

NEPAL EARTHQUAKES

APRIL/MAY 2015

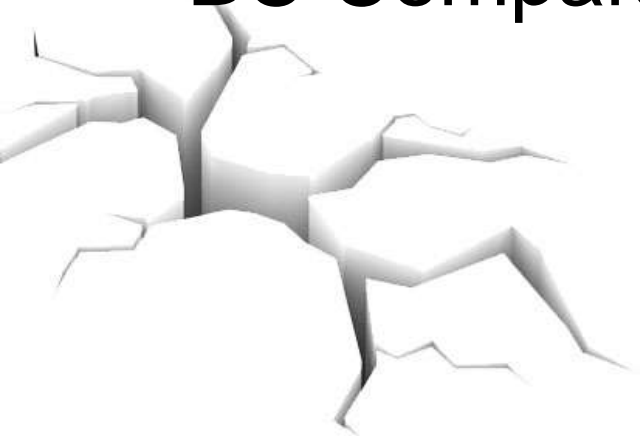
Emergency Preparedness and Business Continuity Conference

November 17, 2015

Shawn Carby CD, BHSc, MAL, ABCP

Outline

- Nepal Quakes and Impact
- Response
- Challenges
- Planning and effectiveness
- BC Comparators



Nepal Earthquake

April 25, 2015

- 7.8 magnitude
- Epicenter was in Lamjang/Ghorkha area west of Kathmandu
- Caused extensive damage to large areas of Nepal as well as India and China
- ~8900 dead and ~26,000+ wounded
- 8 million people impacted
- Much of the country's infrastructure was damaged including most health facilities

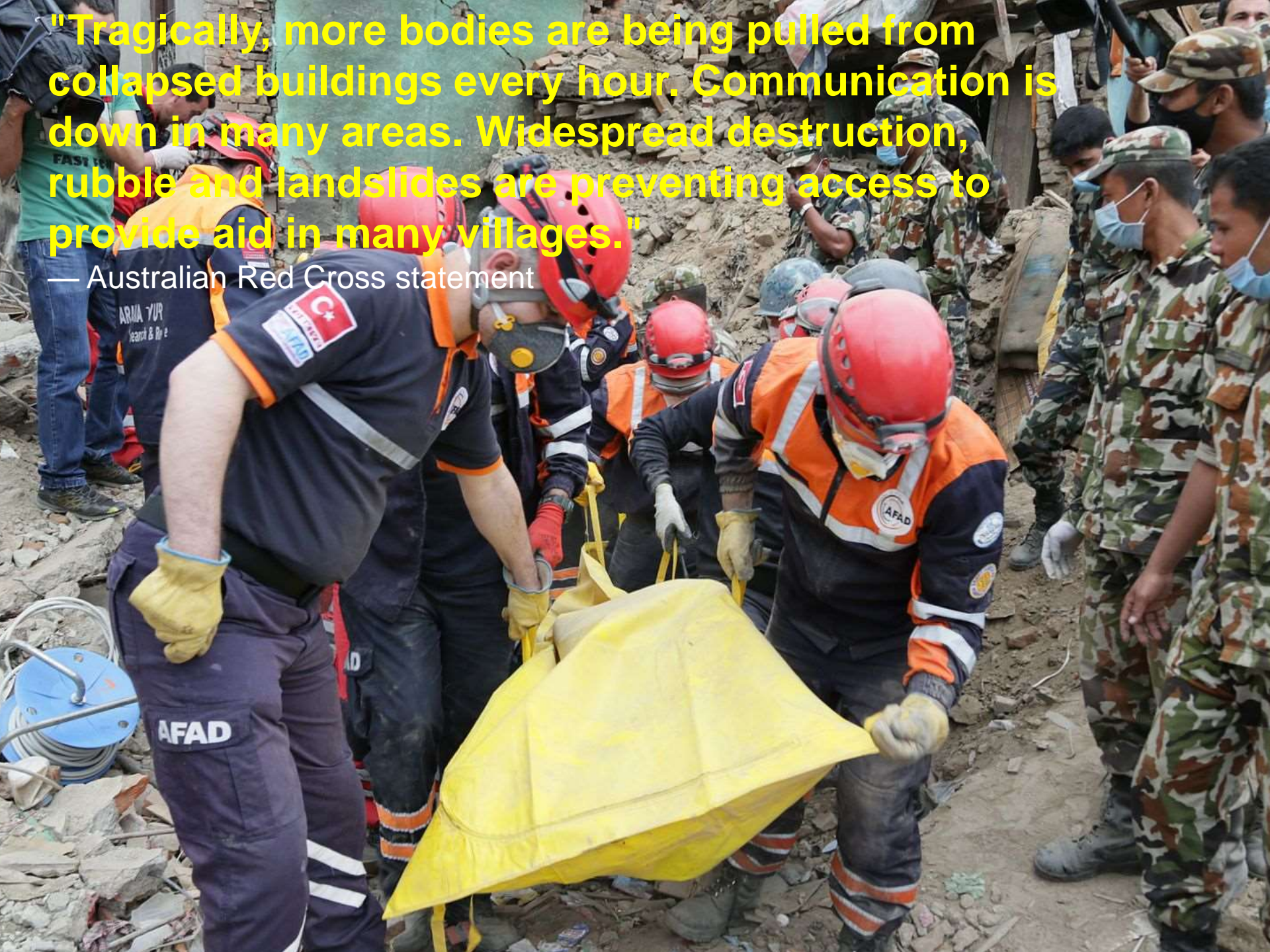
Nepal earthquake_ Video shows terrified
tourists as the temple collapses - BBC
News.mp4





"Tragically, more bodies are being pulled from collapsed buildings every hour. Communication is down in many areas. Widespread destruction, rubble and landslides are preventing access to provide aid in many villages."

