

INTERNATIONAL WORKSHOP: INTEGRATING GEOSPATIAL AND STATISTICAL INFORMATION, 9-12 JUNE 2014, BEIJING, CHINA

Integration of Geo-spatial and Statistical Information: **The Nepalese Experience**

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Presentation Outline

- The Country Context in Brief
- NSDI initiatives
- Statistical Data Collection and Information Presentation
- Utilization of Integrated Geospatial and Statistical Information: Some examples
- Challenges
- Future Directions

Nepal in Brief

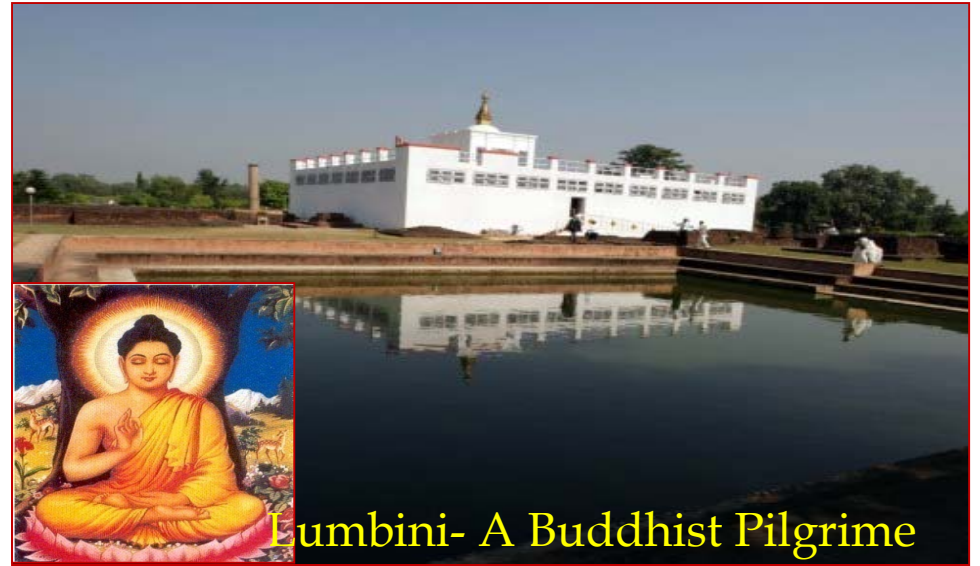
■ Federal Democratic Republic of Nepal, is a tiny Landlocked Country located in South Asia bordered between India & China.

■ Nepal has 26.49 million of population and 147181 Sq. Km. of area. (www.cbs.gov.np)

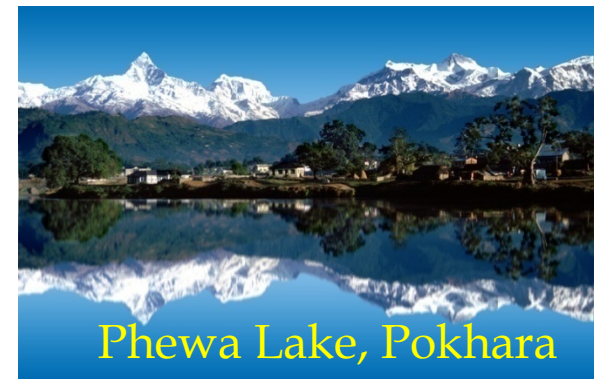


■ Nepal occupies 0.3 and 0.03 percentage of land area of Asia and the world respectively.

Nepal in Brief



- Known as land of Mt. Everest and the BirthPlace of Lord Buddha.
- The country has extreme topography and diversity of weather and climate.
- Heavenly Countryside & rich in natural beauty.



NSDI initiatives

- Survey Department (DoS) is the nodal agency for developing NSDI in Nepal
- National Geographic Information Infrastructure Project (NGIIP), as an NSDI initiative, established in 2000
- The mission is "To strengthen planning and resources management in Nepal through the development of a Geographic Information Infrastructure for the access of geographic and related Information for decision-making."

