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AND Locate25 THE NATIONAL GEOSPATIAL CONFERENCE
Collaboration, Innovation and Resilience: Championing a Digital Generation
FIG Geospatial Council of Australia
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A Review of Nepal's Spatial Data Infrastructure: Status and Future Prospects

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Presentation Outline

1. Understanding Spatial Data Infrastructure (SDI)
2. Introducing Nepal
3. Status of NSDI in Nepal : from past to present
4. Challenges
5. Future Prospects

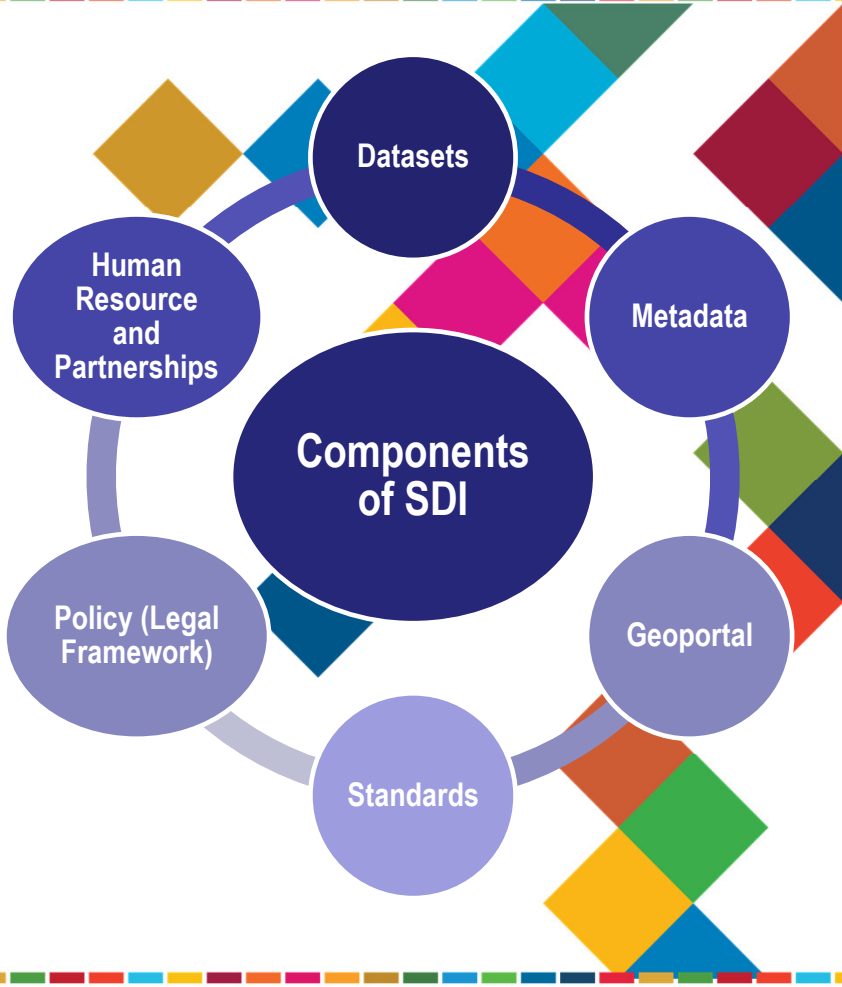
1. Understanding Spatial Data Infrastructure

Spatial Data Infrastructure (SDI) :

- Collection of technologies, policies and institutional arrangement that facilitate the creation, availability, access, exchange and use of spatial data. *(GSDI, SDI Cookbook v2)*

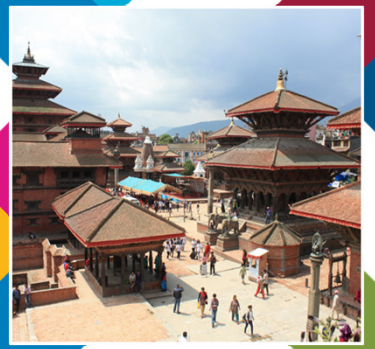
- Involves multiple stakeholders sharing / using data

- A way to :
  - **Support :** Data sharing, use and discovery of data
  - **Reduce:** Data duplication
  - **Assist**: Informed Decision Making and planning

