



# GEOSS Asia-Pacific Symposium

*Earth Observations Supporting the Implementation  
of the SDGs in the Asia Pacific Region*

Date

11th-13th January 2017

Venue

Tokyo International Exchange Center, Plaza Heisei, Japan

## NEPAL COUNTRY REPORT

### “Survey Department: a Short Look”

Krishna Raj BC

Director General

**SURVEY DEPARTMENT**, Nepal

11 January, 2017

Email: [krishnabc@hotmail.com](mailto:krishnabc@hotmail.com)

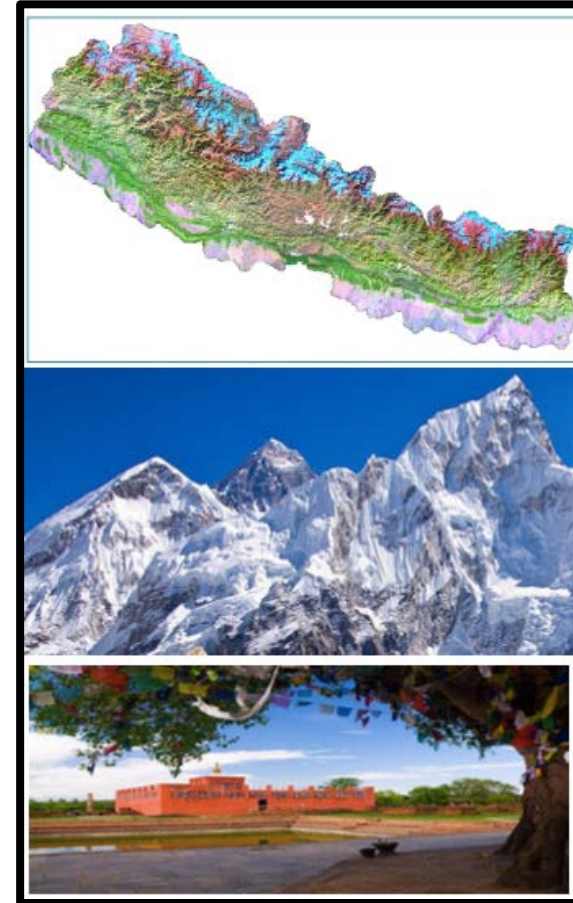


# PRESENTATION OUTLINE

- Nepal in Brief
- Survey Department, the NMO
- Geospatial Information products
- International Affiliations
- Nepal Earthquake 2015
- Post Disaster facts and priorities
- International Assistance

# NEPAL IN BRIEF

- Landlocked Himalayan Country in South Asia bordered with China and India
- Young Republic Country
- Area:147,181 Square Km
- Population: 26.4million (2011 Census)
  
- Uneven Topography ( ranging from 60 m to 8848 m MSL)
  
- Incredible Tourist destinations with natural beauty.