Geospatial Framework



**NATIONAL GEODETIC
CONTROL NETWORKS**



www.ngiip.gov.np



NATIONAL TOPOGRAPHICAL DATABASE

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

Geospatial Framework...

- The fundamental layers of National Topographic Data Base (NTDB) are; Geodetic Data, Administrative boundaries, Transportation Networks, Buildings, Hydrography, Topography, Utilities, Land cover etc.
- The basis for NTDB is the digitization of topographic base maps of scale 1:25 000 for the Terai and the middle mountains and of scale 1:50 000 for high mountains and Himalayas of Nepal.

Geospatial Framework...

- Datasets of Scale 1:100 000, 1:250 000, 1:500 000 and 1:1 000 000 and, a large scale 1:5 000 to 1: 10 000 also constitutes the database.
- Furthermore, Ortho-photo database is provided for densely populated urban and semi-urban areas.
- The other Database obtained from different sources of the related disciplines such as National Data base of Population Census, Agricultural, Soil, Geological.
- The aggregation of fundamental and other geospatial data sets provide the Geospatial Framework and are the base date for data sharing through NGIT



(www.ngiip.gov.np)

NSDI Initiatives....

- Has developed NGII portal to facilitate the access to Geospatial and Statistical Information.

- Working in the direction of establishing data sharing mechanism.

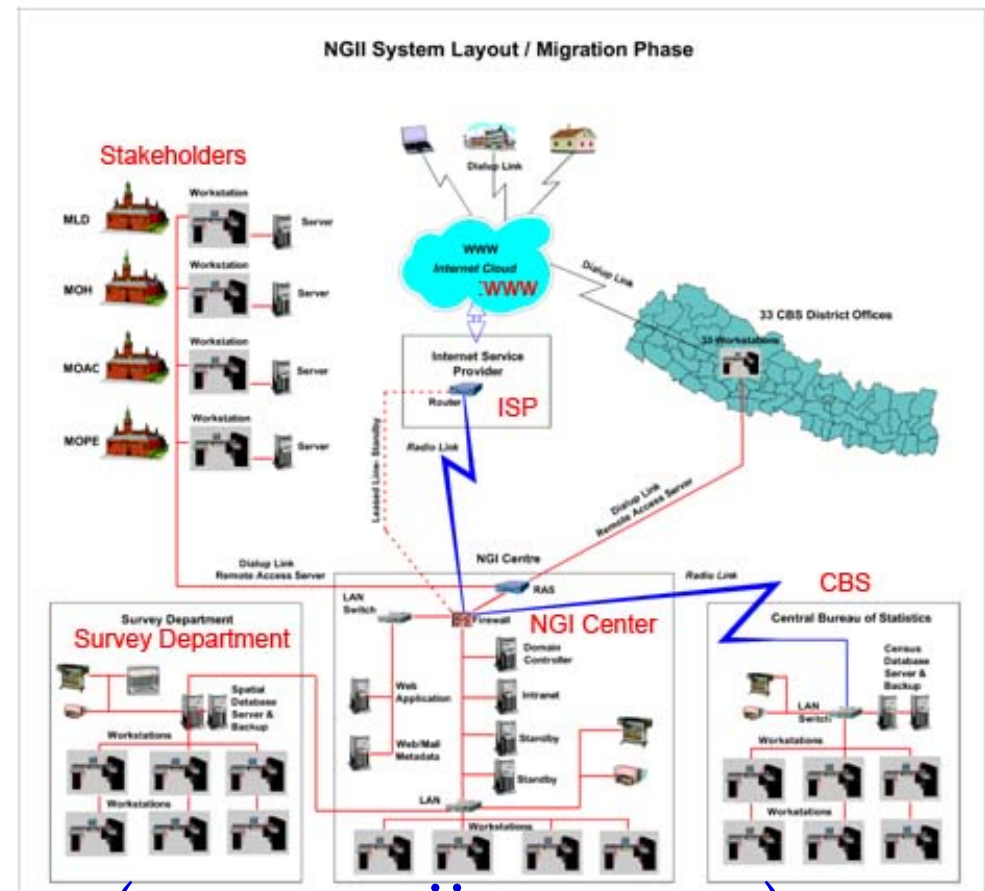


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NSDI Further Expansion

- A draft policy on NSDI has been prepared and consultation with stakeholders is in process.

