

- Sagaing Fault is right lateral strike slip fault and most of historic capitals of ancient kingdom of Myanmar are destroyed by several high magnitude earthquake triggered by Sagaing Fault
- On the 28 March 2025 at 06.20 UTC , a strong earthquake of 7.7 M at a depth of 10 km occurred on in Sagaing Region, central Myanmar. The epicenter was located about 16 km north-north-west of Sagaing city, and 19 km north-west of Mandalay city. An aftershock of 6.4 M at a depth of 18 km occurred in the same area at 06.32 UTC.
- Over 4000 buildings are recorded as damage building tentatively and over 4000 people have been killed.
- Mandalay and its environ is heart of Myanmar. Capitals of the 3rd Kingdom of Myanmar is located around this earthquake-prone region and rich in ancient religious and cultural heritage.
- Mandalay is second capital of Myanmar, where the economic corridor of east (China) and West (India) meeting point. Mandalay is not only significant in economic and population, but their unique culture is also attractive place of tourism.



Overview of Inle Lake (UNESCO World Heritage)

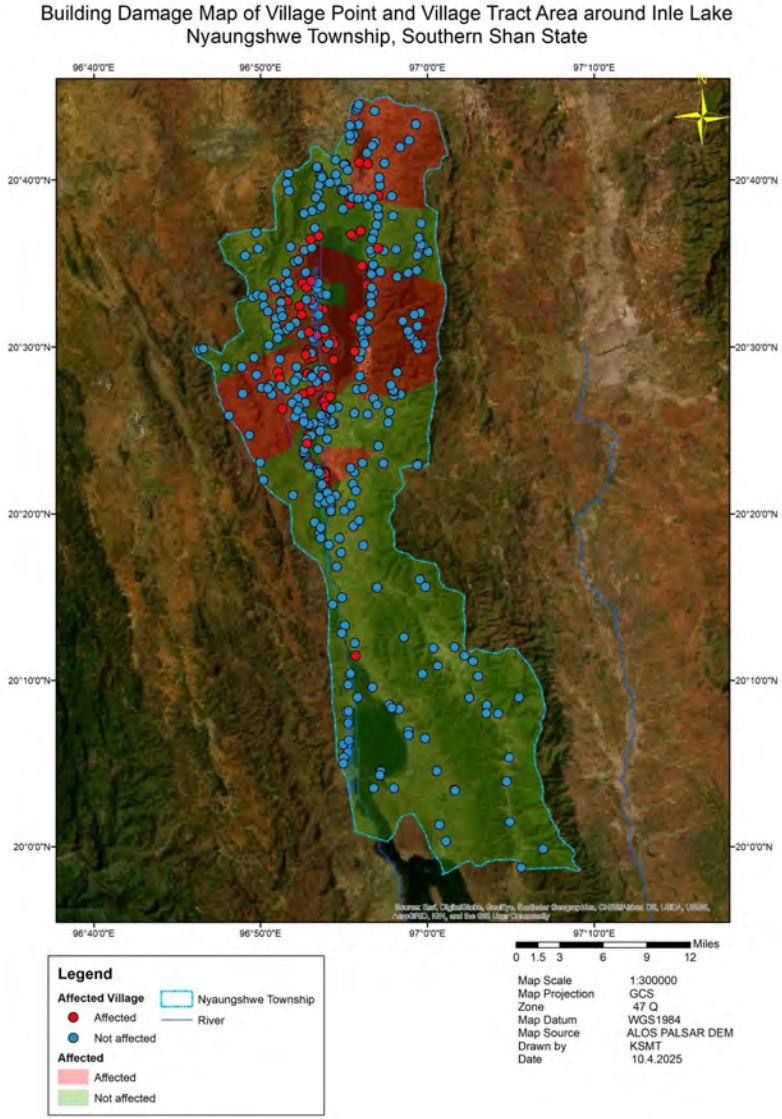
- Inle Lake is a highland freshwater lake, located 880 meter high above sea level. The surface water area during rainy season is about 120 square kilometer.
- Inle Lake is famous for its cultural heritage, floating gardens, ancient temples, unique living style and rich in biodiversity with endemic species.
- The epicenter of the Sagaing Earthquake (2025) and Inle Lake is far more than 200 kilometer. However, the fatality, incident and building damage caused by ground shaking is affected on Inle Lake

Loss and Damage Inventory

- According tentative survey, 50 people killed by building collapsed and 2297 buildings was damaged and 13347 affected people were accounted.