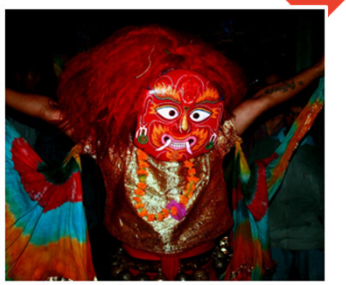


2. Introducing Nepal

Land of Wonderful Landscape, People and Culture



- Land Locked Country in **South Asia**
- **31 million** (approx.) : population
- **207 people / km^2** : population density
- **Lower-middle-income** country *(World Bank)*
- **146th** OUT OF 193 : in HDI Rank



National Goals:

- **'Prosperous Nepal, Happy Nepali' : transform country into high-income nation by 2043 , middle-income by 2030.**

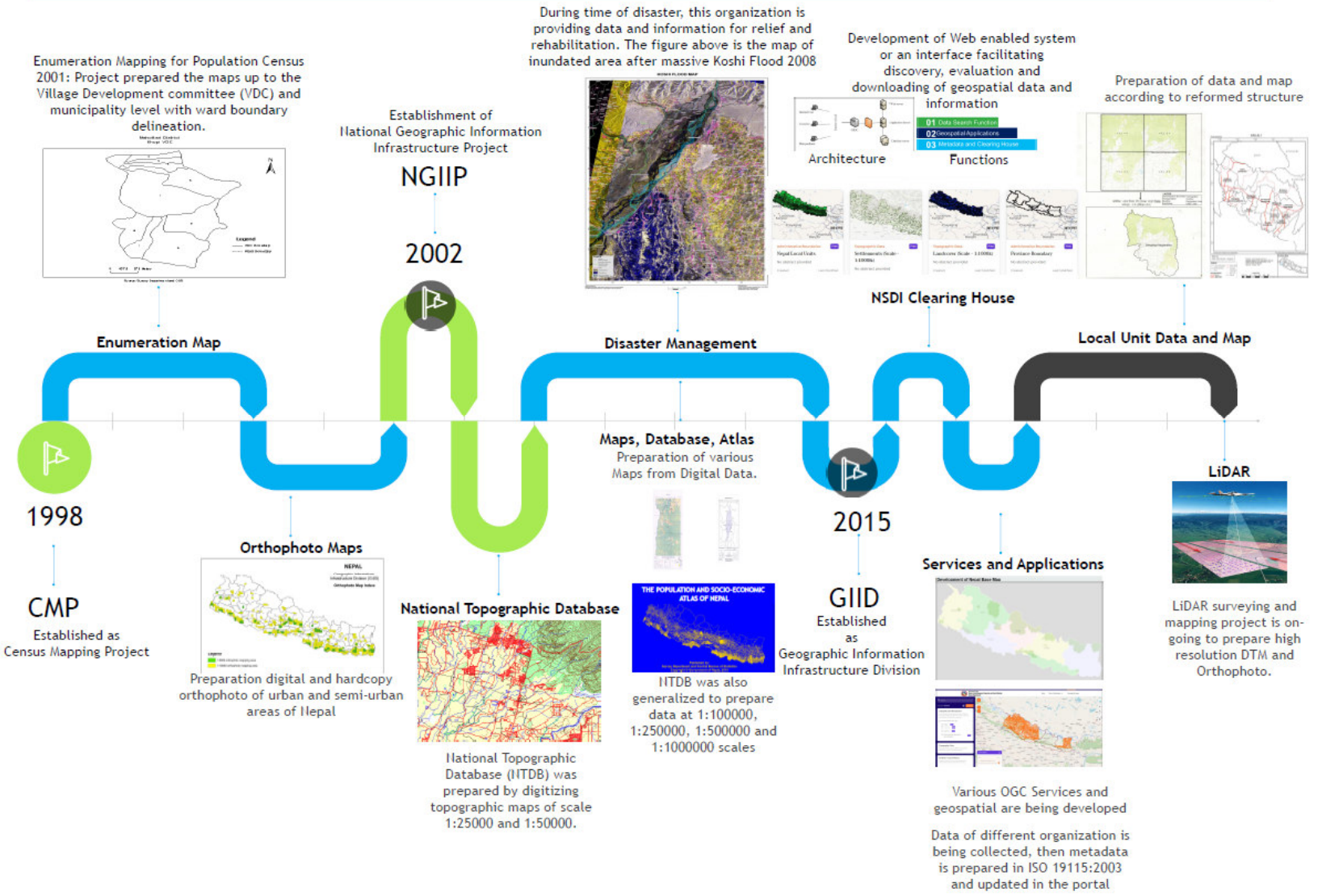
3. National SDI (NSDI) in Nepal : from past to present

