

**NEPAL EARTHQUAKE 2015:
*LESSON LEARNT AND FUTURE
GUIDANCE***

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**ACDR2016
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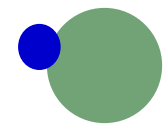
BACKGROUND

- Nepal is a **hot spot** of natural disaster.
- Frequently occurrence: **Flood, landslide, fire** are the main disasters.
- Nepal stands in the **11th** position in terms of **Earthquake disaster**, **6th** in climatic hazards and **30th** in terms of floods
- According to geological studies, Nepal lies on **Seismic Active Zone**.

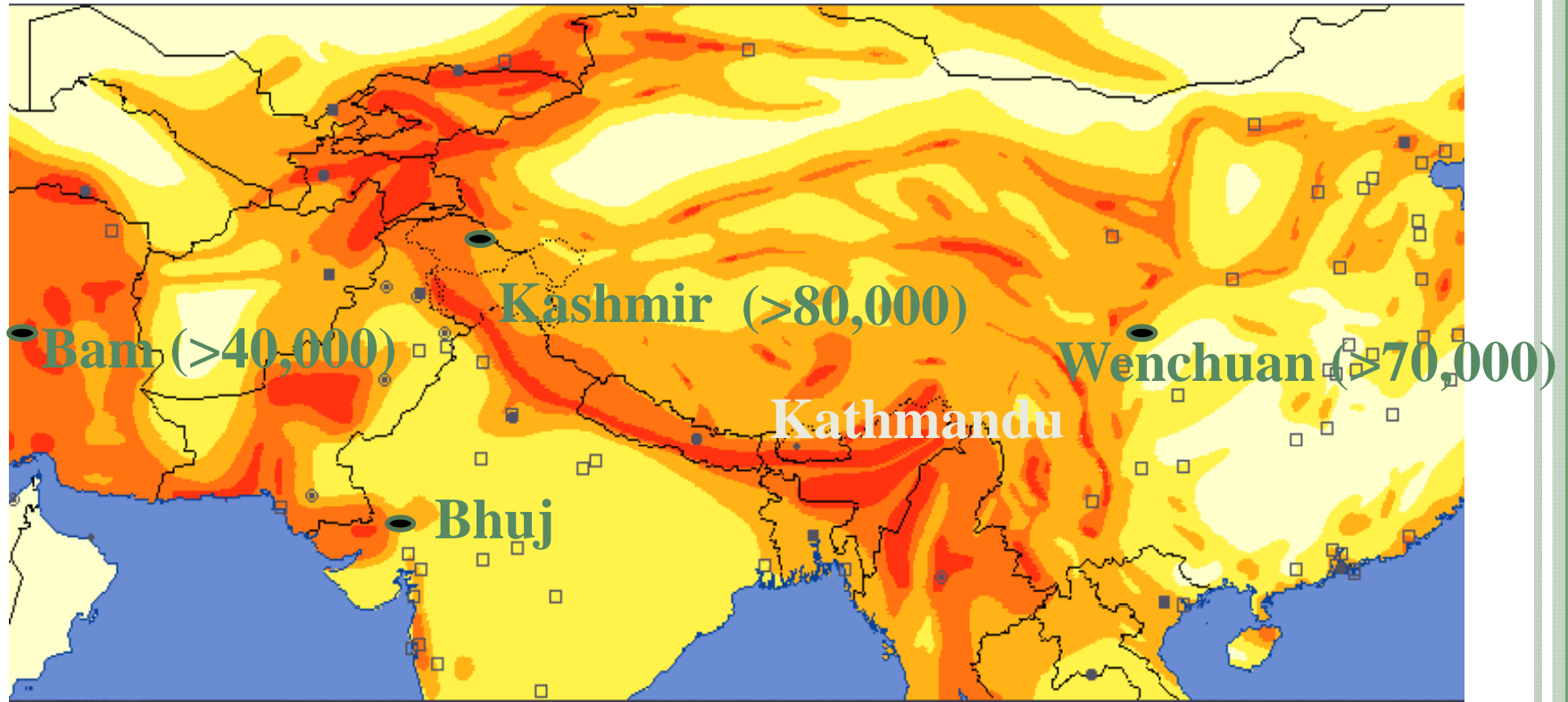


NEPAL IS DISASTER PRONE DUE TO

Difficult Geological
Terrain



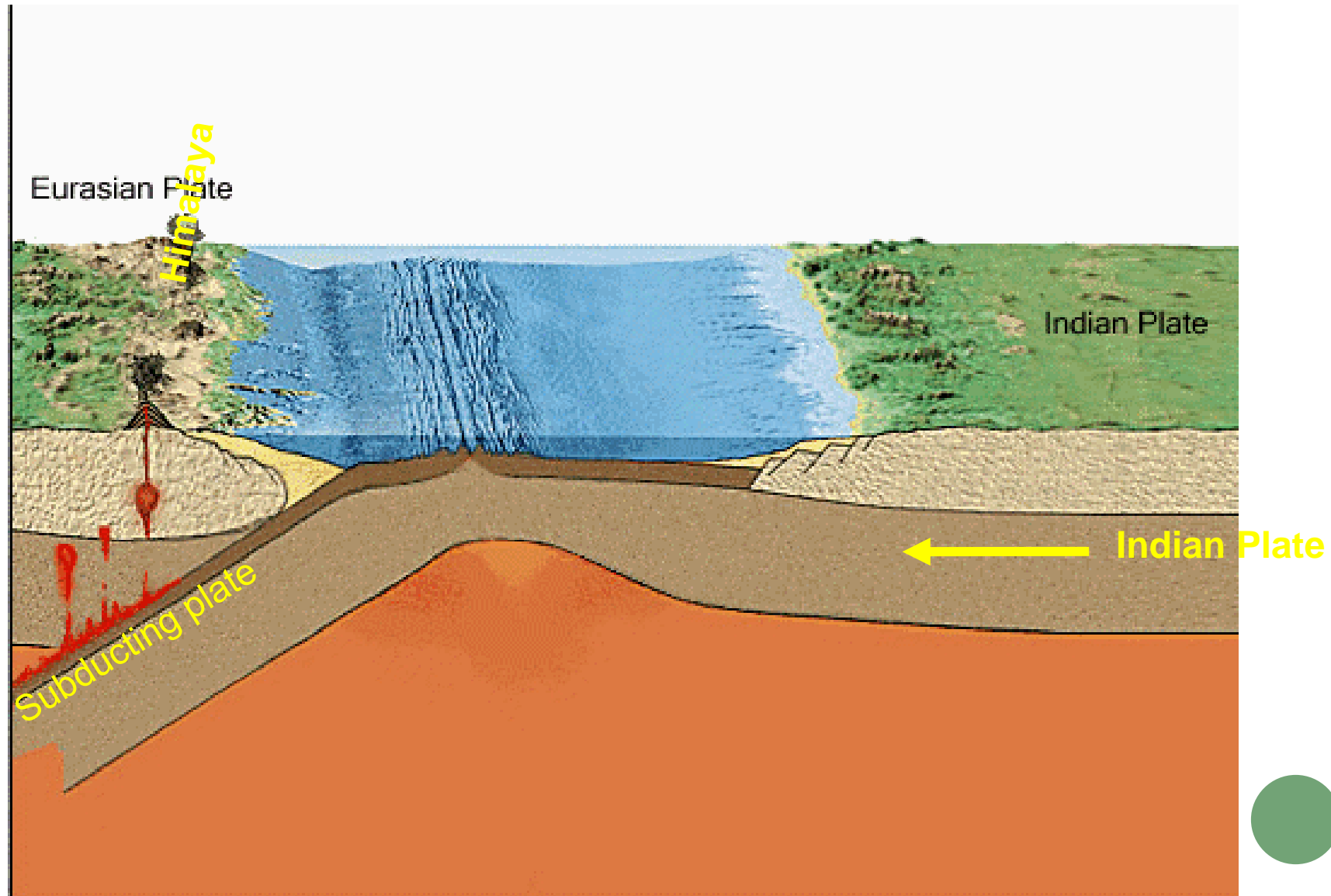
Disaster Prone Seismic Hazard



Collision of Euro Asian Plates and
Indian Plates by 3 mm per year, History of
Nepal by J. Whelpton



Earthquakes in the Himalaya



EARTHQUAKE DISASTER HISTORY