ညောင်ရွှေမြို့နယ်အတွင်း လေျင်ဘေးဒဏ်ကြောင့် ပျက်စီးဆုံးရှုံးမှု အခြေအနေ

စဉ်	ရပ်ကွက်/ကျေးရွာအုပ်စု	အိမ်ခြေ	မြို့ကျ					လူဦးရေ		
			တိုက်အိမ်	ပျဉ်ထောင်		ဝါးအိမ်	ပေါင်း			
				ကြီး	သေး					
၁	အင်းခြံ/ ကေလာ	၈၂၈		၃၁၉	၃၁၆	၁၉၃	၈၂၈	၂၆၁၈	၂၆၃၇	၅၂၅၅
၂	နန်းပန်မြို့	၄၃၀	၁	၁၂၃	၁၃၂	၁၇၄	၄၃၀	၇၅၇	၇၄၅	၁၅၀၂
၃	နန်းသဲ	၃၉၄			၁၂၁	၂၇၃	၃၉၄	၁၀၄၆	၁၀၃၄	၂၀၈၀
၄	မင်းချောင်း	၂၁၇			၇၄	၁၄၃	၂၁၇	၆၀၈	၆၆၅	၁၂၇၃
၅	သလဲဦး	၁၅၃		၈	၈၃	၆၂	၁၅၃	၅၇၁	၅၈၇	၁၁၅၈
၆	မိုင်းသောက်	၁၀၅			၅	၁၀၀	၁၀၅	၂၂၇	၂၃၂	၄၅၉
၇	အင်းပေါ်ခုံ	၆၅			၄	၆၁	၆၅	၄၉၀	၆၅၆	၁၁၄၆
၈	ဟဲယာရွာမ	၅၇			၃၉	၁၈	၅၇	၁၁၃	၁၂၁	၂၃၄
၉	အင်းလျား/ကျိုင်းခမ်း	၁၅				၁၅	၁၅	၂၇	၂၇	၅၄
၁၀	ငါးဖယ်ချောင်း	၁၄			၂	၁၂	၁၄	၂၉	၃၅	၆၄
၁၁	ကျွန်းကြီး	၆	၁			၅	၆	၁၃	၁၃	၂၆
၁၂	အင်းတိန်	၁၀	၁၀				၁၀	၃၂	၂၁	၅၃
၁၃	နန္ဒဝန်ရုပ်ကွက်	၁	၁				၁	၁၁	၁၄	၂၅
၁၄	တီလော	၁	၁				၁	၇	၇	၁၄
၁၅	ကျေးပေါ်ခုံ	၁				၁	၁	၂	၂	၄
စုစုပေါင်း		၂၂၉၇	၁၄	၄၅၀	၇၇၆	၁၀၅၇	၂၂၉၇	၆၅၅၁	၆၇၉၆	၁၃၃၄၇



Building and Foundation Style

- Type 1: The unique and prominent building style in Inle Lake is constructed in the water. The timber pile is driven by human load up to safe bearing soil. It built up to three stories but most of them are two stories.
- Type 2: Some buildings applied shallow footing. The retaining wall is constructed, fill the backfill soil on the lake deposit, in the retaining wall and found the shallow footing on the fill soil.
- Type 3: The building constructed on the lake banks are found on natural soil, mostly with shallow footing.
- Most of the damaged buildings are type-1, a few are type – 2 and there is no building damage which are constructed on lake banks.