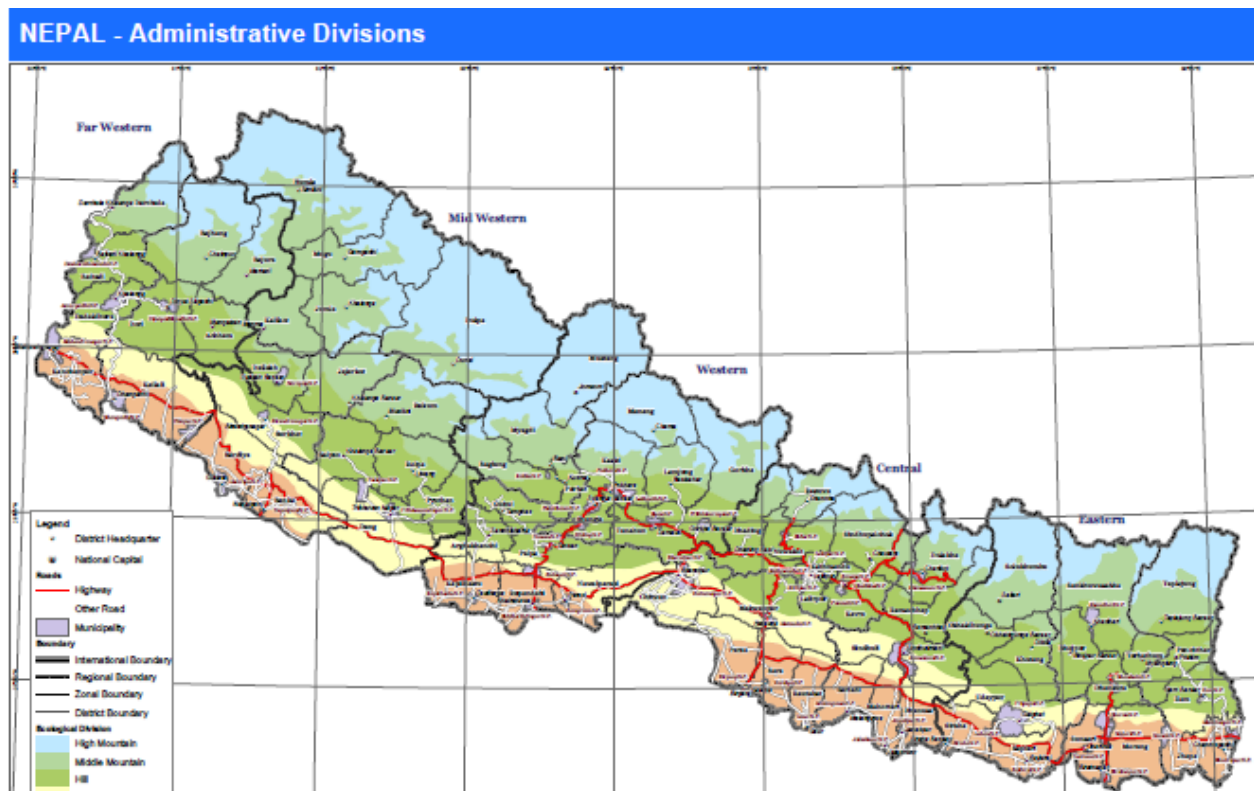
- Efforts are underway in its development and further expansion through the 2nd Generation Reform program in Geospatial Information



(www.ngiip.gov.np)

Administrative divisions and Statistical Data Collection level

- Population census provides a data set on the population at all levels of a country's administrative units.