# **SURVEY DEPARTMENT, THE NMO**

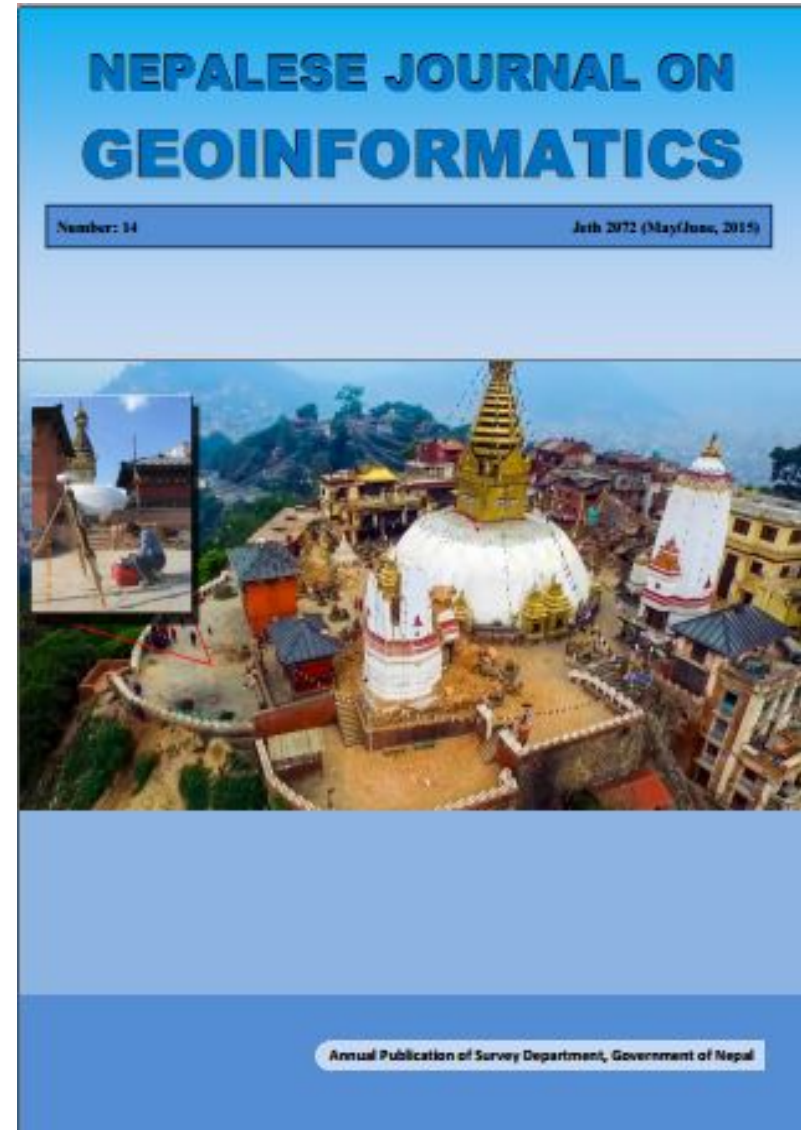
- National Mapping Organization under Ministry of Land Reform and Management, Government of Nepal
- 3 Divisions (Geodetic, Topographical and Cadastral) and 131 District Offices nationwide
- 3030 permanent staffs nationwide

# **SURVEY DEPARTMENT, THE NMO..**

- Producer and Disseminator of Geospatial Information
- Regulatory body of Geospatial activities
  - Regulating, Monitoring and Coordinating Surveying, Mapping and Geospatial activities in the country
- Authority of International Boundary mapping, maintaining, storing and storing related documents
- Nodal Authority for National Spatial Data Infrastructure
  - develop Specification/Standards on Geospatial Information and Surveying & Mapping
- The largest employer of Geospatial professionals
- Authority of issuing License to Qualified Surveyors