— Australian Red Cross statement





























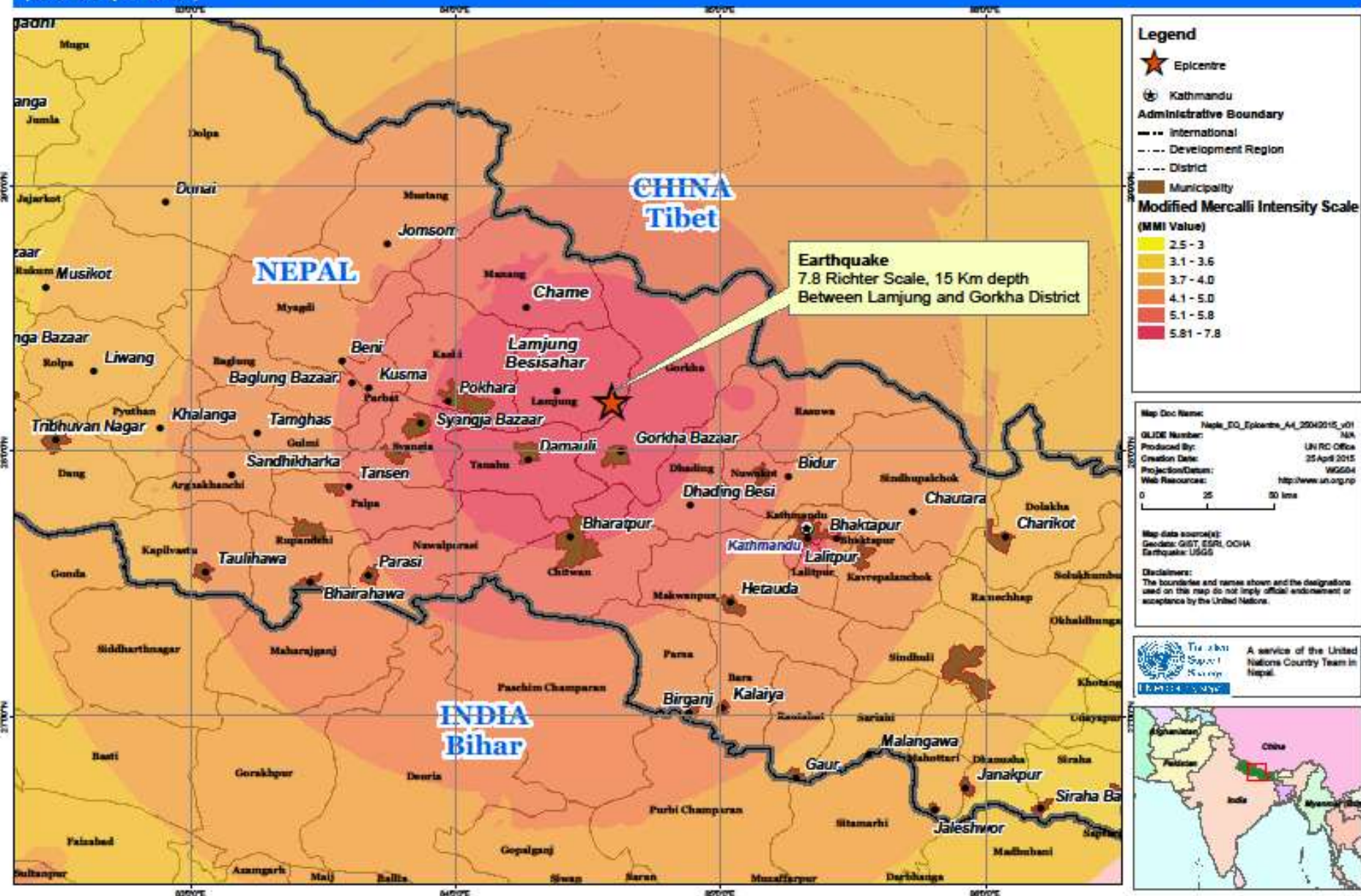




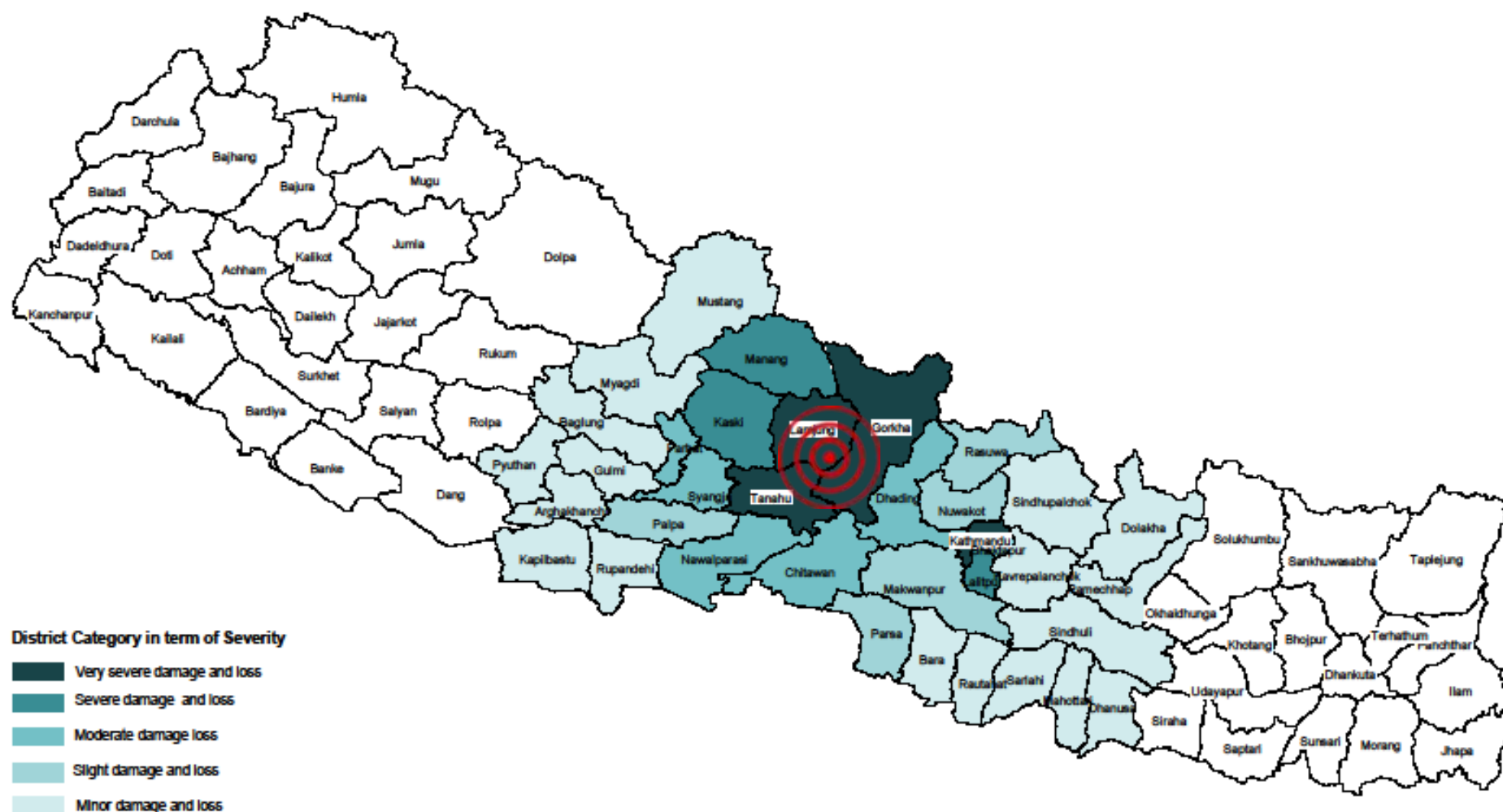


NEPAL - Epicentre of the Earthquake, 25 April 2015

(as of 25 April 2015)