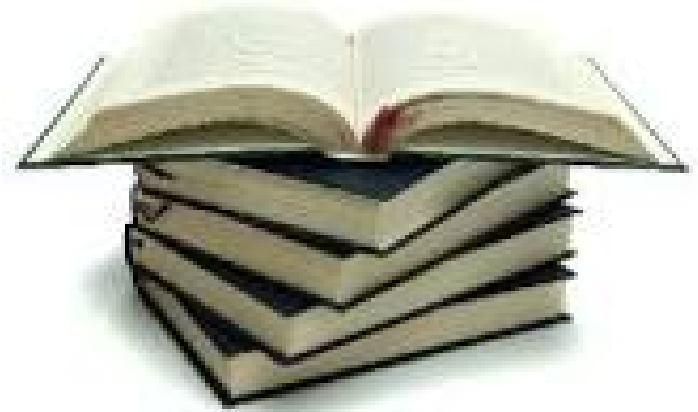
- 5 Development Regions
- 14 Zones
- 75 Districts
- 3913 Village Development Committee and 58 Municipalities

Statistical Data Collection

- In Nepal, Central Bureau of Statistics ([CBS](#)) under National Planning Commission Secretariat is responsible for conducting National Population Censuses.
- The first population “count” was undertaken in 1911. Since then ten more censuses have been accomplished. The last census was conducted in 2011.
- The census data are of immense help in formulating development plans and policies and for implementing developmental activities in the country.

Presenting Statistical Information

- The results of censuses are generally published in tabular forms of different formats.



- There has been a growing demand of
 - integrating statistical and Geospatial data.
 - to understand the spatial distribution of the given phenomenon and to make more reliable decisions to support development activities.

Global Perspective

- In 2013, both UNSC, and the Expert Committee on UN-GGIM, they acknowledged the "*Critical importance of integrating Geospatial information with statistics and socio-economic data and the development of a geospatial-statistical framework, especially in the context of the on-going debate on the post-2015 development agenda*"

Statistical Framework

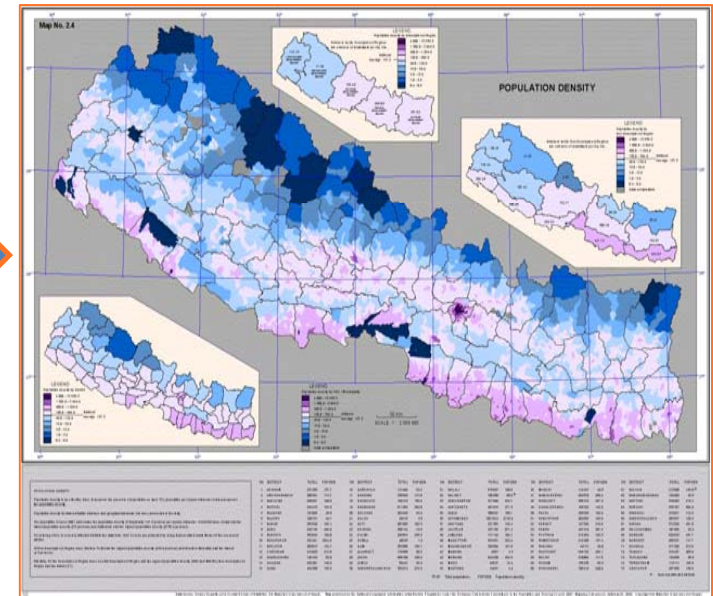
- Recently, CBS is Working towards formulating;
- A National Strategy for the Development of Statistics(NSDS) of Nepal
 - to develop statistics that supports the Government's target to transform from LDC to DC.
 - to cater growing demands for statistics

