



**Asia-Pacific
Economic Cooperation**

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Agenda Item: 8.1

Summary Report on Kaohsiung Earthquake on February 6th 2016

Purpose: Information
Submitted by: Chinese Taipei



**9th Emergency Preparedness Working Group
Meeting
Lima, Peru
20-21 February 2016**

Summary Report on Kaohsiung Earthquake on February 6th, 2016 Chinese Taipei

National Science and Technology Center for Disaster Reduction,
Chinese Taipei

2016.02.20

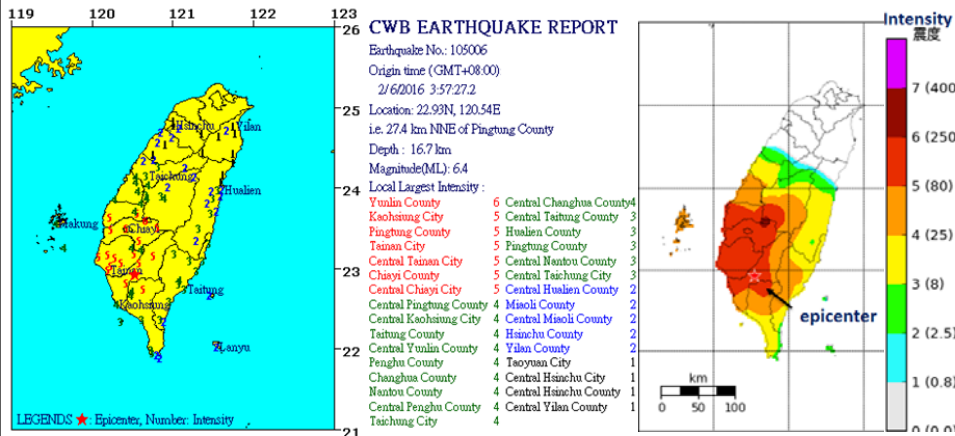
Summary of Kaohsiung Earthquake



- **A magnitude-6.4**
 - Date and Time: February 6, 2016 at 3:57 am
 - Epicenter: at Meinong, Kaohsiung City and with a focal depth of 16.6 Kilometers
 - Peak ground acceleration: 334.1 gal (intensity 6)
 - in-land and shallow earthquake
- **Casualties**
 - 117 died and 546 wounded
- **Major losses**
 - over 60 buildings totally or partially collapsed.



Strong Ground Motion



Earthquake Report

Shake Map

Emergency Operation



- **Level 1 operation**

- Started from **4:15 am on Feb 6** to collect situations, and coordinate search and rescue efforts.
- Ended at **4:00 pm on Feb 14**



- **In total**

- 29,000 of urban search-and-rescue team, firefighters, police officers, volunteers and soldiers had ever joined the operation.



Casualties



- **117 died**
 - 62 males, 55 females
- **546 injured**
 - 84 hospitalized, 29 severely wounded
- **Weiguan Jinlong building**
 - The 16-story building was completed in 1995 is a mixed-use RC complex for residential apartments and commercial units
 - 115 died (61 males and 54 females)
 - 95 residents escaped
 - USAR teams have found 289.



Damages to public services



Item	Num. of service suspension	Num. of Restoration	Under repair	unrepairable
Tap water (household)	400,300	395,300	5,000	0
Electricity (household)	173,084	172,664	0	420
Natural gas (household)	1,241	1,034	0	207
Land-line phone (household)	1,248	1248	0	0
Cell-site for mobile phone (site)	131	131	0	0

Damaged buildings



Area	Report of possible damaged sites	Evaluated site	Site under evaluation	Red Tag	Yellow Tag
Tainan City	589	553	36	61	52
Kaohsiung City	23	23	0	2	1
Sum	612	576	36	63	53



- Red Tag: dangerous structures to be demolished
- Yellow Tag: Repairable damage
- Data : Construction and Planning Agency

Locations of damaged buildings and soil liquefaction zone



Lessons learned



- **Retrofit on old-existing buildings**
 - **Weak story** (insufficient shear capacity) : wide-and-open space.
 - Building **designed before 1999**: lateral reinforcement, seismic hooks and overlap of longitudinal reinforce bars
 - **Mixed-use complex** includes commercial and residential units
- **Needs of modern technique to identify people under deep debris**
- **Enhance resilience of under ground pipelines**
- **Business continuity plan to help quick recovery**
- **Raise public risk perception: impacts by soil liquefaction**
- **Space remodeling requires a professional certificate to ensure seismic safety**

Thanks for your attention