- The massive earthquake of 1255, which was the first recorded earthquake of Nepal had damaged palaces, temples, and houses in the Kathmandu Valley and killed one-third of its population. The reigning monarch, Abhaya Malla, had also died.
- Massive earthquake of Magnitude 8.4 in 1934, more than 10,000 death in Kathmandu.
- Since then, large scale earthquakes in 1980, 1988 and 2011 had caused human and physical loss.



EARTHQUAKE DISASTER HISTORY.....

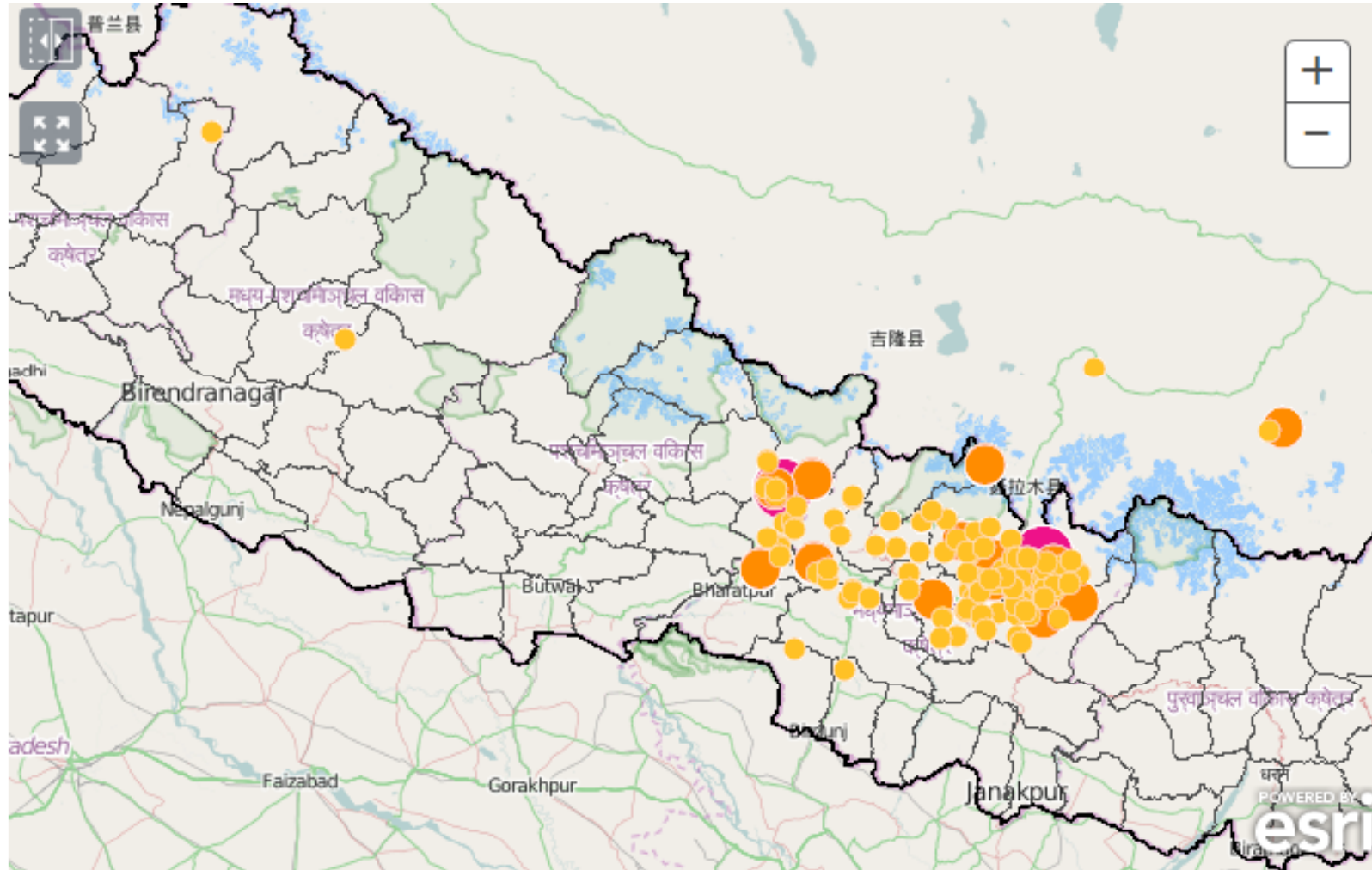
- As a result of the two major earthquakes that struck Nepal on **25 April and 12 May 2015**, nearly 9,000 lives and large number Infrastructures and houses have been destroyed.
- On Saturday, **25 April 2015 at 11:56 local time a 7.6 magnitude** earthquake recorded by Nepal's National Seismological Centre(NSC) struck Barpak in the district of Gorkha, about 76 Km northwest of kathmandu .
- Four aftershocks were greater than **6.0 Magnitude**.
- 8 Million people, one third population of Nepal have been impacted. 31 districts affected **and 14 districts** declared 'crisis-hit' for the purpose of prioritizing rescue and relief operation.