Integration of Statistical and Geospatial Data

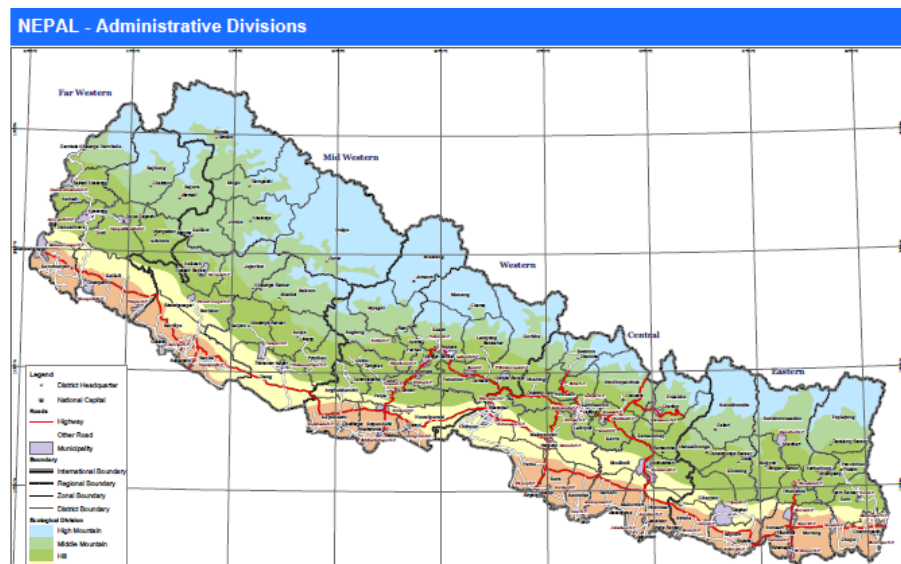
■ CBS and DoS had started to worked together to integrate statistical and Geospatial information since the "Population Census 2001".



DAERAH	KELOMPOK	AWL	LELAKI	PEREMPUAN	TOTAL	POPUSI
TAPLEANG	001 AMBECODN		1472	1646	3118	102,37
TAPLEANG	002 ANWASOP		1342	1298	2640	121,36
TAPLEANG	003 CHANGSOTI		627	578	1205	103,12
TAPLEANG	004 CHANGS		2207	2433	4640	191,98
TAPLEANG	005 (KANGSANGHI)		2000	2174	4174	199,00
TAPLEANG	006 DORAU		1346	1906	3254	219,27
TAPLEANG	007 SANGSE		914	1007	1921	107,16
TAPLEANG	008 HANGDENA		1801	1800	3601	189,07
TAPLEANG	009 HANGFANG		2209	2395	4604	149,00
TAPLEANG	010 HANGU		1147	1246	2393	101,17
TAPLEANG	011 KALAKHILA		366	364	730	17,26
TAPLEANG	012 HANGKANG		667	723	1390	100,00
TAPLEANG	013 HANGBANG		1032	1027	2059	83,73
TAPLEANG	014 HANGJEM		1396	1264	2660	89,81
TAPLEANG	015 HANGKUN		1064	1064	2128	100,00
TAPLEANG	016 HANGLEP		1173	1146	2319	2,87
TAPLEANG	017 LANGRAN		1108	1176	2284	30,52
TAPLEANG	018 LANGKUN		1130	1101	2231	89,64
TAPLEANG	019 LANGTIP		891	852	1743	144,46
TAPLEANG	020 LANGAU		875	871	1746	103,06
TAPLEANG	021 MANGKANG		664	713	1377	10,77
TAPLEANG	022 MANGKANG		1168	1199	2367	164,96
TAPLEANG	023 MANGKANG		800	890	1690	19,46
TAPLEANG	024 MANGKANG		1041	1074	2115	4,28
TAPLEANG	025 MANGKANG		1033	1034	2067	223,77
TAPLEANG	026 MANGKANG		136	137	273	0,38
TAPLEANG	027 MANGKANG		702	702	1404	4,28
TAPLEANG	028 MANGKANG		809	834	1643	139,93
TAPLEANG	029 MANGKANG		2019	2026	4045	62,21
TAPLEANG	030 MANGKANG		639	770	1409	6,42
TAPLEANG	031 MANGKANG		1076	2100	3176	189,19
TAPLEANG	032 MANGKANG		8807	8888	17695	400,00
TAPLEANG	033 MANGKANG		1343	1346	2689	91,83
TAPLEANG	034 MANGKANG		1318	1303	2621	264,11
TAPLEANG	035 MANGKANG		396	402	798	130,82
TAPLEANG	036 MANGKANG		2001	2006	4007	93,16



Map / Orthophot Preparation



- Lowest unit is
- Village Development Committee and Municipalities

■ *Digital Maps and Orthophotos prepared for enumeration of Population Census 2001*

■ 3971 map sheets at VDC and Municipality level with ward boundary delineation were used