NEPAL – Severity of Districts in Term of the Earthquake Intensity Area

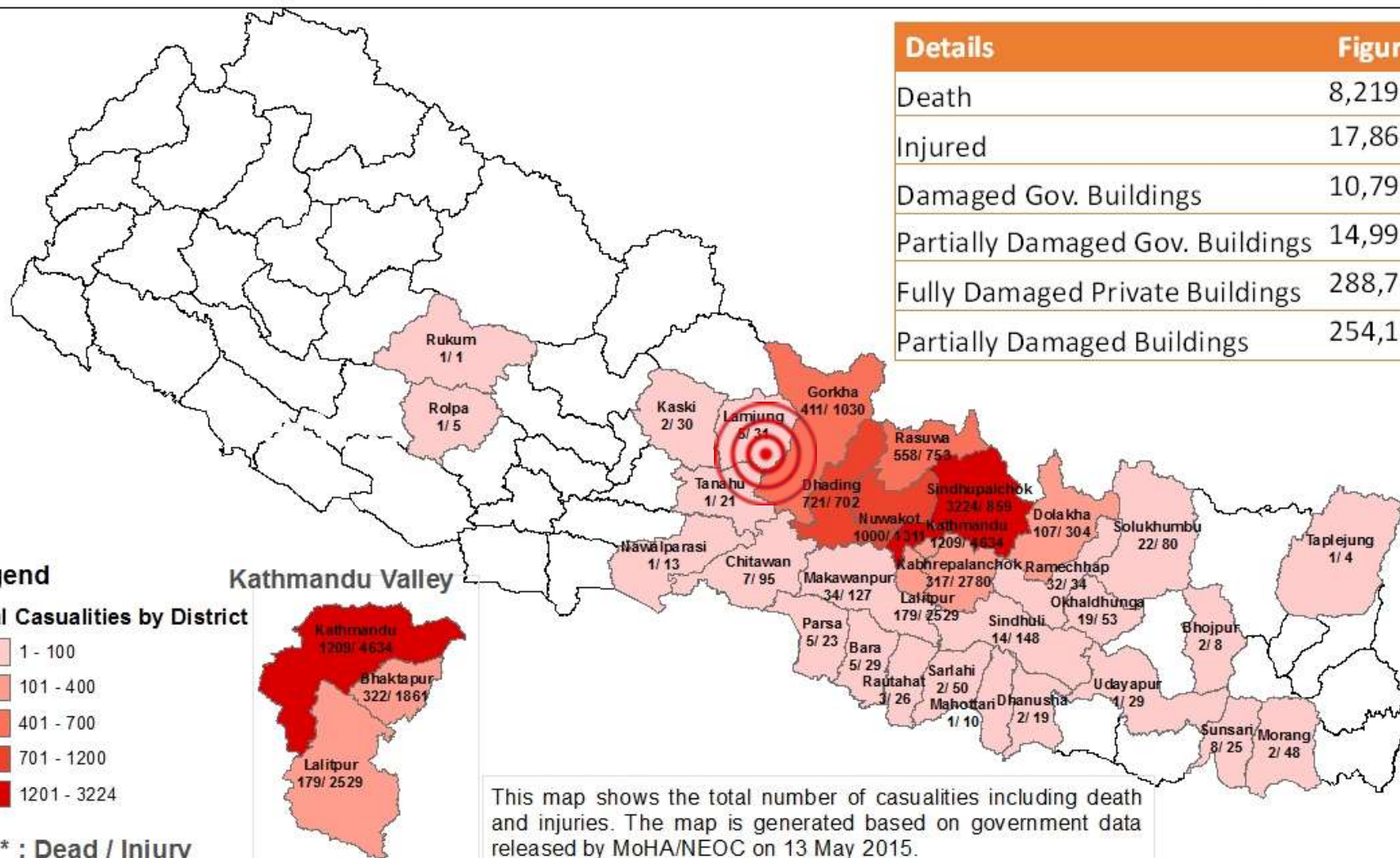


NEPAL: EARTHQUAKE CASUALTIES

As of 13 May 2015



OSOCC
Assessment Cell



Impacts Critical Infrastructure

Water

Sewage

Communications

Power



Roads and Transportation Routes





आशिष स्तर

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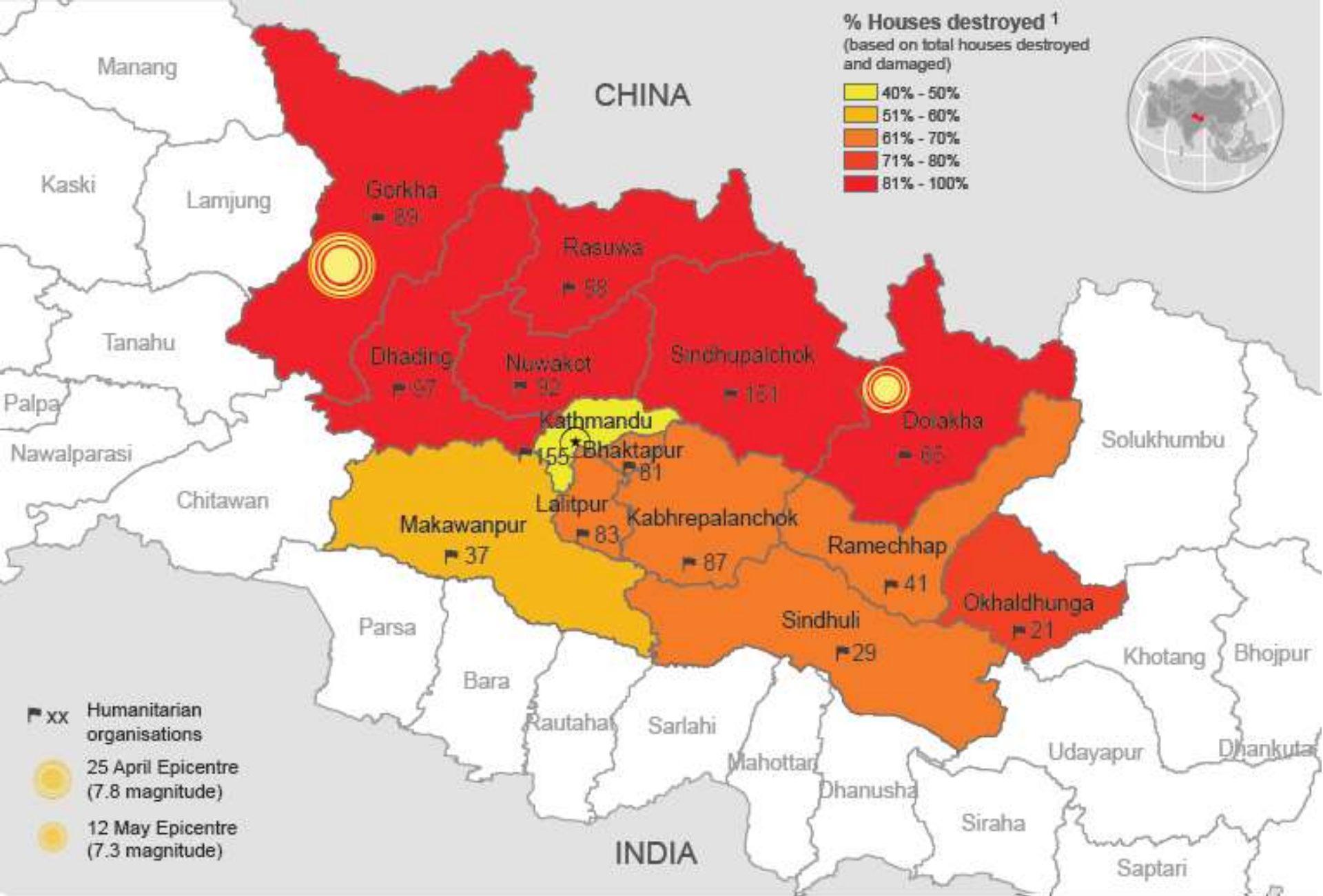


Shelter



600,000 homes destroyed

280,00 homes damaged



Map Sources: UNCS, Nepal Survey Department; USGS - Data sources: 1 - MoHA figures as of 28 June 2015;