DETAIL ON APRIL 2015 EARTHQUAKE OF NEPAL

- On 25 April 2015 at 11.56, an earthquake of 7.6 Richter Scale.
- Same day at 12:30, an aftershock of 6.6 scale was felt.
- Next day, on 26 April 2015, another quake of 6.9 Richter Scale with epicenter in Sindhupalchowk was felt.
- One 12 may 2015, another aftershock with 6.8 scale occurred.
- The catastrophic earthquake was followed by more than 300 aftershocks greater than magnitude 4.0 (as of 7 June 2015).



EPICENTERS OF THE MAIN QUAKES AND THE AFTERSHOCKS



BUILDING DAMAGE

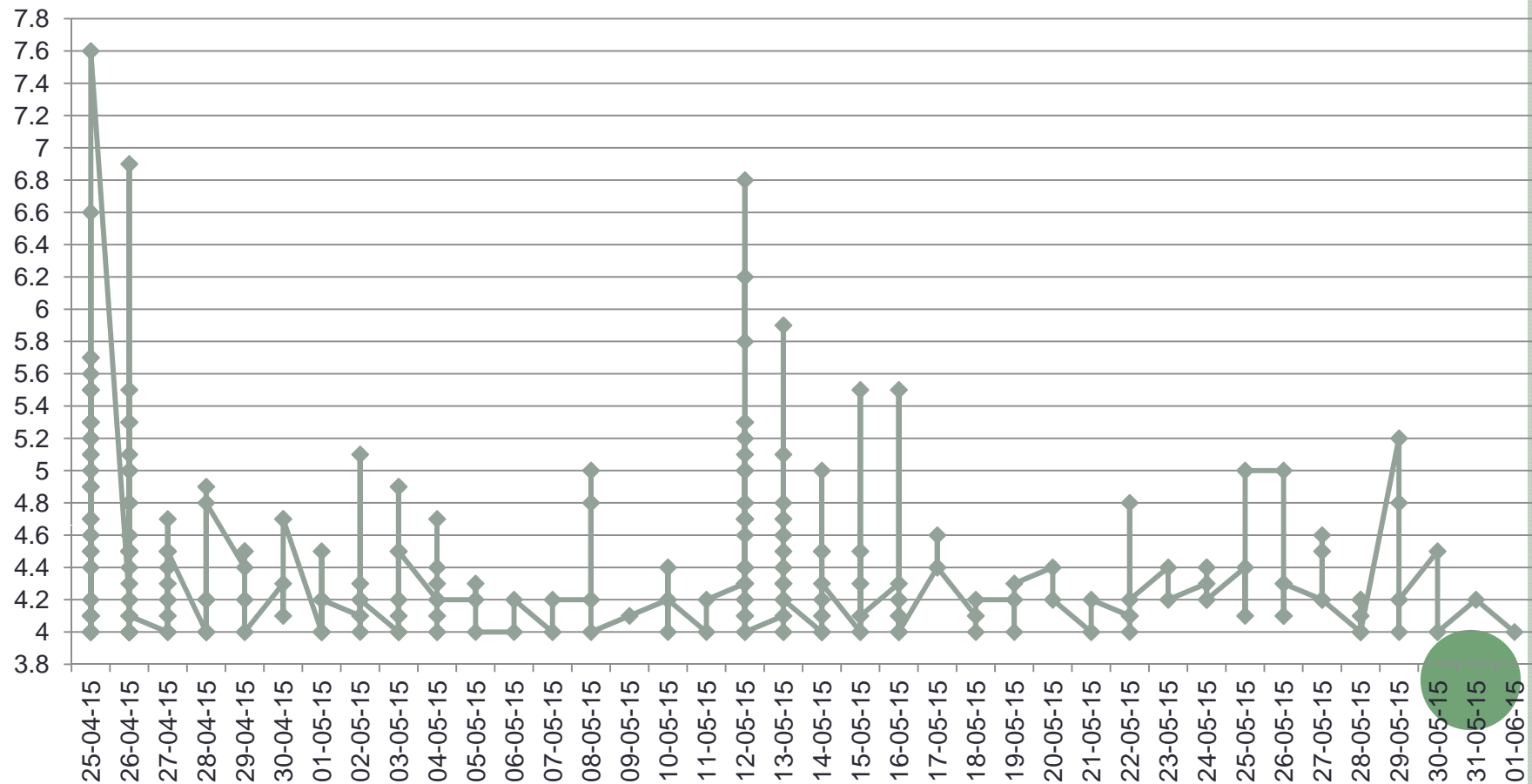


Barpak Village – the Epicenter of 7.6 ML

THE AFTERSHOCKS ABOVE 4 RICHTER SCALE

Nepal Earthquake (25 Apr - 01 Jun 2015)
Magnitude (ML), NSC, Nepal

EACH DOT INDICATES ONE QUAKE



LOSS DUE TO EARTHQUAKE

S. No.	Description	Number	Information Source
1	Death	8,891	Nepal Police
2	Missing	198	Nepal Police
3	Injured	22,302	Nepal Police
4	Private House Damaged	602,567	DDRC
5	Private House Partical Damaged	284,479	DDRC
6	School Class Room Damaged	18,433	MoEd
7	School Class Room Partical Damaged	7,561	MoEd
8	Health Infrastructure Damage	375	MoH
9	Health Infrastructure Partial Damage Damage	648	MoH
10	Government Building Damaged	270	DUDBC
11	Government Building Partial Damaged	673	DUDBC
12	Food Damage (mt)	135,187	MoAD
13	Livestock Dead	54,411	MoAD

IMPACTS OF EARTHQUAKE



STRUCTURES DAMAGE





Dharahara made by Prime Minister Bhimsen Thapa in 1832 AD destroyed on 25th April,2015 Tower

Before 25th April, 2015



After 25th April, 2015





VEHICLES CRUSHED



ON THE ROAD



THE GOVERNMENT RESPONSES

- Two hours after the Earthquake, the Central Natural Disaster Relief Committee (CNDRC) called its meeting
- The CNDRC held its meetings on 25, 27, 30 April and 3, 10 and 12 May 2015
- Within 4 hours of earthquake, the Council of Ministers held its meeting
- The meetings were followed by meeting of the Secretaries under the Chair of Chief Secretary of the GoN
- Clusters were called upon their meetings.
- The Regional Disaster Relief Committees (REOC) and The District Disaster Relief Committees (DDRCs) held their meetings.



KEY DECISIONS OF CNDRC

- Immediate mobilisation of all relevant institutions of all Ministries
- Immediate establishment of temporary rescue houses in all 16 most affected districts and locations
- Under the leadership of Secretary of Ministry of Home Affairs, a central **command post** was established comprising Secretaries of
 - 1) Ministry of Finance
 - 2) Ministry of Defense
 - 3) Ministry of Foreign Affairs
 - 4) Ministry of Health and Population
 - 5) Ministry of Physical Planning and Transport