NSDI of Nepal: Timeline

25+ years of SDI development:

- 1998-2002
- 2002-2015
- 2015- Present

Milestone of Geographic Information Infrastructure Division



NSDI of Nepal: Timeline

- **1998-2002:**
  - 1996- NTDB
  - 1992-1997 8th Periodic Plan : GIS Activities Initiatiation
  - 1999: Systematic map digitalization and digital mapping project
  - IT Policy 2000
  - Ninth Plan (1997-2002)
  - Tenth Plan (2002-2007)
- **2002-2015:**
  - 2002 NGII
  - 2005 Geoportal (www.ngiip.gov.np)
  - 2004 Nrs 3.6 M worth data sold
  - 2005 EC Handed over mapping component to government
- **2015- Present:**
  - Geoportal (https://nationalgeoportal.gov.np/)
  - 2015 LRIMS
  - 2021 NelIS
  - 2021 Digital Mapping and Service Delivery Directives 2021

Recognizing the Need for SDI in Nepal

- Multiple organization generating data
- Questions on quality, compatibility,
- Difficulty in discovery , lengthy process
- Need of data in development and research activities

Reviewing NSDI of Nepal:

Technical Aspect :

- [ ] Data
- [ ] Metadata
- [ ] Geoportal

Organizational Aspect

- [ ] Institutional Arrangement
- [ ] Human Resources

Legal Aspect

- [ ] Policy
- [ ] Standards

NSDI of Nepal : *Technical Aspect*

Data and Metadata:

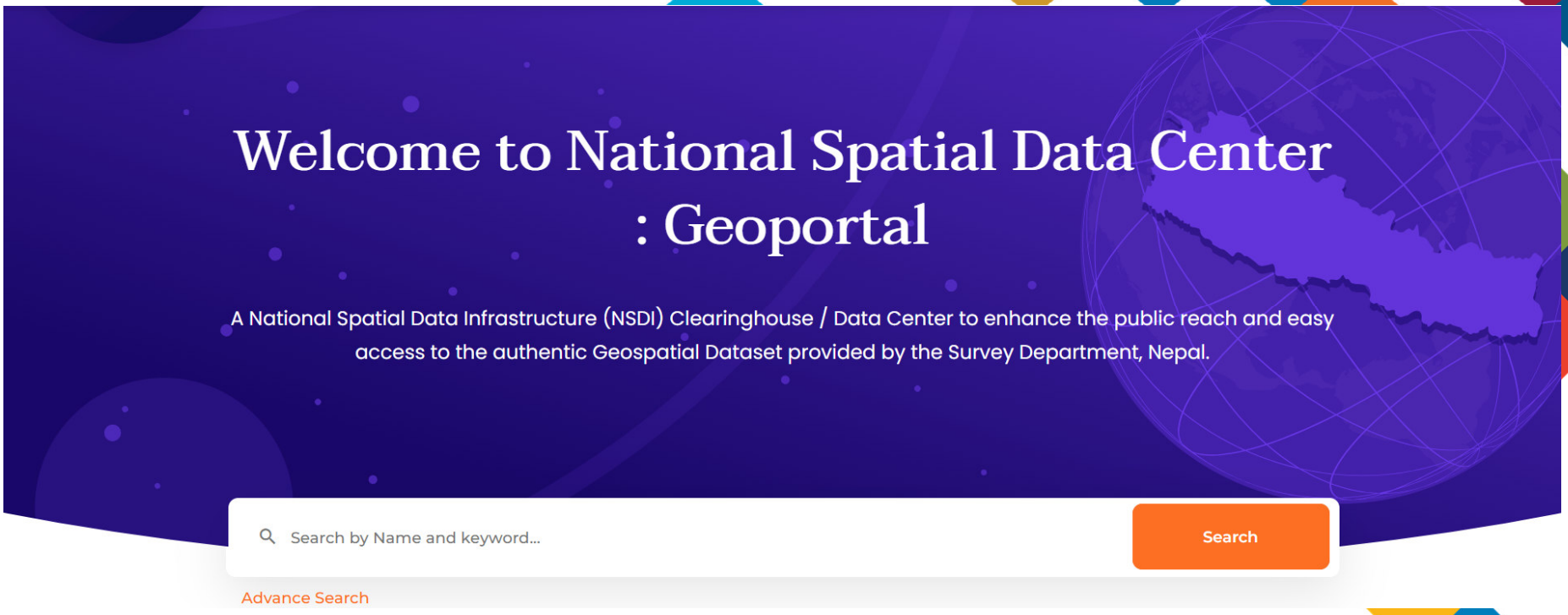
- 67 dataset layers (Framework + other Geodata)
- 8 categories