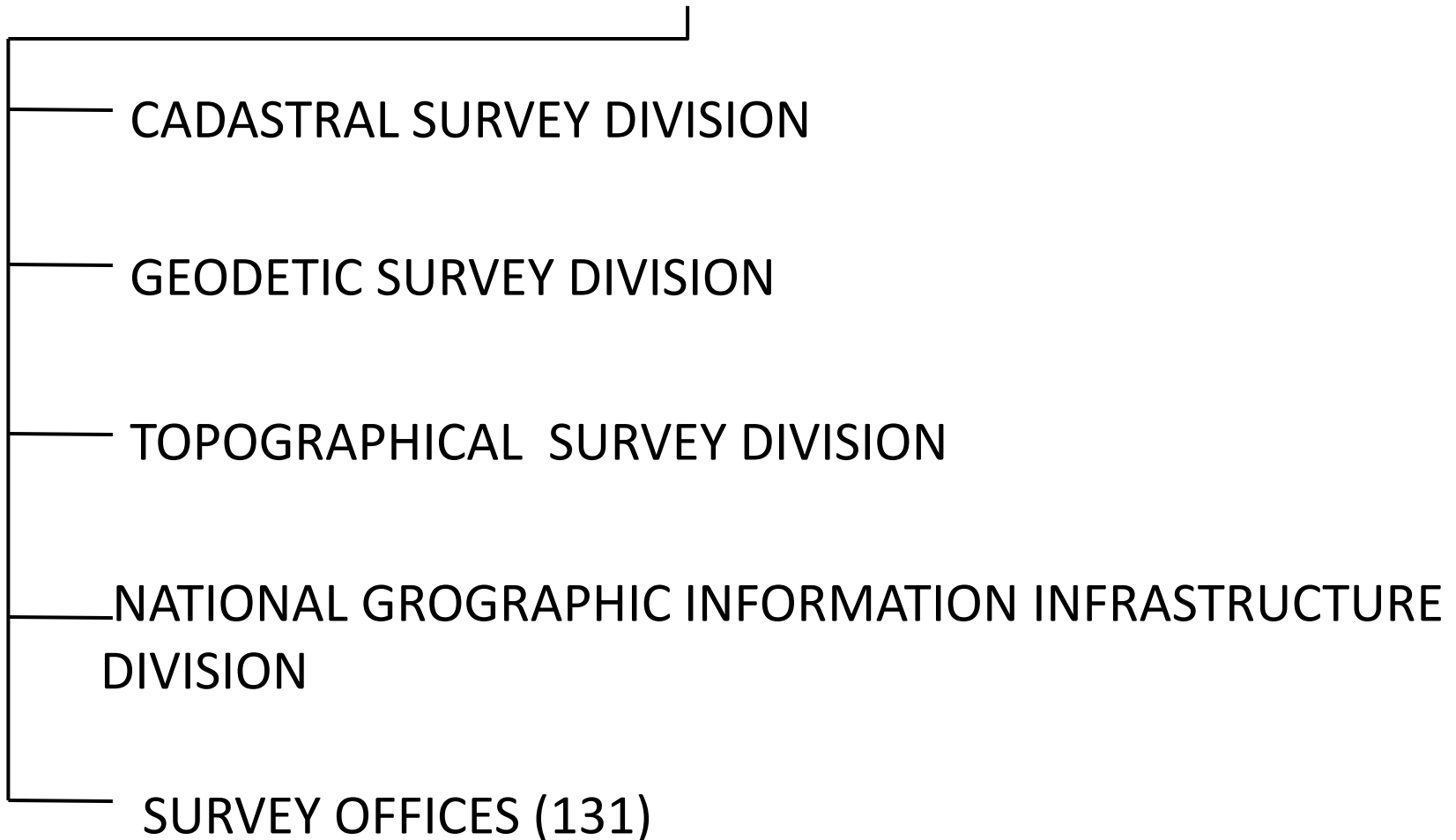
# SURVEY DEPARTMENT, THE NMO..

- Publishes GEOINFORMATICS Journal at annual basis
  - Provides forum to share the experiences and exchange professional knowledge.