 - 6) Ministry of Urban Development
 - 7) Ministry of Culture, Tourism and Civil Aviation
 - 8) Ministry of Information and Communication



KEY DECISIONS OF CNDRC ...

- All the hospitals would remain open for 24 hours, all government, community and private hospitals should provide free service to the people injured by earthquake
- All media and communication services should deliver information and notices.
- 14 districts (Kathmandu, Lalitpur, Bhaktapur, Dhading, Rasuwa, Nuwakot, Kavrepalanchowk, Sindhupalchowk, Gorkha, Dolakha, Ramechhap, Sindhuli, Okhaldhunga and Makawanpur) were declared as districts of crisis.
- As the preliminary assessment showed high loss which was beyond the national capacity to address, the CNDRC recommended to the GoN for seeking international support



IMMEDIATE SEARCH AND RESCUE FORCES AND OPERATIONS



Live rescue from collapsed buildings	Individual	16	Nepal Police
Search and Rescue Team - National	Civil Servant	22,500	Related Ministries and Organisations
	Nepal Army	66,069	
	Nepal Police	41,776	
	Arm Police Force	24,775	
	Government Health Workers	9,500	
	Private Sector	4,000	
Search and Rescue Team - International	Country	34	
	Persons of the Countries	4,521	
	Canine	141	
International health Team	Groups	87	MoHealth
	Total Individual	1,400	

INTERNATIONAL SEARCH AND RESCUE TEAMS

- For SAR 4,236 helicopter flights were used (GoN/Private) with 7,558 persons rescued by air and 4,689 persons rescued by land.
- International rescue team rescued 16 lives from the rubbles and recovered many dead bodies along with our National Security Forces.
- Rescue teams were from various 34 countries : Algeria, Australia, Belgium, Bangladesh, Canada, China, France, German, Hungary, India, Indonesia, Israel, Japan, Jordon, Malaysia, Mexico, the Netherland, Norway, Oman, Philippines, Poland, Pakistan, Russia, South Korea, Sri Lanka, Singapore, Spain, Sweden, Switzerland, Thailand, Turkey, UAE, UK, USA



IMMEDIATE RELIEF SUPPORTS

Based on Disaster Victims Relief Standard, 2064

- NPR40,000: Per human death to the family
- NPR5,000: Complete house damage
- NPR3,000: Partial house damage
- NPR2,000: For immediate food

As per the decision of Council of Ministers:

- Additional NPR100,000: who have lost family member/s
- NPR15,000: for Temporary Shelter for complete and partial house damage



COUNTRIES AND ORGANIZATIONS SUPPORTING IN SEARCH, RESCUE AND RELIEF

- ▶ Government of Nepal (Central and Local Governments), Gov. of Neighboring Countries, UN Agencies/ Specialized Agencies, International NGOs
- ▶ NGOs, Civil Society, Community Organisations, Business Houses/ Groups, Individuals