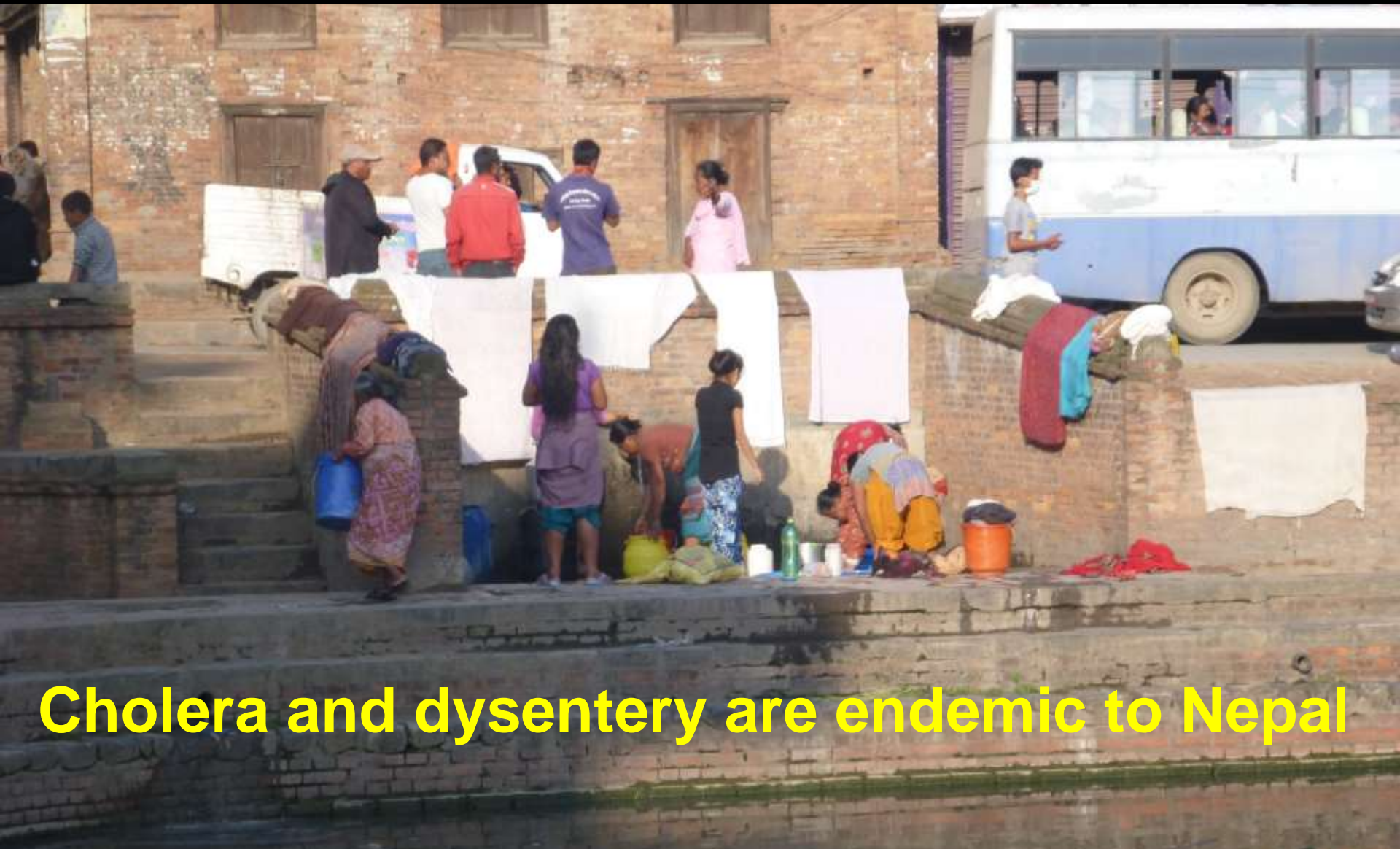


Access to Food





Sanitation and Hygiene



Cholera and dysentery are endemic to Nepal



Health System



Health System Impacts

- 446 health facilities completely damaged (Hospitals, Primary Health Care Clinics, and Health Posts)
- 746 partially damaged
- Understaffed and overwhelmed
 - Huge influx of casualties
 - Staff casualties or unable to get to work
 - Loss of treatment areas, surgeries, lab, etc
 - Power, water, sewage, etc., dysfunctional



GLOBALMEDIC



RESTRICTED USE

Caution: This Structure has been inspected and found to be damaged as described below:

Shear cracks on wall, outer plan
failure, beam-column junction problem at
certain blocks. Bands are missing in infill wall, brick

Entry, occupancy, and lawful use are restricted and indicated below:

☒ Do not enter the following areas:

Near Extensive wall Cracks

☒ Brief entry allowed for assess to contents:

☐ Other restrictions:

Facility Name and Address:

Old Block of Army hospital, Chhauri

Date: 2072/11/17

Time: 5:40 PM

(Caution: Aftershocks since inspection may increase damage and risk.)

Cladding in wall severely damaged and needed to be dismantled

This facility was inspected under emergency conditions for:

(Jurisdiction)

Inspector ID/ Agency:

Government of Nepal, Ministry of Urban

Development, Department of Urban

Development and Building Construction.



Do Not Remove, Alter or cover this Placard
until Authorized by Governing Authority.

Repair & Retrofit & Detail Investigation Required







Kathmandu Imaging Pvt. Ltd.



ANNAPURNA NEUROLOGICAL INSTITUTE
अन्नपूर्ण न्यूरोलोजिकल संस्थान

PO Box: 24663, Maitighar, Kathmandu, Nepal. Tel: 4262114, 4262195. Email: info@annainstitute.com.np



Kathmandu Imaging

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MRI. CT-SCAN. USG. DOPPLER. DIGITAL X-Ray









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Health System – Maternal

- 1.4 m females of reproductive age, ~93k were pregnant
- ~ 10K deliveries monthly requiring emergency obstetric care
- ~1500 require caesarian section
- Many delivered in areas with no health care or housing

Additional Impacts

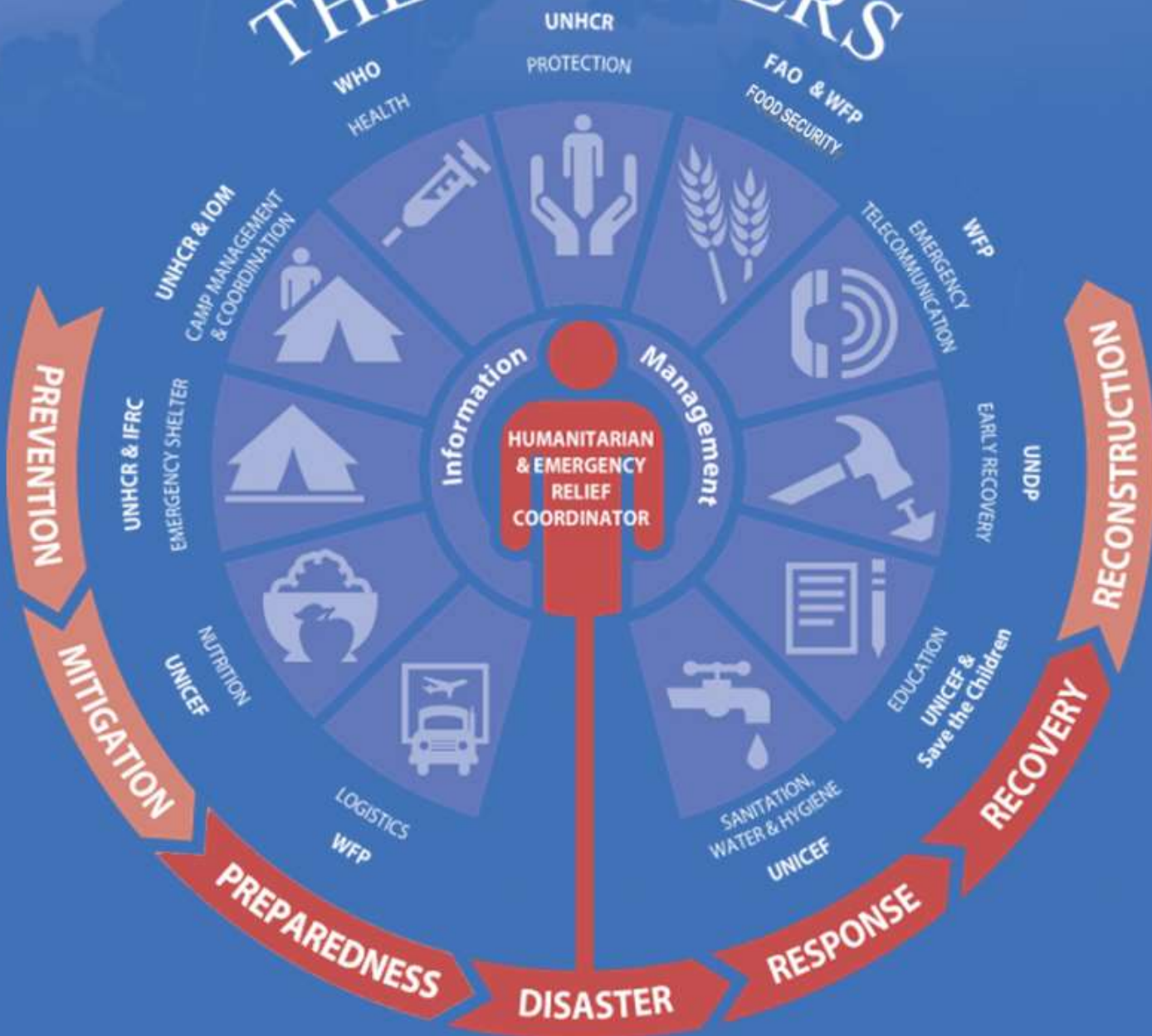
- Loss of schools – 1.4 million students out
- Loss of economic capacity
- Loss of social programs
- Increased potential for human trafficking
- Increased incidents of GBV
- Constant state of fear exacerbated by frequent and ongoing aftershocks
- Management of deceased
- Identification and tracking of missing

International Response

- Coordinated by UN using cluster system
- 387 registered agencies in 14 districts
- Regional coordination hubs established
- Numerous non-registered agencies
- Access limited to airport and two main land routes from India and China