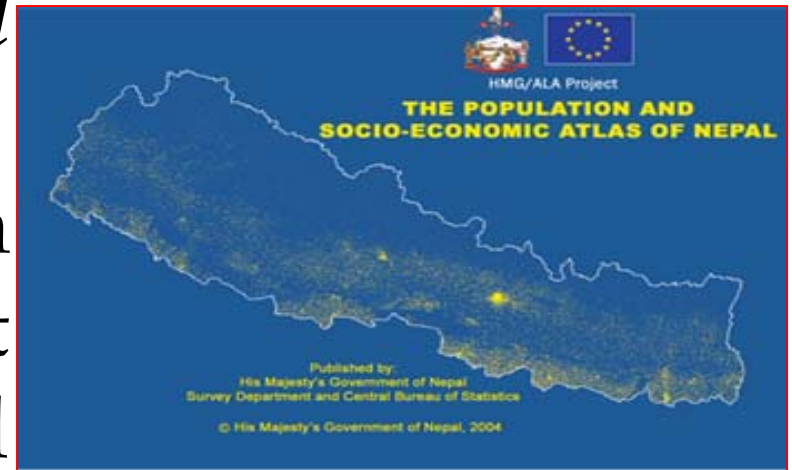
■ 2200 Orthophoto maps were prepared for the dense urban and semi dense urban areas

Utilization of Integrated Information

▪ *Population and Socio-economic Atlas 2004*

The Atlas was prepared with the joint effort of CBS and DoS based on results of the 2001 census and National Topographic Database.

▪ The Atlas has been a very useful reference to the planners and policy makers as well as to the politicians and the social inclusion advocates.



[\(www.ngiip.gov.np/projects/\)](http://www.ngiip.gov.np/projects/)

Utilization of Integrated Information..

- *Poverty Mapping*

- A report on Estimation of Poverty, Caloric Intake and Malnutrition in Nepal was published in 2006

- A integrated product of Geospatial and Statistical Information to estimate consumption-based welfare indicators (including estimates of poverty, caloric intake and malnutrition)

Nepal Poverty
Mapping
Project

UNDP Human
Development
Report Data

Nepal Development Wiki
nepaldevelopment.pbworks.com

www.un.org

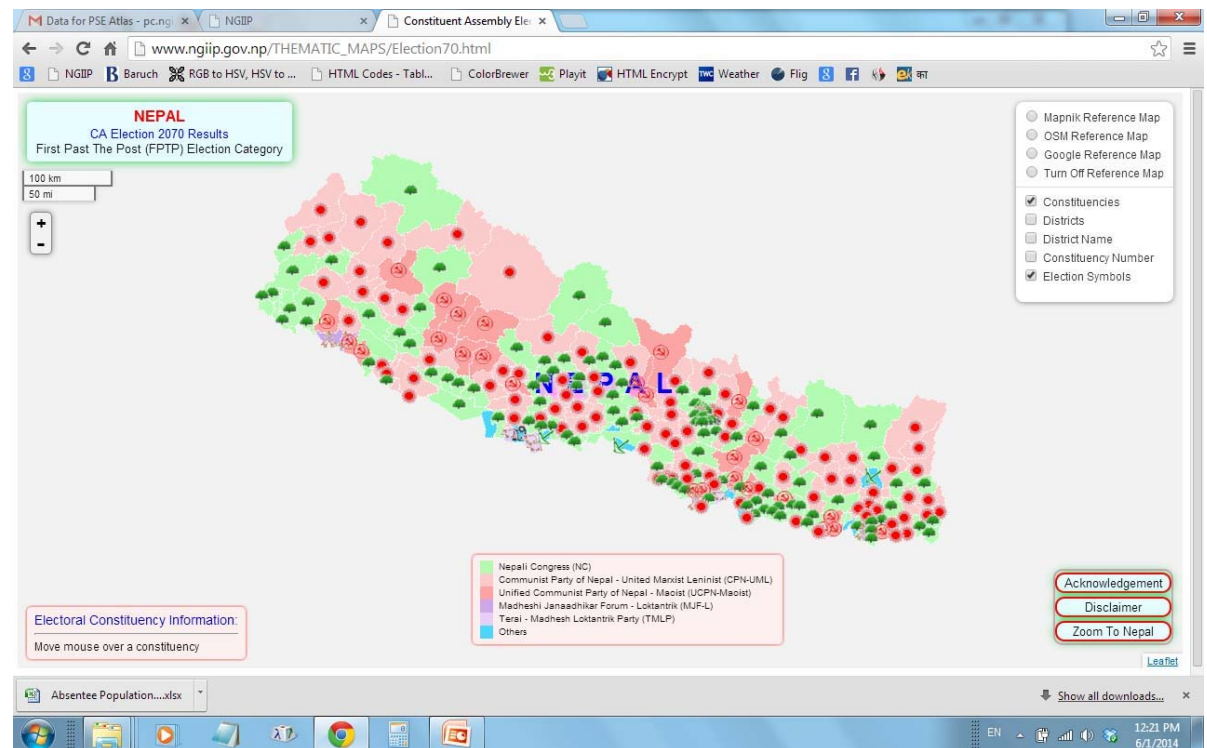
Utilization of Integrated Information..