Food: 1) India, 2) Bangladesh, 3) Myanmar, 4) Pakistan, 5) China, 6) Thailand, 7) Sri Lanka, 8) Indonesia, 9) Azerbaijan, 10) Korea, 11) Singapore, 12) Bhutan, 13) Poland, 14) Bahrain, 15) Russia, 16) Turkey, 17) Hong Kong, 18) Malaysia, 19) Kuwait

Non-food: 1) India, 2) Bangladesh, 3) Myanmar, 4) China, 5) Thailand, 6) Sri Lanka, 7) Indonesia, 8) Azerbaijan, 9) Korea, 10) Algeria, 11) Oman, 12) Switzerland, 13) Singapore, 14) Germany, 15) Canada, 16) Cipa, 17) Japan, 18) The Netherlands, 19) Bahrain, 20) Hong Kong



SEARCH & RESCUE.....



LIVE RESCUE



Dead Body Collection



HELICOPTER RESCUE



INTERNATIONAL ASSISTANCE



CHALLENGES – AT FIELD / OPERATION LEVEL (IMMEDIATE ACTION)

- Challenge of **approach in remote** areas for **rescue and relief**, single government agencies was not effective enough during immediate response in the remote areas.
- **Temporary settlement** of displaced
- Challenge to **manage** the space for **rubbles**



CHALLENGES – AT FIELD / OPERATION LEVEL (IMMEDIATE ACTION)

- Selection of appropriate caring of children with good faith who lost their parents and guardians.
- Challenges for immediate repair of rural roads and for immediate transportation
- Collection of integrated field information and dissemination
- Lack of office space for the government operations as significant number of government buildings were damaged / destroyed



CHALLENGES – AT POLICY AND PRACTICE

- Lack of policy, technology, tools and equipment, and skills to **dismantle the damaged structures**.
- Challenges to **restoration** and conservation of **cultural and religious heritages**.
- The earthquakes will end up pushing an **additional 2.5 to 3.5 percent Nepalese into poverty** in 2015-2016 which translates into at least 700,000 additional poor(PDNA)
- The nation will require substantial external assistance to meet the rehabilitation and reconstruction (NPR **669 billion or US\$ 6.7 billion**).



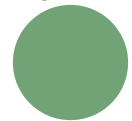
LESSONS LEARNT AND AREAS FOR FUTURE DIRECTION

- Need of new **Disaster Management Act** to address the present challenges.
- Perfect implementation of building codes. **Strictly monitor mechanism is needed.**
- Strengthen the **capacity** of National Search and Rescue Team specially focusing for **Security forces.**
- **Assured international supports** in Search and Rescue relief and recovery.

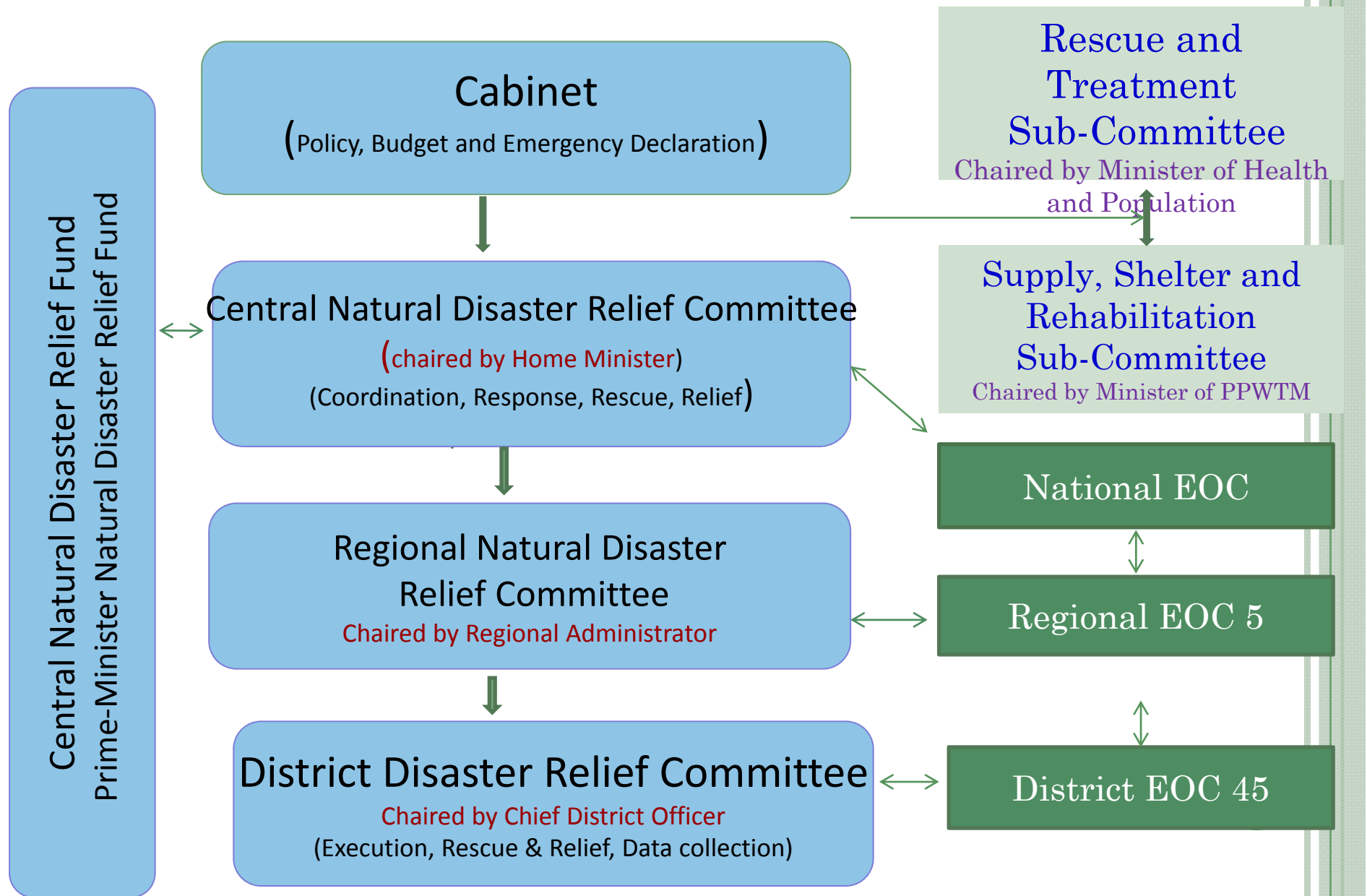


LESSONS LEARNING AND ...