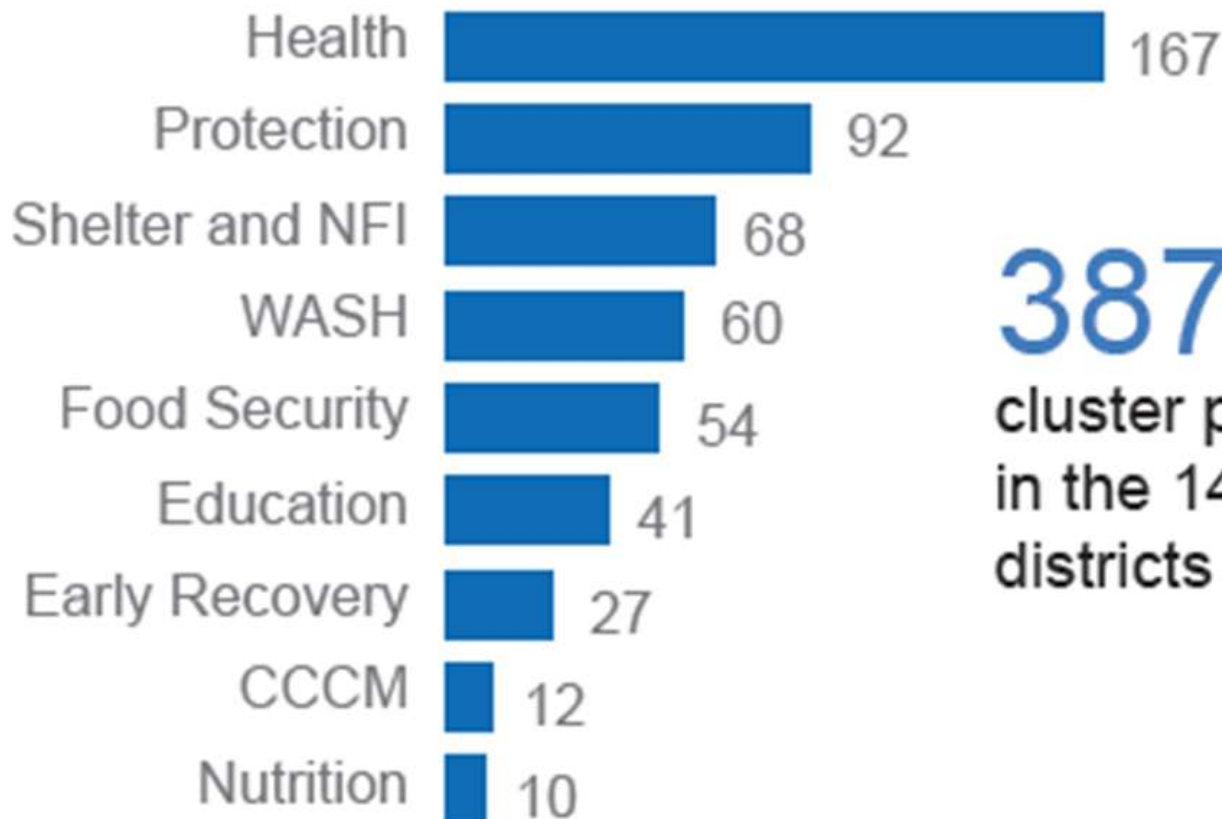


THE CLUSTERS



OPERATIONAL PRESENCE (as of 23 June)²

Number of organisations by cluster



387

cluster partner agencies
in the 14 most-affected
districts





GlobalMedic

GlobalMedic provides emergency relief to those affected by natural disasters and complex emergencies.

- Non-profit Canadian NGO
- Over 100 missions in over 50 countries
- Disaster relief and capacity building
- Operational arms (medical, fire, water)
- Arrived in Nepal April 27th



GlobalMedic Response

Priorities

- Potable drinking water
- Shelter
 - Medical
 - Maternal and child health
 - Schools
- Disaster mapping with UAVs
- Non food items (NFI) such as hygiene and household kits

Water

Immediate

- Aqua tabs
- AR 3 and Trekker portable units (4-6 lpm)
- AR10 (60 lpm)
- Tankering to bladder and cistern sites













christian aid GLOBAL MEDICAL Aquaplan act alliance

PURIFIED
DRINKING WATER

NEPAL EARTHQUAKE RESPONSE 2015

Minister of Labour and Minister for the Status of Women, Dr. Kellie Leitch, visited GlobalMedic's operations and helped our teams to install two water purification units at schools in Lalitpur, providing 2, 000 students with access to clean drinking water.



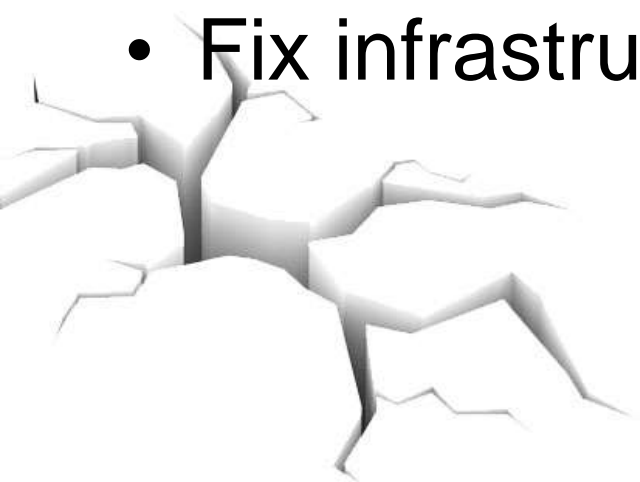
Water

Intermediate

- Rainfresh household units (6-12 months)
- AP700 (1-2 years)

Long Term

- Fix infrastructure





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christian
aid



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www.globalmedic.ca



Aquapulse

ad

PURIFIED
DRINKING WATER

NEPAL EARTHQUAKE RESPONSE 201







Shelter











विश्व स्वास्थ्य
विभाग
केन्द्र

L'ŒUVRE
LÉGER



Pour la donation
au Québec la santé

L'ŒUVRE
LÉGER

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Child and Maternal Health









NFI Aid Distribution







UAV







Collaboration



Response Challenges

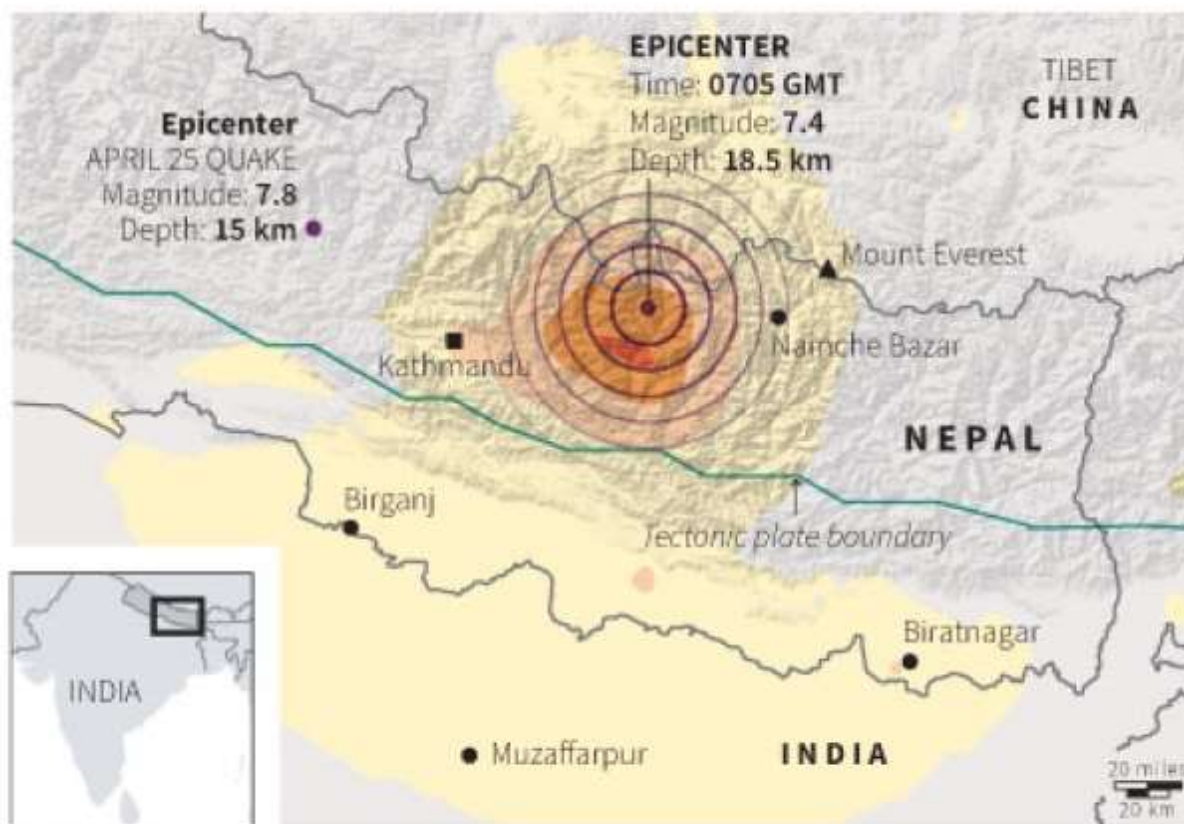
[Nepal Quake May 12, 2015.mp4](#)