# ORGANIZATIONAL STRUCTURE

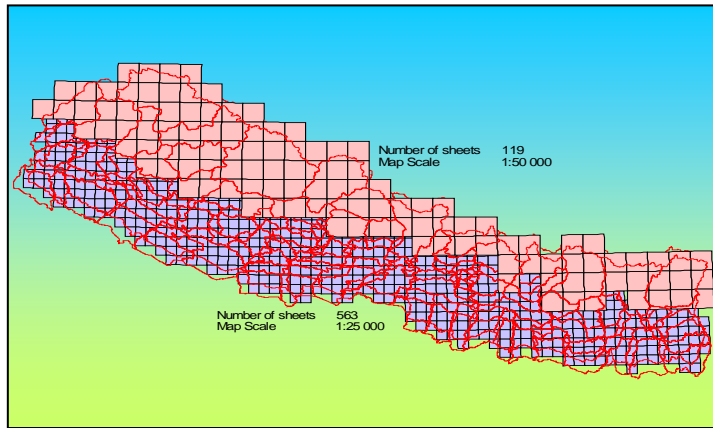
## SURVEY DEPARTMENT



# GEOSPATIAL INFORMATION PRODUCTS

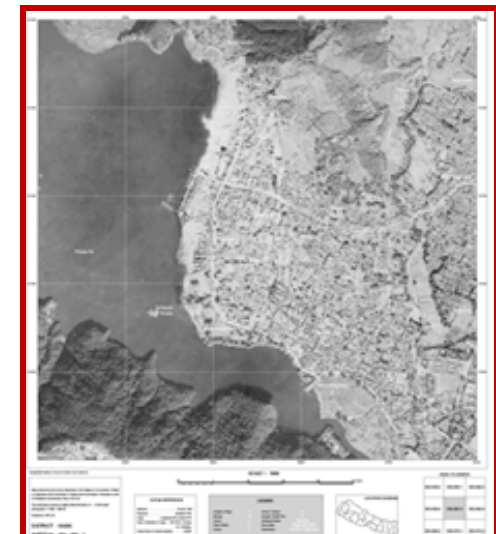
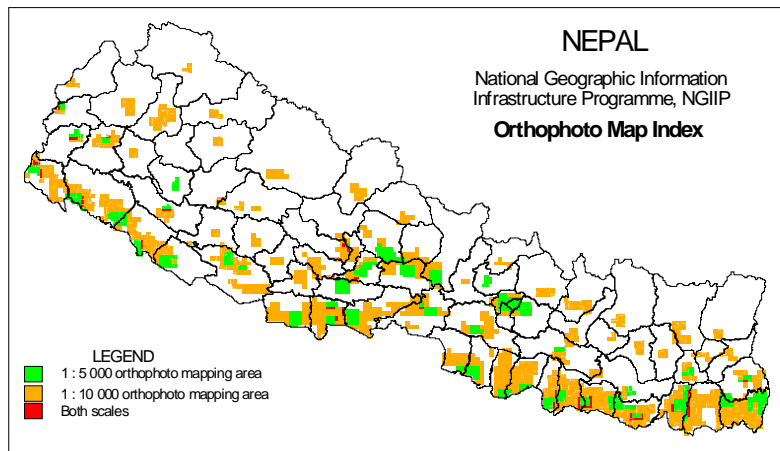
## 1. SERIES OF NATIONAL TOPOGRAPHICAL MAPS/ DATABASE

- Terai and Middle hills (scale 1:25000)
- High hills and Himalayas (scale 1:50000)



a topographical map sheet

## 2. ORTHO-PHOTO MAPS /AERIAL PHOTOGRAPHS



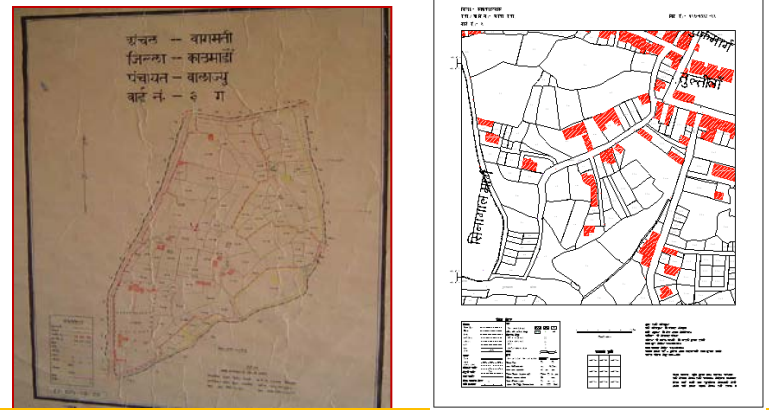
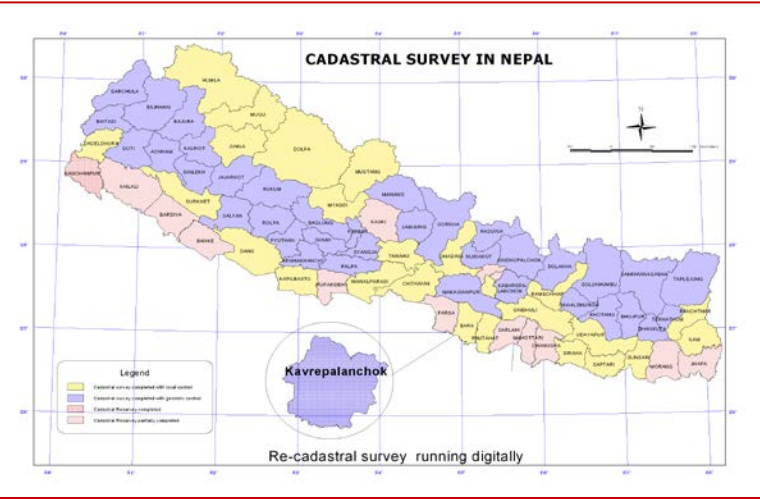
a Ortho photo map sheet