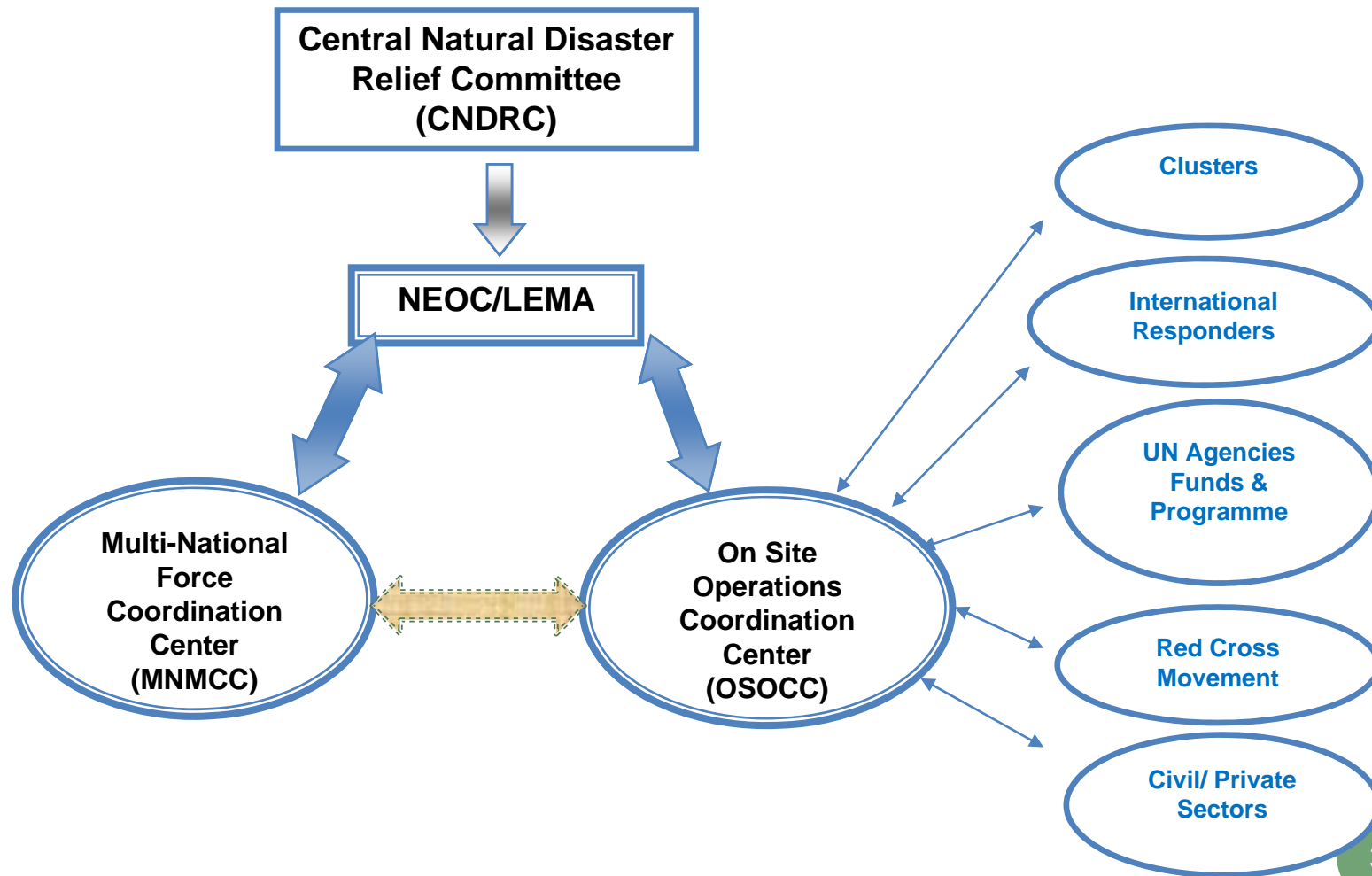
- Need of **Helipads in Rural Areas**, Provision of Helipads in each VDC
- Emergency **warehouse** and adequate stockpiling of appropriate supplies and equipment
- **One window system** is very imp. in Rescue and Relief to distribute food and nonfood items in **remote areas and to the backward and deprive people.**
- Establishment of call centres in each Village and need of GIS based integrated information system
- **Finally, Recovery should follow a community based approach which encourages communities**, utilization of social networks, and built self reliance efforts using local skills and Knowledge. It will largely be an owner driven recovery programme



