

Regional Capacity Development Workshop:
*Mainstreaming DRR in Sustainable
Development Planning*
Bhutan Country Presentation

13-16 September 2016
New Delhi, India

Key Disaster Impacts: Overview

1. Earthquakes
2. Glacial Lake Outburst Floods (GLOF)
3. Floods/Flash floods
4. Landslides
5. Forest fires/Structural fires
6. Windstorms
7. Others



Key Disaster Impacts: Overview (Earthquake)

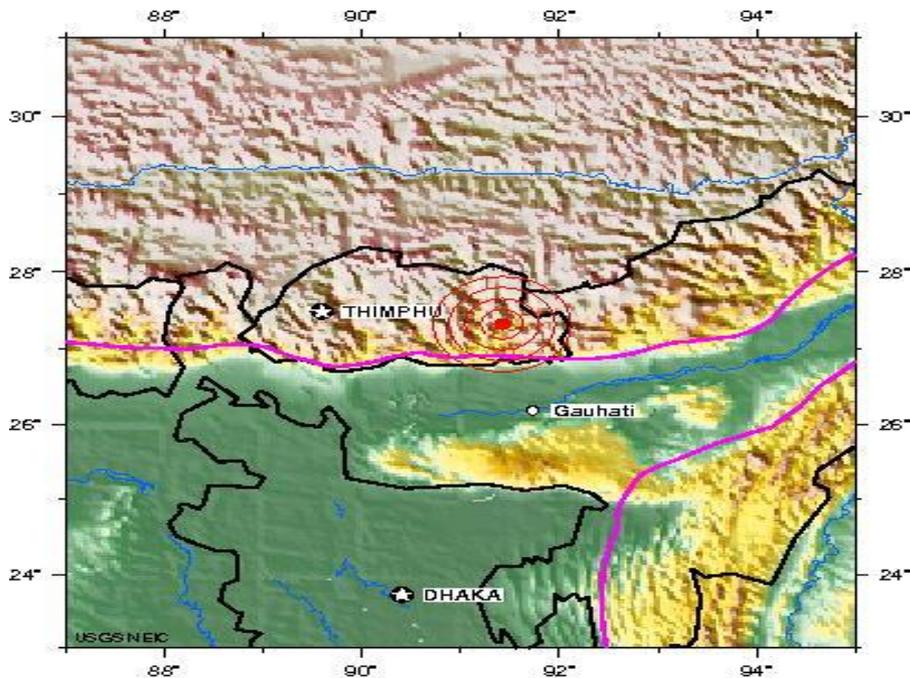
21st September, 2009 Mongar Earthquake

Magnitude: 6.1 (10 km)

Time: 2:53 p.m. BST

Repeated after-shocks

12 People killed



BHUTAN

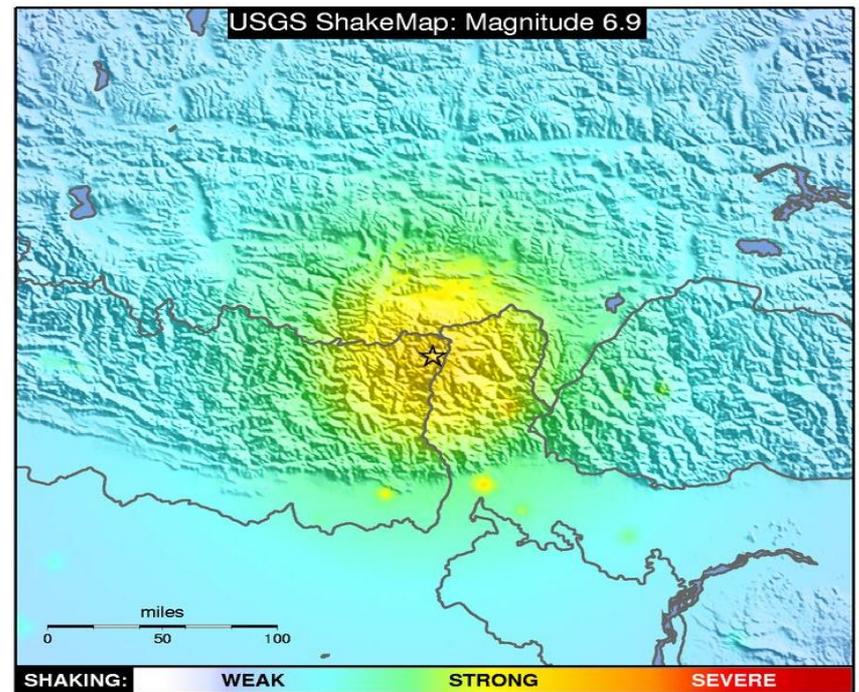
2009 09 21 08:53:06 UTC 27.32N 91.42E Depth: 14 km, Magnitude: 6.1

Earthquake Location

18th September, 2011 (Sikkim Earthquake)

Magnitude : 6.9 (19.7 km)