Nepal shaken by fresh earthquake

A 7.3 magnitude earthquake shook Nepal on Tuesday, just weeks after a devastating temblor killed more than 8,000 people and damaged hundreds of thousands of buildings.

AFFECTED POPULATION

Estimated intensity*	II-III	IV	V	VI	VII	VIII
Perceived shaking	Weak	Light	Moderate	Strong	Very Strong	Severe
Estimated population affected (thousands)	26	95,415	60,510	3,886	304	67

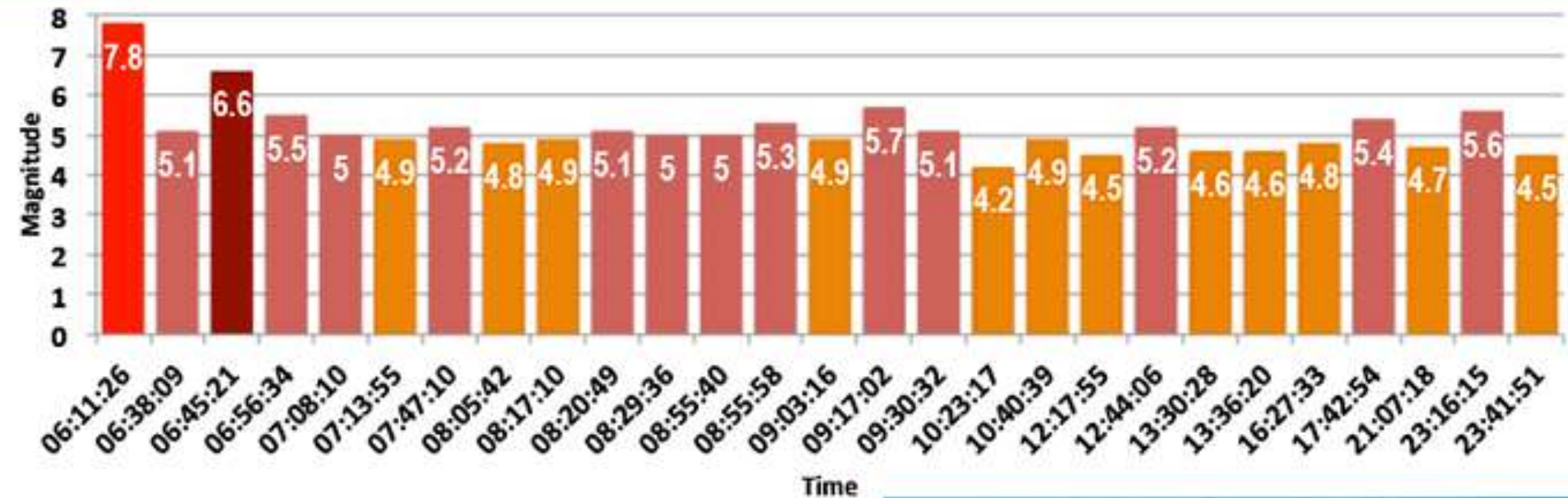


Source: USGS

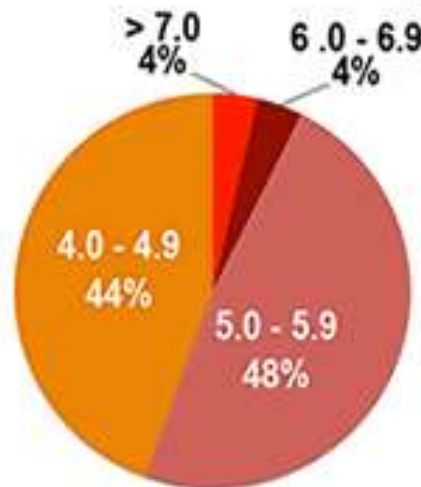
* Modified Mercalli Intensity

Aftershocks - (405 > M 4.0 April 25 –Nov 5)

NEPAL: Earthquakes on April 25, 2015, 06:00 - 24:00 UTC



Magnitude	Number
> 7.0	1
6.0 - 6.9	1
5.0 - 5.9	13
4.0 - 4.9	12



Landslides





Logistics

“Our granaries are full and we have ample food stock, but we are not able to transport supplies at a faster pace,” Shrimani Raj Khanal, Manager, Nepal Food Corp



Remote Area Access

Around 315,000 people in Nepal's most affected districts are in areas inaccessible by road and 75,000 cannot be reached even by air.











Monsoon Rains



Civil Unrest





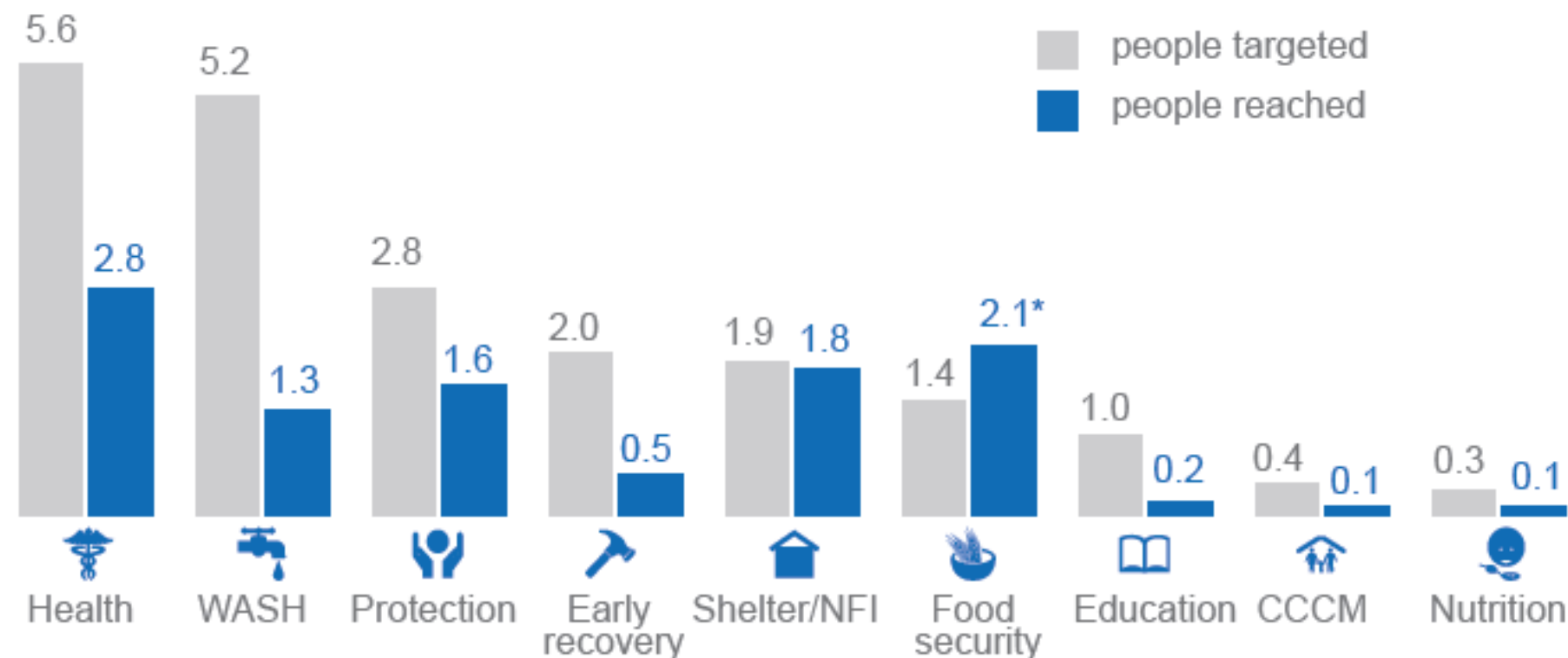


Other Challenges

- Communications
- Infrastructure
- Limited access routes into Nepal
- Customs clearance for aid
- Access to equipment and goods
- Bureaucracy - graft/corruption
- Political issues
- Decreased aid – no longer priority
- Recovery