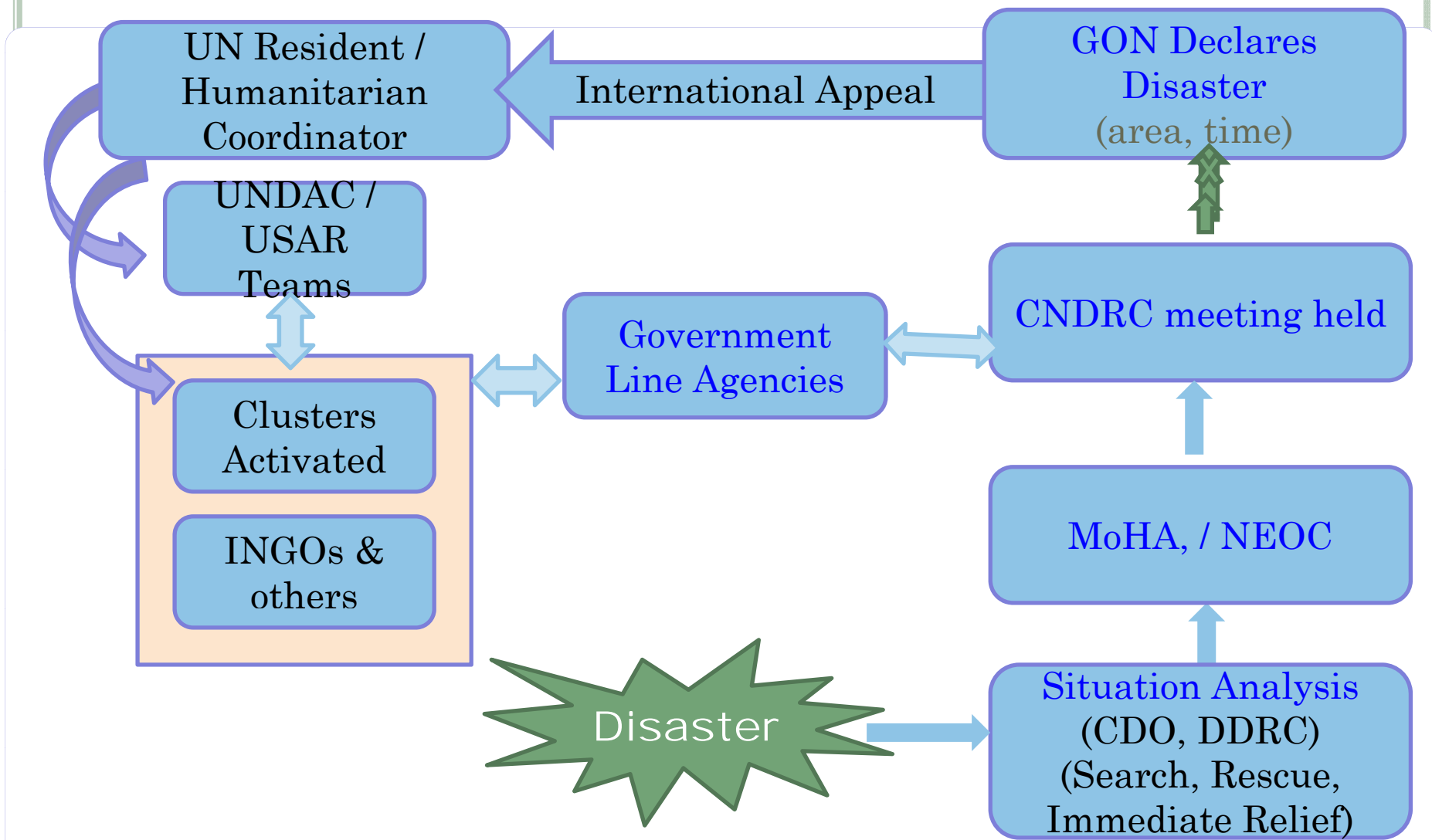
LESSON LEARN: INSTITUTIONAL FRAMEWORK (1982 ACT)



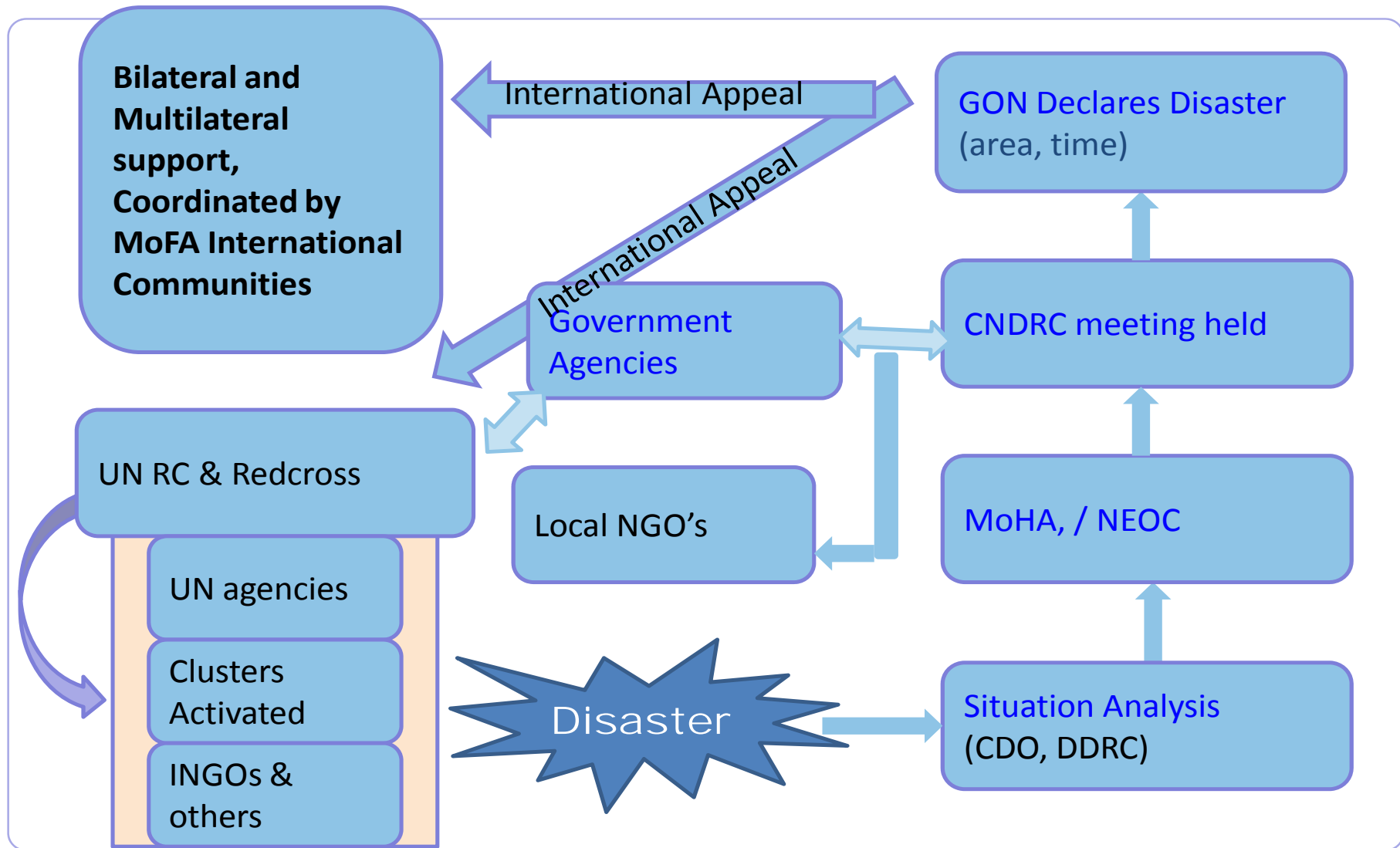
Coordination Structure during Mega Disasters