Topographic Data (18)	Others (19)	Geodetic Control Points (12)	Administrative boundaries (4)
Land Use Data (2)	Social Infrastructure (2)	LIDAR (9)	Orthophoto (1)

NSDI of Nepal : *Technical Aspect*

Geoportal:

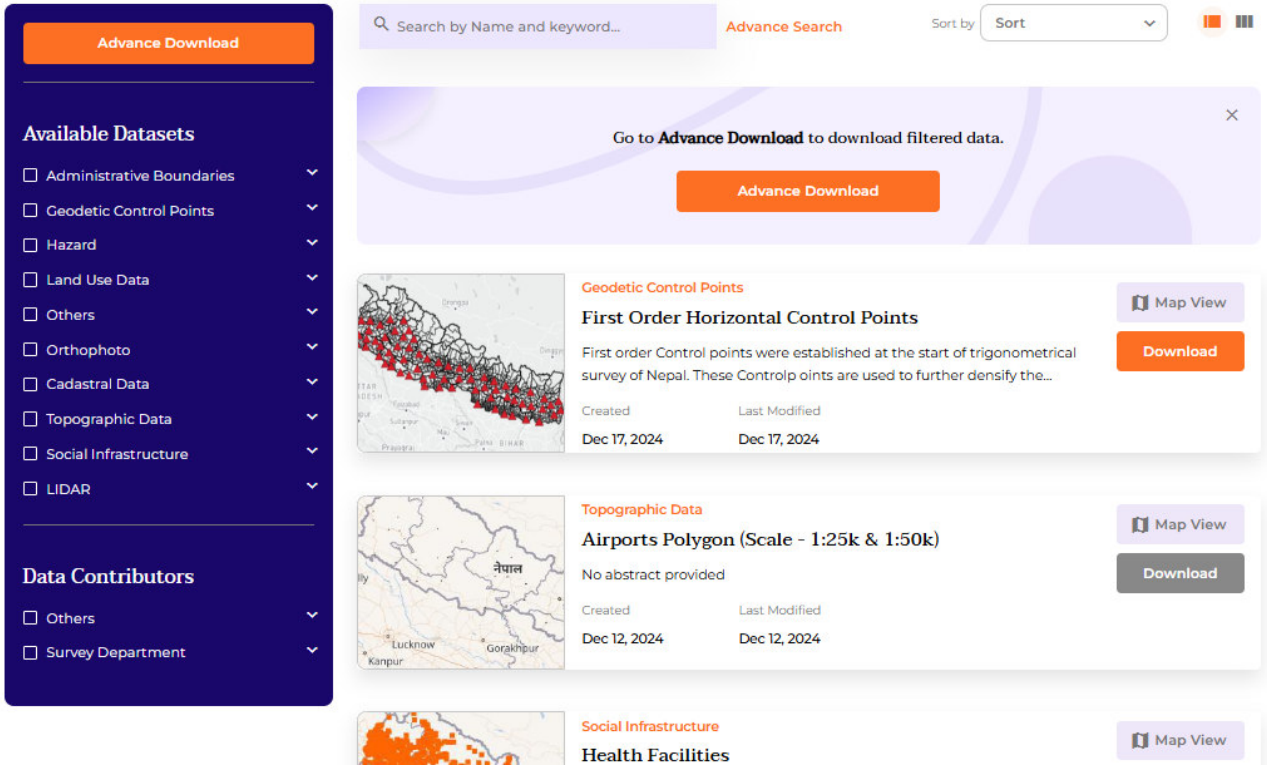
- Interface of Nepal's National Geoportal



NSDI of Nepal : *Technical Aspect*

Geoportal:

- User friendly interface with option to view map and download data



NSDI of Nepal : *Technical Aspect*

Geoportal:

- Multiple features

Major Features

The major features of National Spatial Data Clearinghouse - Geoportal

Find Desired Data

You can find desired data by using the search and advance search feature.

Download Desired Data

You can download desired data by logging in to the system.

Desired Data in Map

You can view the data in map to check how the data looks when plotted over map.