ACHIEVEMENTS VS TARGETS²

People targeted and reached by cluster (in million)



Nepal - Planning

- Catastrophic earthquake anticipated
- Risk factors/challenges
 - Poorer country
 - Political turmoil
 - massive growth of the urban population
 - dense overcrowding in Kathmandu
 - poor building practices
 - public utilities infrastructure
 - capacity of the health system and emergency services to respond to a disaster

National Disaster Response Framework (NDRF)



The Government of Nepal
Ministry of Home Affairs
July 2013

Objectives and Scope

1 The main purpose of this framework is to develop a clear, concise and comprehensive national disaster response framework for Nepal that can guide a more effective and coordinated national response in case of a large scale disaster.

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“Thankfully there had already been a heavy investment in preparedness with simulation and training exercises conducted. Operations centers were already in place, with trained staff at district and national levels. When the disaster struck, these preparations helped responders to move fast.”

“But regardless of the level of preparedness, a disaster of such magnitude as this quake would overwhelm the response capacity of any country, and Nepal is the poorest country in the region.” Regional Director for Asia and the Pacific for the United Nations (OCHA)

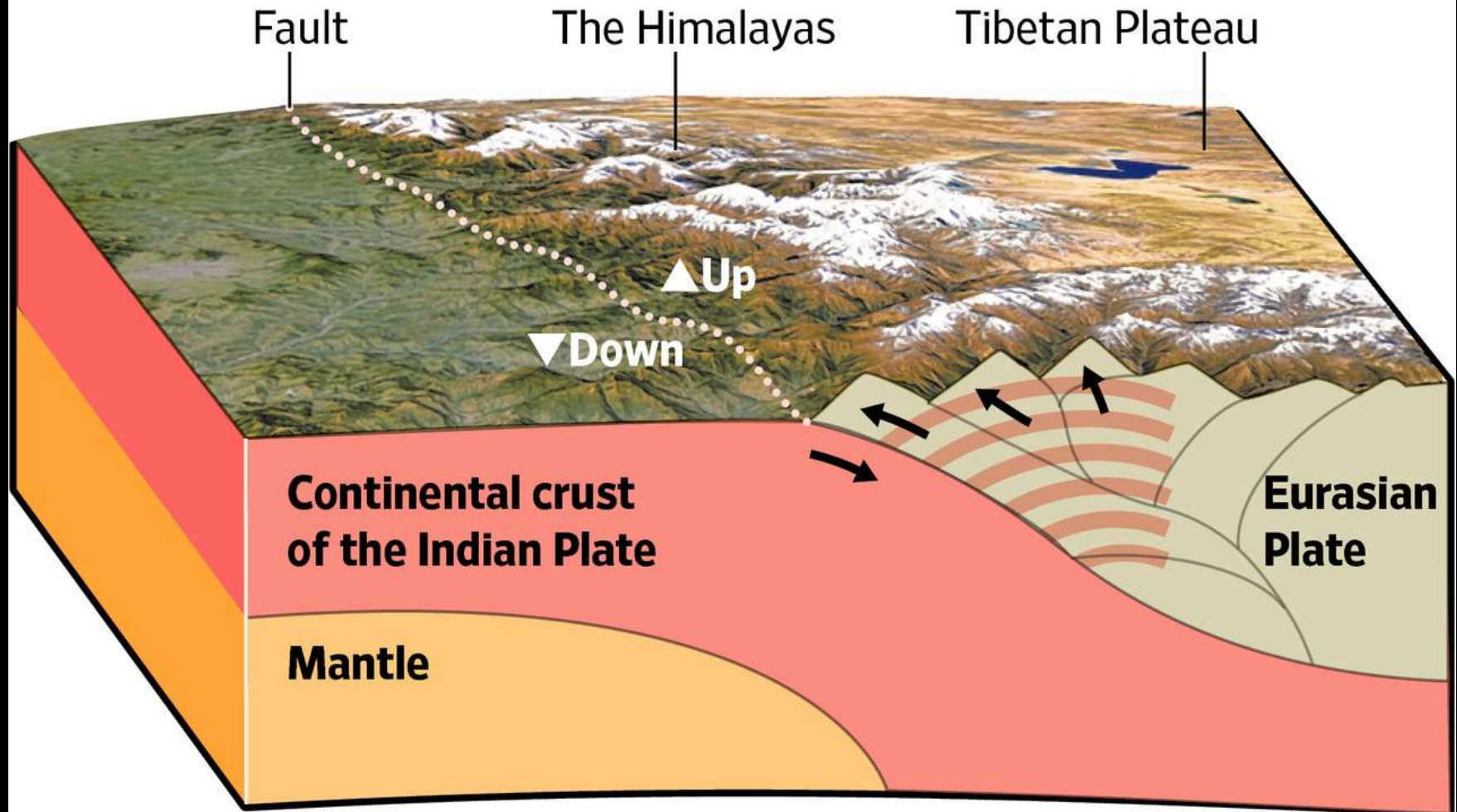
"They should not be using peacetime customs methodology," the U.N.'s resident representative in Nepal

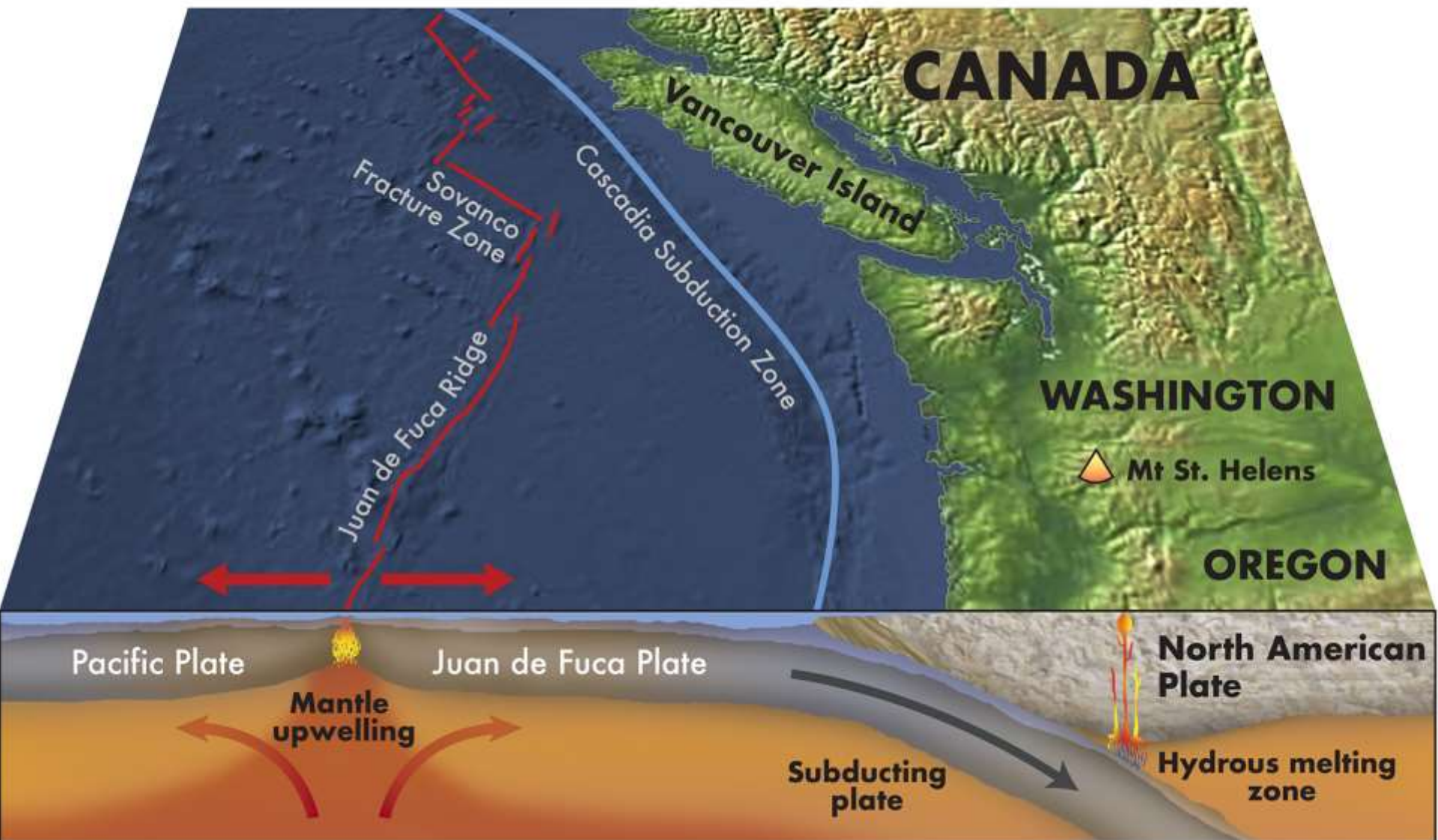
“While there have been some pockets of good practice, such as disaster preparedness training in some schools, pre-positioning of emergency stores, and some community-based disaster preparedness projects, this has not been systematically rolled out across the country.” Andrew Lee, Consultant in Communicable Disease Control with Public Health England