Building and Foundation Style (Sky View of Inle Lake)

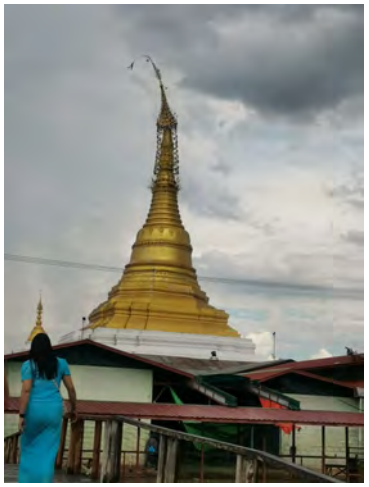
Damage of Ancient Temples and Floating Garden

- Buddhist Monasteries in Inle Lake and most of the Shan State are significant not only for religious matter but also serve as shelter for festivals, ceremonies, education center, justices, community center and guest houses.
- Floating gardens are highly productive vegetable farms made with lake weeds and measured by length (Taung – 18 inch)

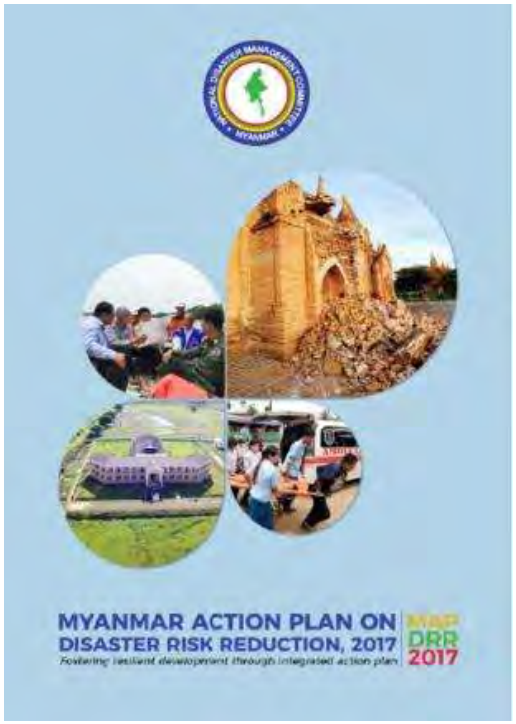
Pre-identification of building failures

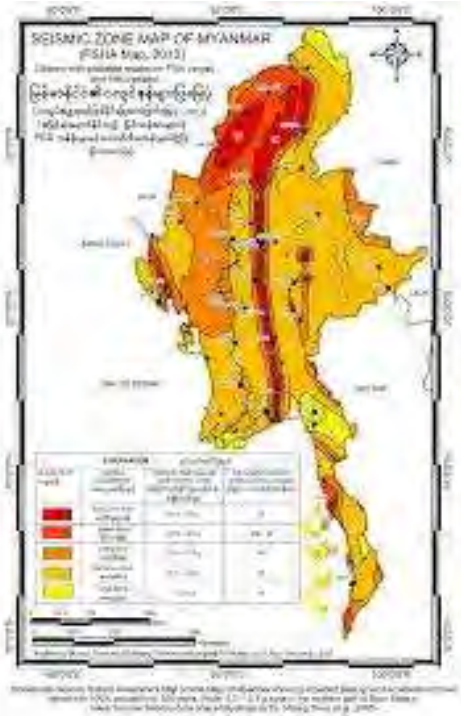
- Buildings are collapsed and distorted mainly caused by ground shaking effect
- Most of the building collapsed by loss of both skin friction and bearing capacity on timber pile foundation triggered by ground shaking
- Some timber and bamboo piles are founded up to 18 feet under lake deposit. Thus, it is necessary to extend the timber length. The lagging of the timber may break during ground shaking
- According to pre-survey, there is no evidence of liquefaction potential, but it is necessary to identify according ongoing soil test results.

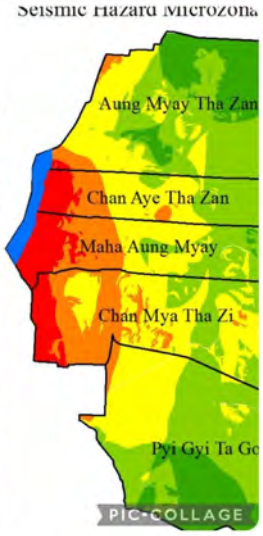
Photos of some building damage in Inle Lake



Earthquake and Disaster Prevention of Myanmar







Increase fatality and damage are caused by -

- Poverty
- Lack of awareness
- Weak law enforcement
- Corruption
- Civil Wars


Thank You