Time: 6:41 PM BST



Map Version 3 Processed Tue Sep 20, 2011 08:01:13 AM MDT - NOT REVIEWED BY HUMAN



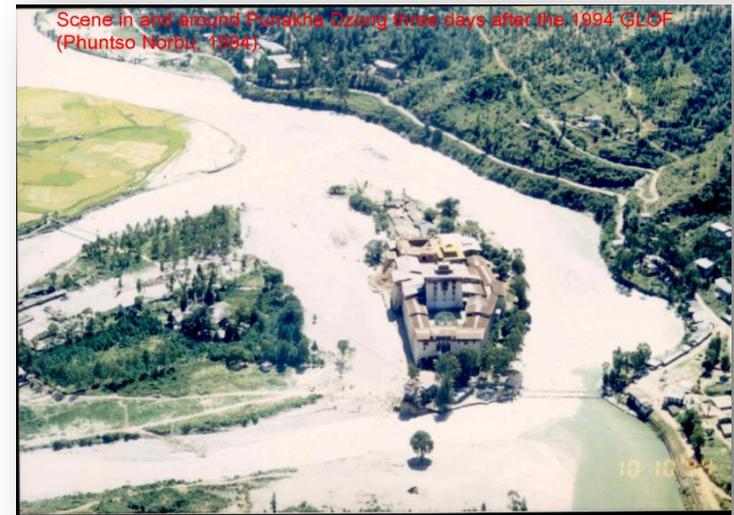
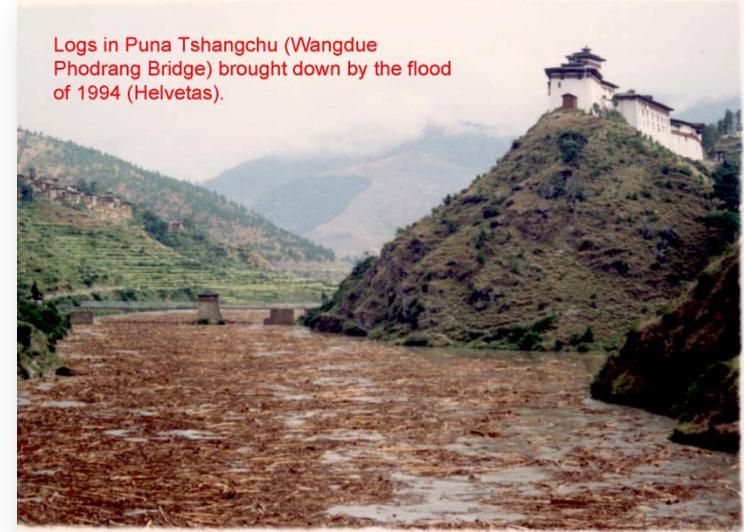
Earthquake

Bhutan lies in seismically active zone IV & V (accordin to Bureau of Indian Standards)

Year	Location of epicenter	Magnitude	Impact
2003	Gunitsawa, Paro, Bhutan	5.5	Several landslides & minor cracks in some buildings in Thimphu
2006	The epicenter near Dewathang in Samdrup Jongkhar struck successively between 2:04 am and 2:07 am local time.	The two earthquakes, measuring 5.8 and 5.5	126 houses in nine blocks under Trashigang district have suffered damages. Trashigang <i>Dzong</i> also suffered minor damages.
21 Sept. 2009	Narang, Mongar District, Bhutan	6.1	12 people killed Damaged properties worth of Nu. 2501 million (US\$ 52 million). Approximately 7,290 people were left without adequate shelter.
18 Sept. 2011	Greater Sikkim Area, mostly affecting Haa, Paro, Samtse and Chhukha <i>Dzongkhags</i> in Bhutan	6.9	Loss of one life due to landslides and 14 injured Damaged properties worth of Nu 1,197.63 million (US\$ 24.46 million).

Key Disaster Impacts: Overview (GLOF)

- 677 glaciers and 2,794 glacier lakes
- 25 glacier lakes potentially dangerous
- 21 outburst cases in Bhutan (SATREPS Project, 2012)
- 17 events between 19th century and the 1970s
- 4 cases of outburst in the last 40 years





“Reducing Disaster Risks for a Safe and Happy Bhutan”



Glacial Lake Outburst Floods (GLOF)

Year	Origin	Affected Areas	Impact
1957	Western Lunana region	Punakha- Wangdue valley	Part of Punakha <i>Dzong</i> destroyed
1960	Eastern Lunana area (burst of Tarina Tsho)	Punakha	Parts of Punakha <i>Dzong</i> destroyed
1968	No Information available	Punakha, Thimphu and Paro valleys	In Punakha valley: several houses washed away, old traditional bridge of Wangdue Phodrang and a house with 12 people washed away. In Thimphu: a few houses, slopes and bridges swept away. In Paro: great damage to both human and aquatic life (eg major area of paddy fields in Dophu areas were completely laden with silt, sand and debris)
1994	Eastern Lunana (burst of Luge Tsho)	Punakha-Wangdi valley	17 lives lost, 91 households affected, 12 houses damaged, 5 water mills to grind barley washed away, 816 acres of dry land and 965 acres of pasture land damaged(washed away or partially covered with sand and silt), 16 yaks carried away, 36 cowsheds and a full year’s manure washed away, about 6 tonnes of food grain lost, 2,838 pieces of roof shingles and 68 “champs”/beam washed away, 4 bridges washed away, 2 <i>chortens</i> destroyed, 1 temple in Tsojug badly damaged.

Key Disaster Impacts: Overview (Flood)

- Recurrent Event
- Eastern & Southern Region most vulnerable

Past events

- Phuentsholing & Pasakha – Year 2000
- Eastern Bhutan – Year 2004
- Cyclone Aila – Year 2009 flood





Floods (Flash)

Floods (Flash): Recurrent during monsson season (June to September)

Year	Causes	Affected areas	Impact
2000	Heavy rains (Flood)	Phuentsholing, Pasakha and other southern cities	49 lives lost many public and private infrastructure and properties were destroyed.
2004	Heavy rainfall (Flood)	Six eastern <i>dzongkhags</i> , Trashigang, Trashiyangtse and Samdrupjonkhar being the most affected ones.	9 lives lost, many houses damaged, agricultural land washed away estimated to be lost affecting about 1437 households. Damages to infrastructure and services facilities: 39 irrigation channels damaged, 22 bridges of different types damaged or washed away
			Damages estimated at Nu719million affected mainly public and

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_2418