The government has “to give permission to everybody, not only (operate) a one-window policy. We don’t trust that if we hand over to the government it will reach the people who are suffering.” Director of Maiti Nepal

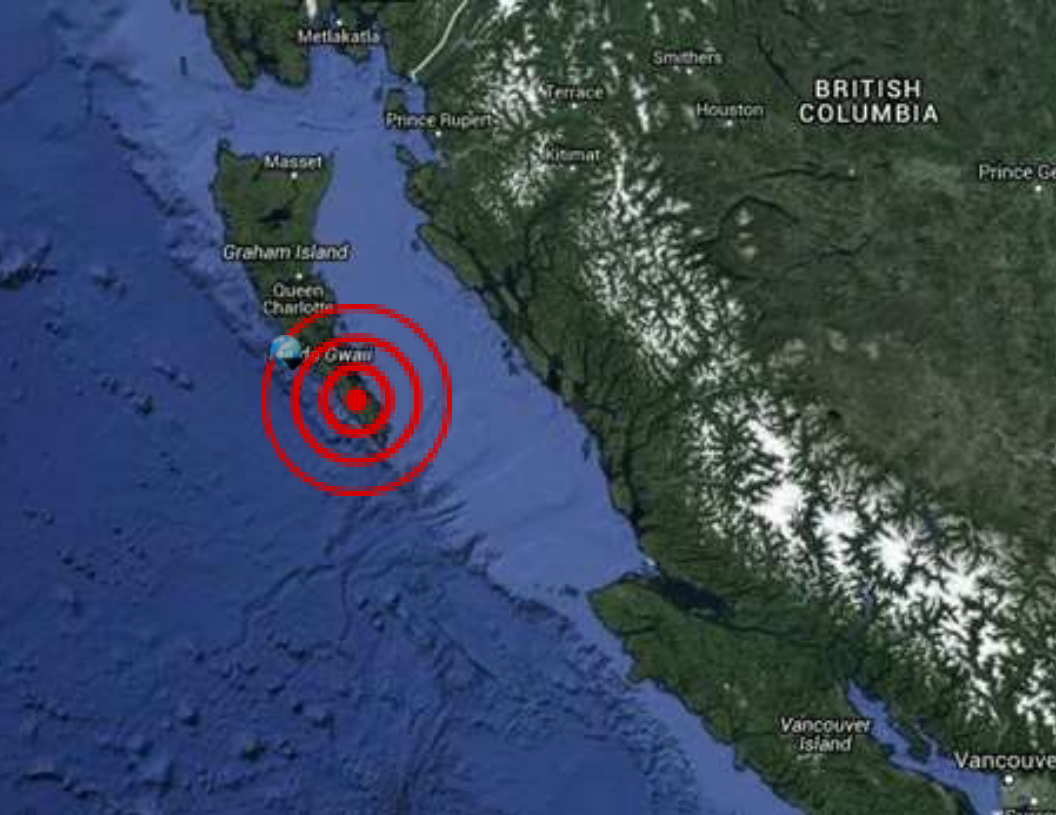
Continental Collision

As the Indian subcontinent pushes against Eurasia, pressure is released in the form of earthquakes. The constant crashing of the two plates forms the Himalayan mountain range.





City of Vancouver_ Are You Prepared for
an Earthquake_[1].mp4



2012 Haida Gwaii earthquake	
Date	October 27, 2012
Origin time	8:04:08 p.m. (PDT) ^[1]
Duration	90 seconds ^[2]
Magnitude	7.8 M_w
Depth	17.5 km (10.9 mi)
Epicenter	52.769°N 131.927°W Coordinates : 52.769°N 131.927°W
Type	Thrust ^[2]
Areas affected	Canada
Max. intensity	V (<i>Moderate</i>)
Peak acceleration	.2 <i>g</i> ^[2]
Tsunami	Yes
Casualties	None

There were **94 aftershocks** of magnitude **4.0** or greater lasting until November 7, as recorded by the USGS.

The largest of these numerous aftershocks was a **6.3** magnitude earthquake that occurred 56 kilometres (35 mi) to the west of the main tremor on the morning of October 28.^[15] This was followed on October 29 by a **6.2** aftershock 50 kilometres (31 mi) to the south of the original quake.^[16]



OFFICE OF THE
Auditor General
of British Columbia

NEWS RELEASE

For Immediate Release

March 25, 2014

British Columbians at Risk if Catastrophic Earthquake Occurs

VICTORIA – Auditor General Russ Jones’ latest report, *Catastrophic Earthquake Preparedness*, states that British Columbians are at significant risk if a catastrophic earthquake were to occur today.

“Successive governments have decided to allocate scarce public resources to meet more immediate pressing demands, rather than to adequately prepare the province for a catastrophic earthquake that may or may not occur”

“British Columbians need to take responsibility and prepare for a catastrophic earthquake to protect themselves and their families”



Province of British Columbia

B.C. Earthquake Immediate Response Plan

Version 1
July 20, 2015

“Over just the last few years, we have been warned a number of times: large earthquakes off Haida Gwaii in 2012 and 2013, and an Auditor General’s report in 2014. For British Columbia, the Big One is not a matter of if, but when, and we must do more to be ready.

With the B.C. Earthquake Immediate Response Plan (IRP), we take another step forward. Our government is aware and fully supportive of the framework it lays out.”

Hon. Suzanne Anton
Attorney General and Minister of Justice

“Most important is that B.C. is on the path towards true and practical catastrophic preparedness at the provincial level. EMBC is committed to leading this undertaking and we value existing and emerging partnerships to achieve unity of effort and build resilience in B.C. as we prepare for a worst-case event.”

Pat Quealey
Assistant Deputy Minister Emergency Management BC

BC Preparedness

- Provincial/National coordination
- Regional coordination
- Logistics – air, land, sea
- Health surge planning
- International collaboration
- Large scale exercises
- Personal planning – ShakeOut BC

"By failing to prepare, you are
preparing to fail."

Benjamin Franklin (1706-1790)

It takes real
planning to
organize this kind
of chaos.

Mel Odom

If an hour has past and
nothing has gone wrong,
look closer because you
are probably missing
something...

Shawn Carby

Questions





Thank you