# GEOSPATIAL INFORMATION PRODUCTS...

## 3. CADASTRAL MAPS THROUGH THE COUNTRY

- Digitization and database development in all 104 offices



a cadastral map sheet (paper map/digital)

## 4. NATIONWIDE COVERAGE OF GEODETIC CONTROL NETWORKS

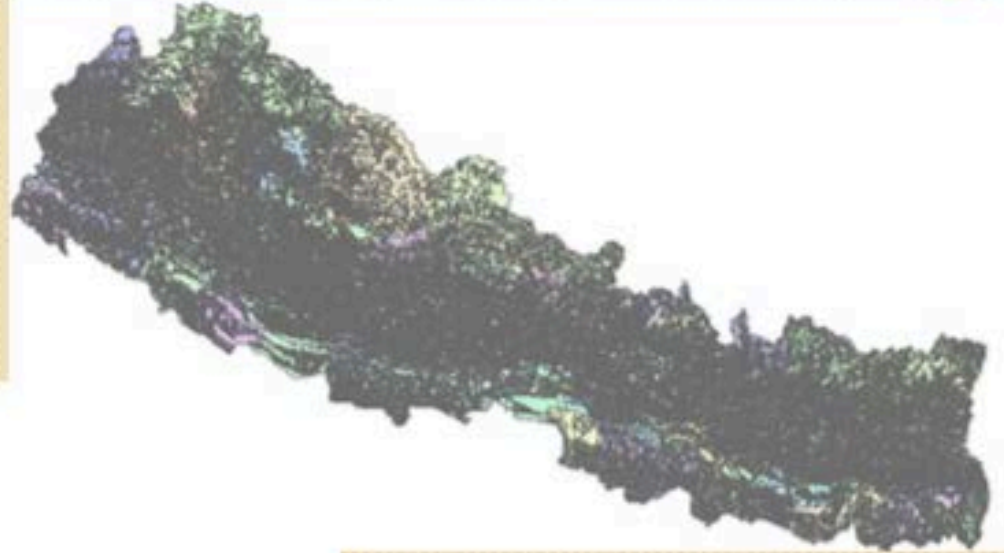
- HORIZONTAL
- VERTICAL
- AIRBORNE GRAVITY



# GEOSPATIAL INFORMATION PRODUCTS..

## 5. Nationwide Coverage Of Land Resource Maps/Database

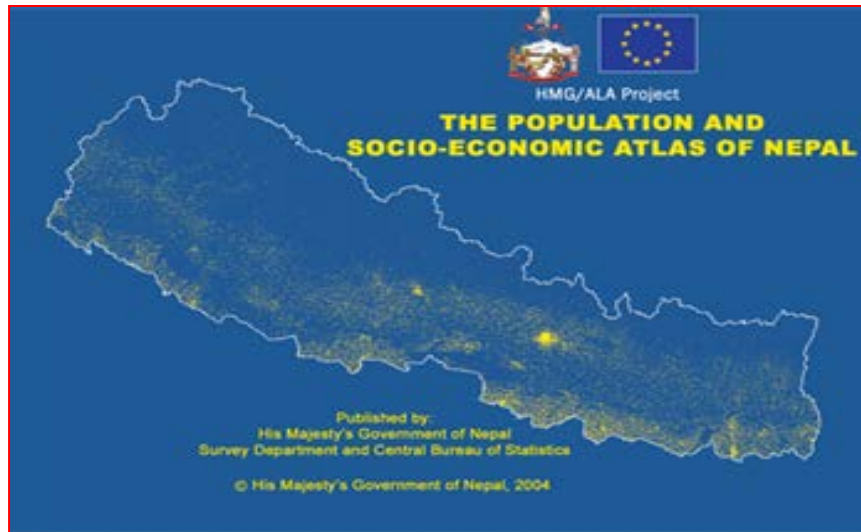
- Land use maps
- Land capability maps
- Soil maps