View Metadata

You can view the metadata of the desired data to know more about the data.

Add Data to Cart

You can add multiple dataset to cart and download it together in a packaged format.

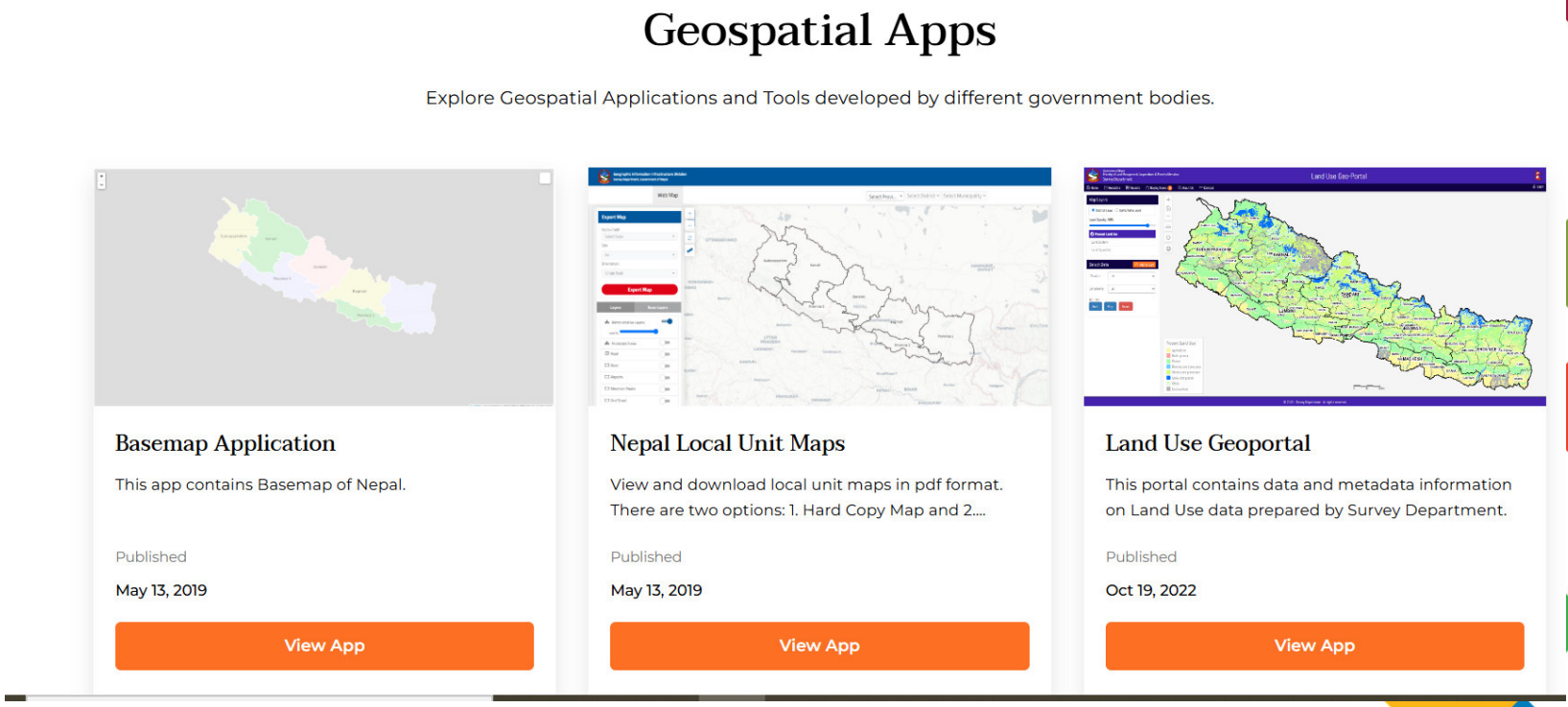
View Geospatial Apps

You can view the useful geospatial apps and tools developed by different Government Bodies.