▪ *Delineation of boundaries of electoral constituencies for Constituent Assembly Members' Election 2013*

▪ Survey Department had worked together with the Election Commission of Nepal to delineate the boundaries of Electoral Constituencies for Constituent Assembly Members' Election 2013.

▪ Geo-spatial Information thus created has been used to display the results of the Constituent Assembly Members' Election.

www.ngiip.gov.np/THEMATIC_MAPS/Election70.html

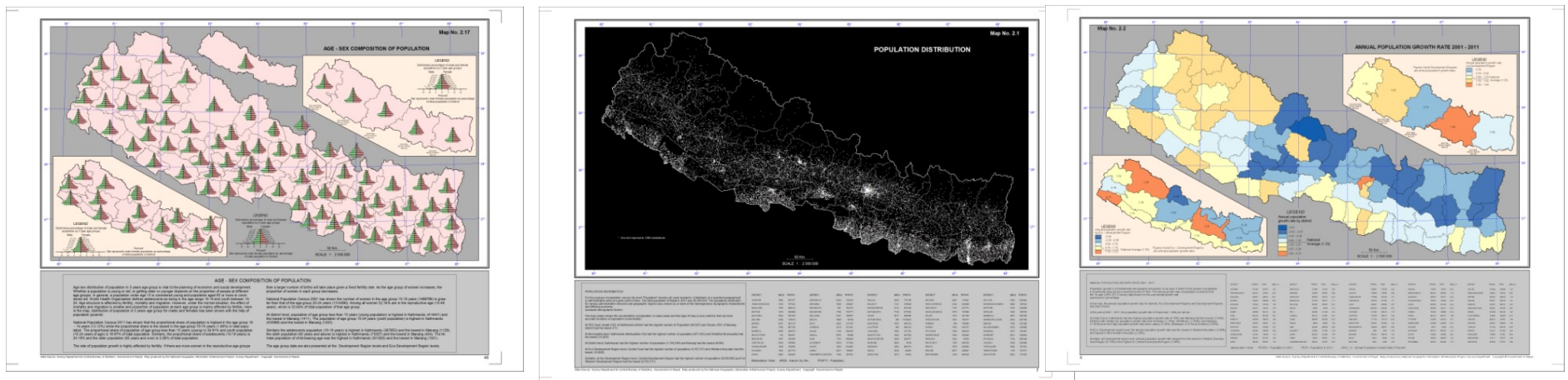


Utilization of Integrated Information..

■ National Geographic Information Infrastructure Project (NGIIP), Survey Department has created several maps showing the results of Census 2011.

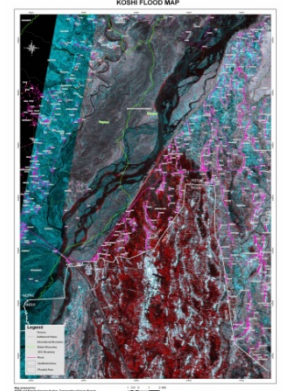
www.ngiip.gov.np/THEMATIC_MAPS/MapExplorer.html#.)

www.giip.gov.np/THEMATIC_MAPS/Popden.html)



Utilization of Integrated Information..