## 6. Digital Elevation Model

# GEOSPATIAL INFORMATION PRODUCTS...

## 7. SOCIO ECONOMIC ATLAS BASED ON POPULATION CENSUS 2001/2011



## 8. THEMATIC MAPS

- ADMINISTRATIVE MAPS
- GEOLOGICAL MAPS
- PHYSIOLOGICAL MAPS

## 9. GEOGRAPHICAL NAMES

## 10. MANY OTHER PROJECT SPECIFIC GEOSPATIAL DATA

## 11. BOUNDARY INFORMATION SYSTEM

# INTERNATIONAL AFFILIATIONS

Survey Department is now affiliated with various international organizations.



**JAXA**



**SNAC**

SAARC Networking Arrangement on Cartography

# INTERNATIONAL WORKSHOPS

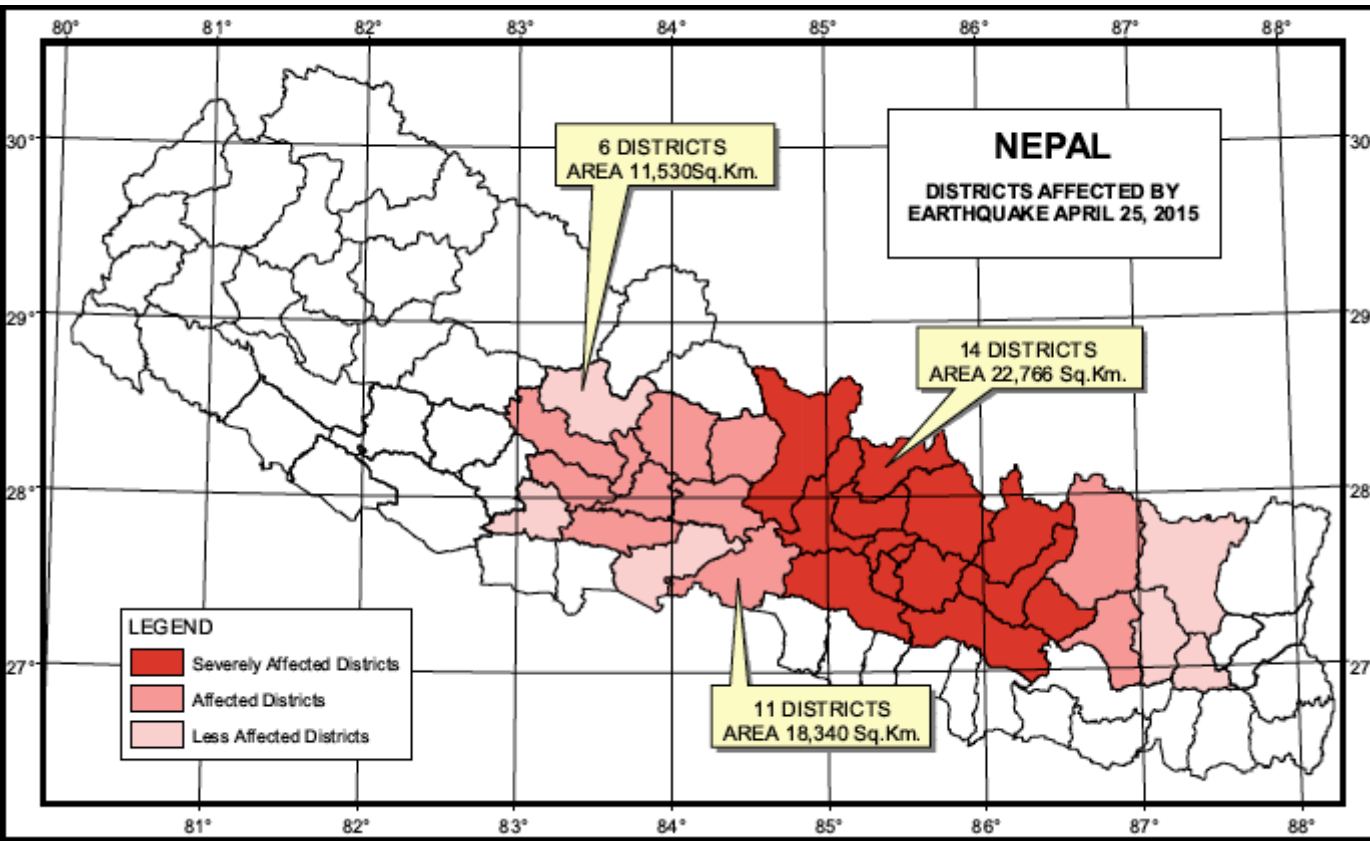
Survey Department has successfully convened