EMERGENCY RESPONSE MECHANISM (GoN): CURRENTLY PRACTICED



Lesson Learn: Proposed National Mechanism Emer. Response



RECOVERY AND RECONSTRUCTION

- National Reconstruction Authority (NRA) has been established with full and independent authority.
- Mostly affected 14 district are divided into 7 cluster headed by cluster chief for action.
- 1000+ engineers and social mobilizers are mobilized for the collection of digital information of households and damage of houses.
- Government has developed resilient models of houses, provide technical support and help delivery of construction material to accessible areas.

RECOVERY AND RECONSTRUCTION....

- Government will be providing Rs. 200,000 as grant for each house affected by the earthquake and additional **soft loan** from commercial banks.
- **Detailed HH survey** is in progress to facilitate reconstruction work and deliver social security and other services in the future.



GOVERNMENT OFFICIALS VISIT TO EVALUATE RECOVERY PROCESS



DIGITAL INFORMATION COLLECTION BY ENGINEERS AND SOCIAL MOBILIZER SUPERVISION BY LDO GORKHA



RECONSTRUCTION BUDGET ALLOCATION PLAN (NRS IN MILLION)

SECTOR	015-16	016-17	017-18	018-9	019-20	020-21	Total
Social	84,935	83,914	109,210	69,559	53,852	6,278	407,747
Productive	78,250	31,797	5,152	256	164	-	115,618
Infrastructure	29,658	21,965	12,799	4,935	4,910	-	74,266
Cross-Cutting	24,087	19,765	18,617	3,496	2,859	3,048	71,873
Total	216,931	157,440	145,778	78,245	61,785	9,326	669,504

PROVISIONS OF BUDGET (FY 2015/16)

- National reconstruction fund (RS 74 billion)
- Rs 200 thousand grant assistance to the fully damaged households
- Loan up to Rs 2.5 and 1.5 million for HH within and outside Kathmandu valley respectively at highly subsidised interest rate (2 Percent)
- Separate heritage reconstruction fund
- Mason, carpenter and artisan training to 50,000 youths



RECOVERY AND RECONSTRUCTION POLICY/ APPROACH

- Central policy/plan, decentralised implementation will be adopted.
- Adopt **BBB** (build back better) principle.
- Owner driven and **self reliant effort for reconstruction in private housing** for optimum utilisation of local resources, skills, labour
- An effective institutional set up in community level and capacity building of local people



POSITIVE ASPECTS DURING THE DISASTER TIME: BELIEFS, SOCIAL HARMONY AND COMMITMENT

- Saturday is a off day in Nepal. Therefore, schools across Nepal were closed on 25 April. The death toll of young people could have been much higher considering that nearly 7,000 schools were completely or significantly damaged. Similarly, if the earthquake had struck at night, and not in the middle of the day, there would certainly have been greater casualties.
- Lifelines were remarkably not affected during the earthquake.



POSITIVE ASPECTS DURING THE DISASTER...

- The first meeting of the Central Disaster Relief Committee (CDRC) was held immediately after the first earthquake, with the National Emergency Operation Centre (NEOC) providing an initial report to the CDRC recommending a focus on Search and Rescue (SAR), and Disaster Relief Fund was immediately allocated, and the government's Cluster mechanisms, comprising 11 sectors, were instantly activated.
- The network of NGOs and INGOs based in Nepal swiftly rallied to support community rescue and relief efforts. Several volunteer groups, especially of youth and professionals like doctors and engineers were active in treating the wounded, setting up temporary shelters, supplying food and attending to vital needs.



POSITIVE ASPECTS DURING THE DISASTER...

- Strong political will and continuous dialogue with the affected people are the most important aspects
- Self reliant and motivated urban youth were active for rescue and relief activities.
- Social harmony has become great example. Theft and robbery did not occur.



POSITIVE ASPECTS IN RECOVERY STAGE

- Post disaster needs assessment (PDNA) is prepared on time.
- International Conference on Nepal's Reconstruction was held with commitment of their contribution
- Establishment of National Reconstruction Authority as an independent authority and Post Earthquake Recovery and Reconstruction Policy/strategy and guideline are in action .



Thank You