- *Koshi River Flood Map 2008*
- DoS prepared a integration of satellite image, topographic data and population census data for the rescue and rehabilitation work



www.dos.gov.np/new/graph/koshifloodmap.jpg

- *Population and Socio-economic Atlas 2014*
- Recently, DoS and CBS have started to work together to integrate the Geospatial and Statistical Information to produce Population and Socio-economic Atlas 2014 based on the results of population census 2011.

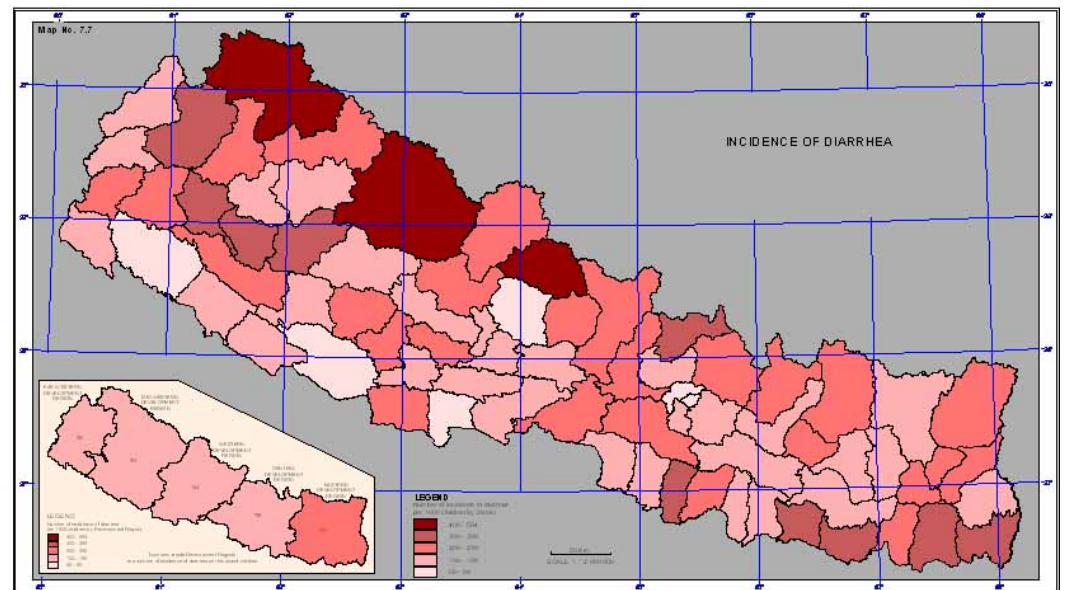
Standards and Spatial Framework; A Key Enabler

- NGIIP has developed **Metadata standard** for the exchange of Geospatial data and Metadata.
- Survey department has developed **technical specification** for NTDB.
- High Level Committee for Information Technology (HLCIT) has developed **standard codes** for different Geographical entities to ease the process for linking socioeconomic information to a location.

Benefits of Integrating Geospatial and Statistical Information

Integrating of statistical and Geospatial Information benefits the entire process of policy planning, implementation of different activities in much more realistic basis.

Incidence of diarrhea in Nepal



Challenges

- It has been a big challenge for countries like Nepal to keep up with the rapid pace of developments in the field of geo-spatial information,
 - Technology Transformation with Capacity Development.
 - Keeping Update-ness of the Geospatial Information
 - Lack of awareness to follow Standards for maintaining consistencies.
 - Building spatial-statistical framework

Future Directions

- Ministry of Land Reform and Management is launching a programme for **2nd Generation Reforms in Land Governance**.
 - Technology transformation and improving accuracy in the field of Geospatial Information, specially improve National Geodetic Reference System, Updating Topographic Datasets and Cadastral datasets with the use of modern technology.
- Enhance Service delivery in land administration through automation of services.
- Capacity building
- Coordination with CBS and other agency

Thank You

Further information

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