- An International workshop jointly on “The Role of Land Professionals and SDI in Disaster Risk Reduction: in the context of Post 2015 Nepal Earthquake” from November 25-27, 2015 in Kathmandu.
- **“United Nations/Nepal Workshop on the Applications of Global Navigation Satellite Systems”** from 12-16 December in Kathmandu Jointly with the United Nations’ Office for Outer Space Affairs (UNOOSA) and Co-organization and Co-sponsorship by the International Committee on GNSS(ICG)

# NEPAL EARTHQUAKE 2015

April 25, 2015,  
Gorkha  
earthquake  
struck Nepal

- Biggest Earthquake after 1934
- Affected 31 districts out of 75.



- Devastating Earthquake also affected on the Geodetic control Network of Nepal including heavy human losses.

# POST DISASTER FACTS & PRIORITY

## Reconstruction and Resettlements



- About 500 settlement areas were damaged and has to be reconstructed.
  - About 200 settlements are unsafe, vulnerable and hazard prone .
- 
- Earth Observation data and Updated geospatial information is vital for reconstruction and resettlements in a sustainable way.

# POST DISASTER FACTS & PRIORITY

## Reconstruction of Damaged Infrastructures like Schools, Hospitals, Government buildings

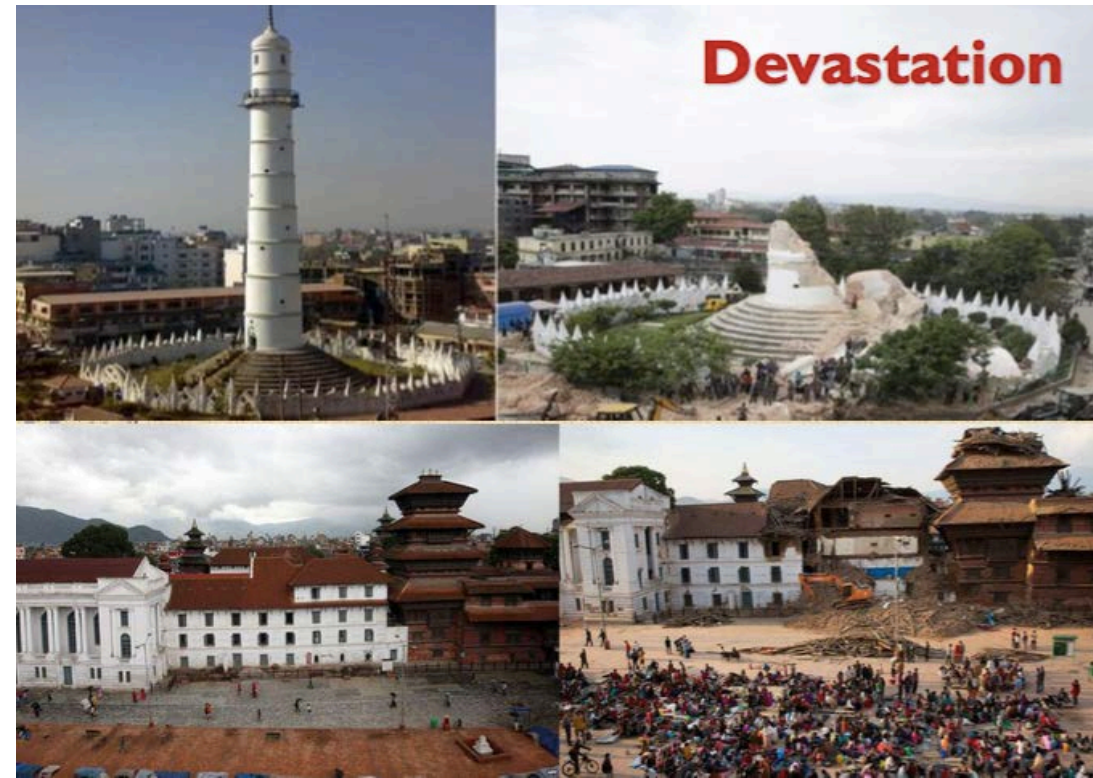
- Many hydro-electric Projects, Roads, Government buildings, Schools, Hospitals and Health posts were badly damaged by the earthquake.
- Earth Observation data and updated geospatial information is important to optimize the development investments and planning Reconstruction and of such infrastructures.