NSDI of Nepal : *Technical Aspect*

Geoportal:

- Geospatial Apps links for accessing: Land use and other data

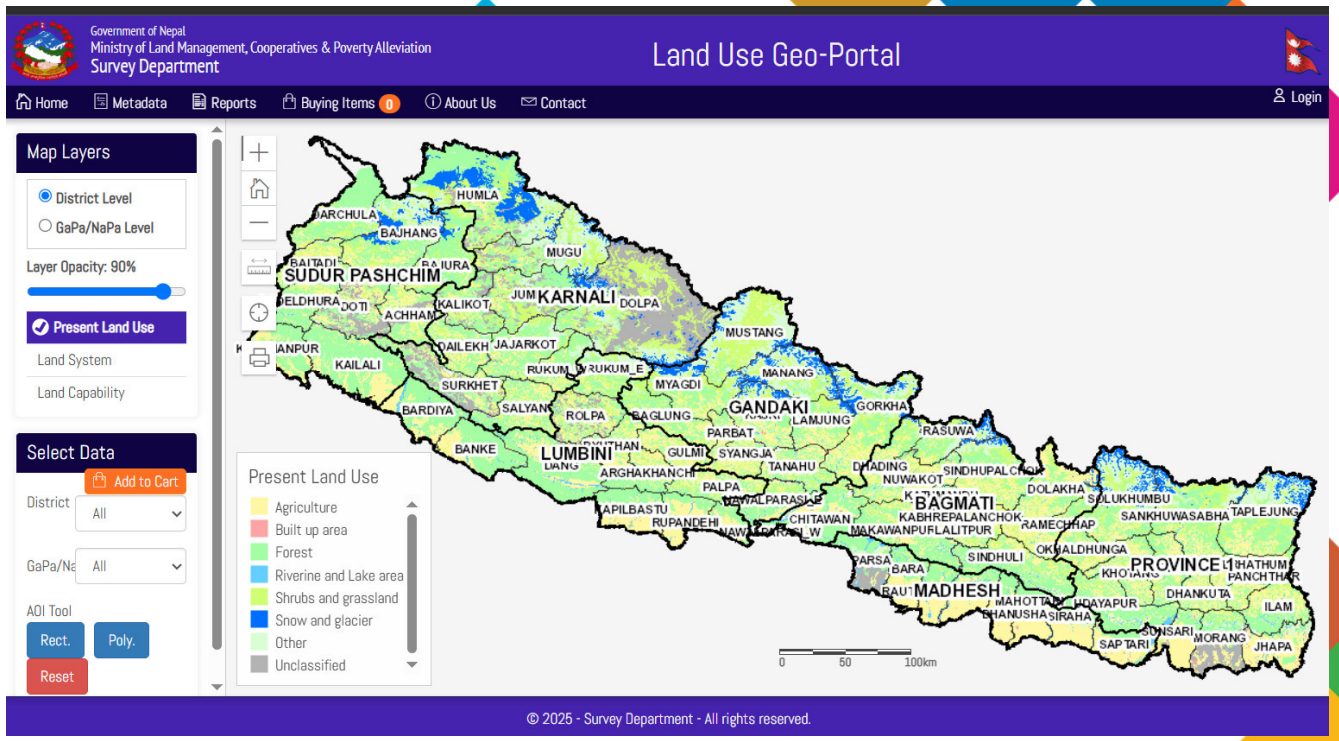


NSDI of Nepal : *Technical Aspect*

Geoportal:

- Geospatial Apps links for accessing: Land use and other data

Land Use Geoportal



NSDI of Nepal : *Technical Aspect*

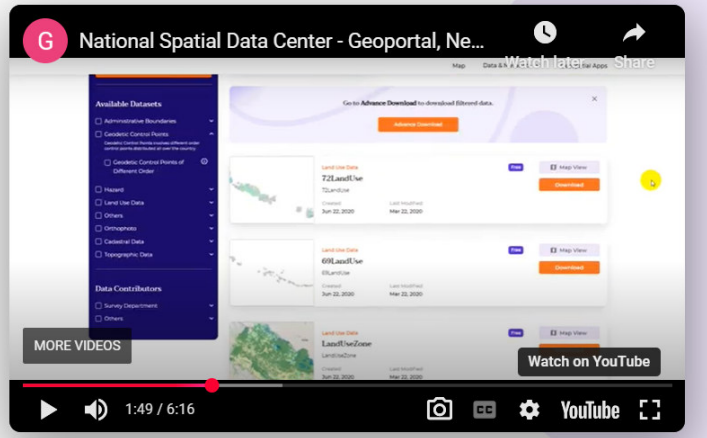
Geoportal:

Other features for user's ease:

- Video Tutorial for using the portal
- FAQs

What is National Spatial Data Center : Geoportal?