# POST DISASTER FACTS & PRIORITY

## Reconstruction of Damaged Historic and Heritage Sites



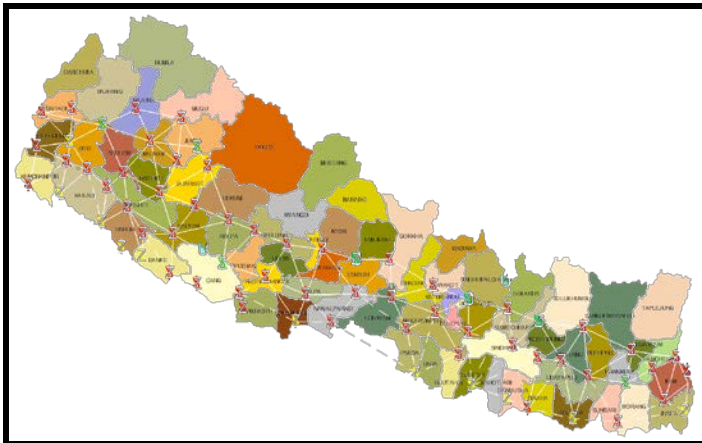
Before

After

- Many popular, historic and heritages sites were collapsed and badly damaged by the earthquake.
- The Reconstruction of these heritage sites are in progress
- Earth Observation data and updated geospatial information is important for the reconstruction in right way

# POST DISASTER FACTS & PRIORITY

- Has given priority to
  - Establish CORS (Continuously Observed Reference Station) a backbone for all mapping, earth observation and geospatial information to re-establish the Geodetic Control Network which was affected by devastating Earthquake.
  - Preparation of a common product “Ortho-photo maps with DTM” based on Earth observation data of the earthquake affected 31 districts.



- Re-establishing Geodetic Network of a country like Nepal with its given complex topography is a challenging and difficult technically as well as financially

# FACTS AND PRIORITY

- The new Federal constitution has recently been promulgated on September 20, 2015 and is in place.
- For better and effective boundary demarcation of Provincial states and Local levels, is in priority.
- The role of earth observation data and updated geospatial information is equally important for such a important activity.
- Survey Department is providing support in this initiative.



**CONSTITUTION OF NEPAL 2072**

# FACTS & PRIORITY

- in Nepal, where ¼th of the total population lives below poverty line, and Nepal lies in the natural disaster prone Zones



- Earth Observation data with updated Geospatial information is highly important on effective implementation of SDGs.

# CALL FOR AN INTERNATIONAL ASSISTANCE

- An opportunity for professionals, development partners and industries in this noble and challenging task of “rehabilitate the Geodetic Control Network”.
- Technology Transfer and Capacity Building in geospatial information production and management.
- Technology Transfer and Capacity Building in collecting, analyzing and disseminating Earth Observation data for implementing SDGs in a sustainable way.