A Geoportal is a consolidated and centralized web-based digital platform that provides an online geo information management system and consists of spatial data sharing tools to access and view different data and maps. It is a type of web portal used to find and access geographic information (geospatial information) and associated geographic services (display, editing, analysis, etc.) via the internet. Geoportals provide geospatial service access to distributed data systems featuring maps, data downloads and management. Some Geoportals can also offer online analysis and processing of datasets and dynamic data visualization tools.



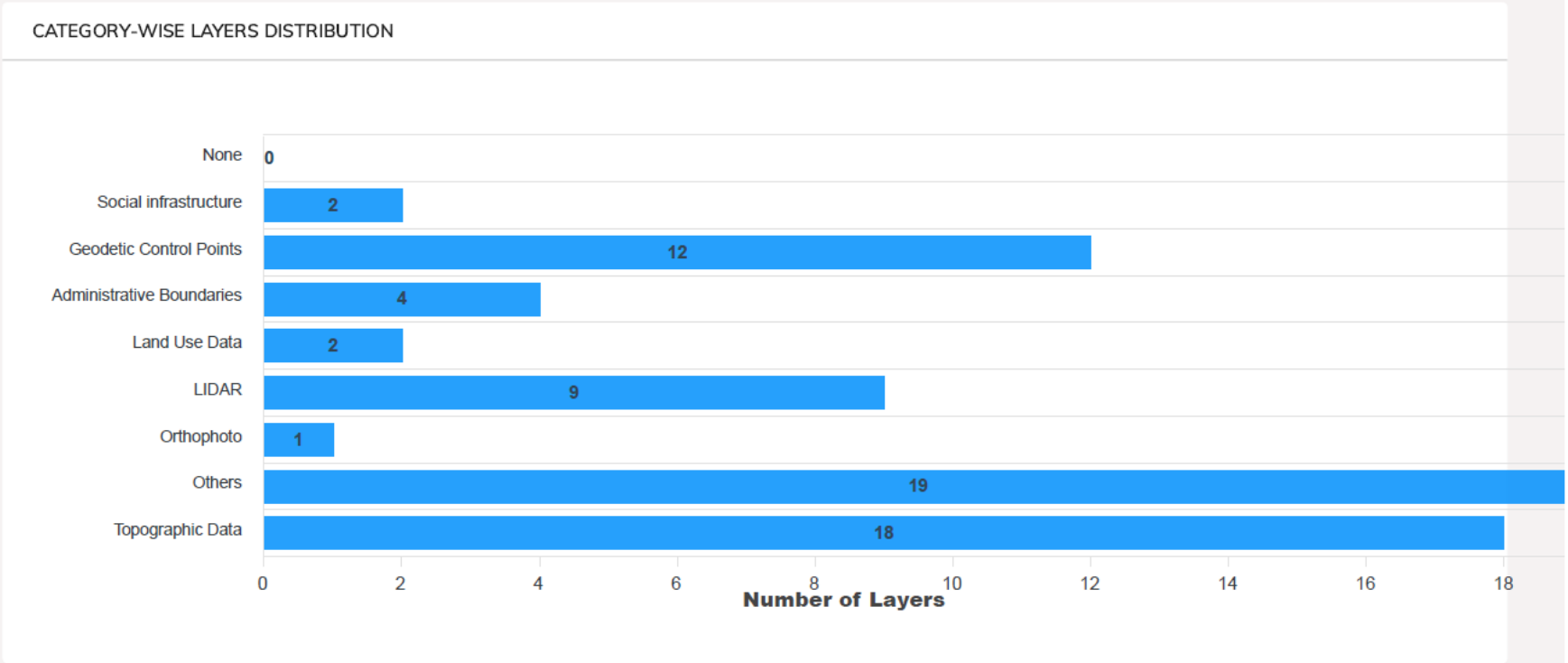
Frequently Asked Questions

Please wait while FAQs are being displayed.

NSDI of Nepal : *In terms of Data/ Metadata/ Geoportal Usage and Demand*

Available data in geoportal as per category

- Total layers (



NSDI of Nepal : *In terms of Data/ Metadata/ Geoportal Usage and Demand*

Download request on basis of:

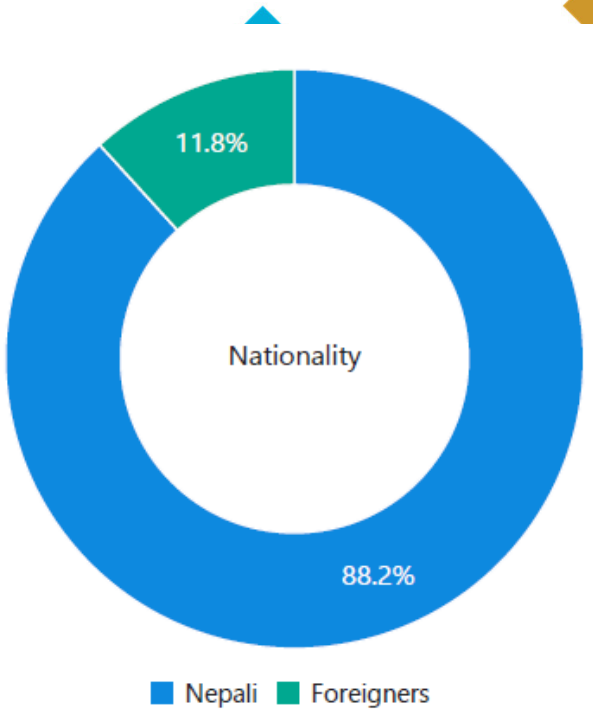
- Nationality
- User Category

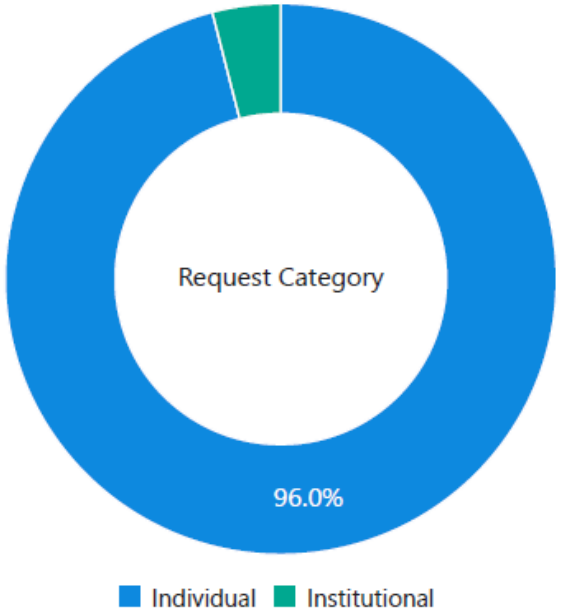
75
TOTAL DATA

1090
TOTAL DATA VIEWS

25782
TOTAL DATA DOWNLOADS

7603
LOGS





NSDI of Nepal : *Organizational Aspect*

In Initial Stage

Partnership was envisioned between 6 government agencies:

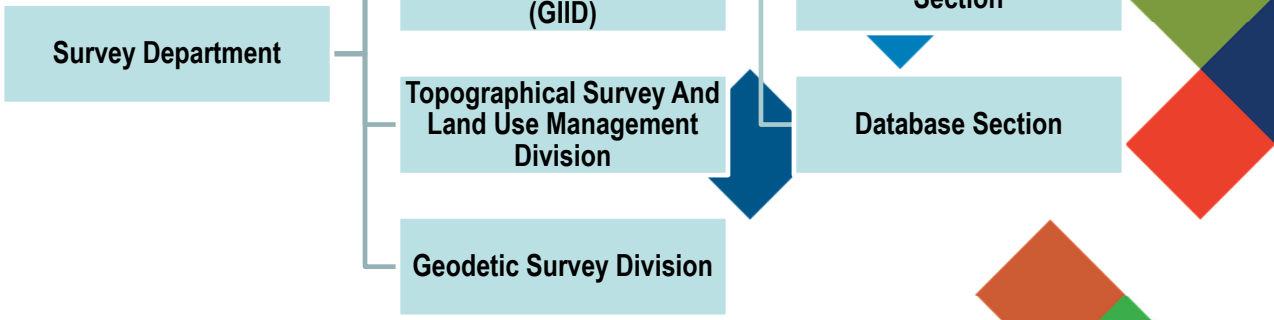
- Survey Department under Ministry of Land Management and Cooperatives (Lead Agency)
- Central Bureau of Statistics
- Ministry of Local Development
- Ministry of Population and Environment
- Ministry of Agriculture and Co-operatives
- Ministry of Health/ Department of Health Services

NSDI of Nepal : *Organizational Aspect*

Now

Geographic Information Infrastructure Division (GIID) under Survey Department is core organization Involved.

Human resources include those with background in Geospatial Field (Geomatics engineers, Surveyor), IT, management, etc.



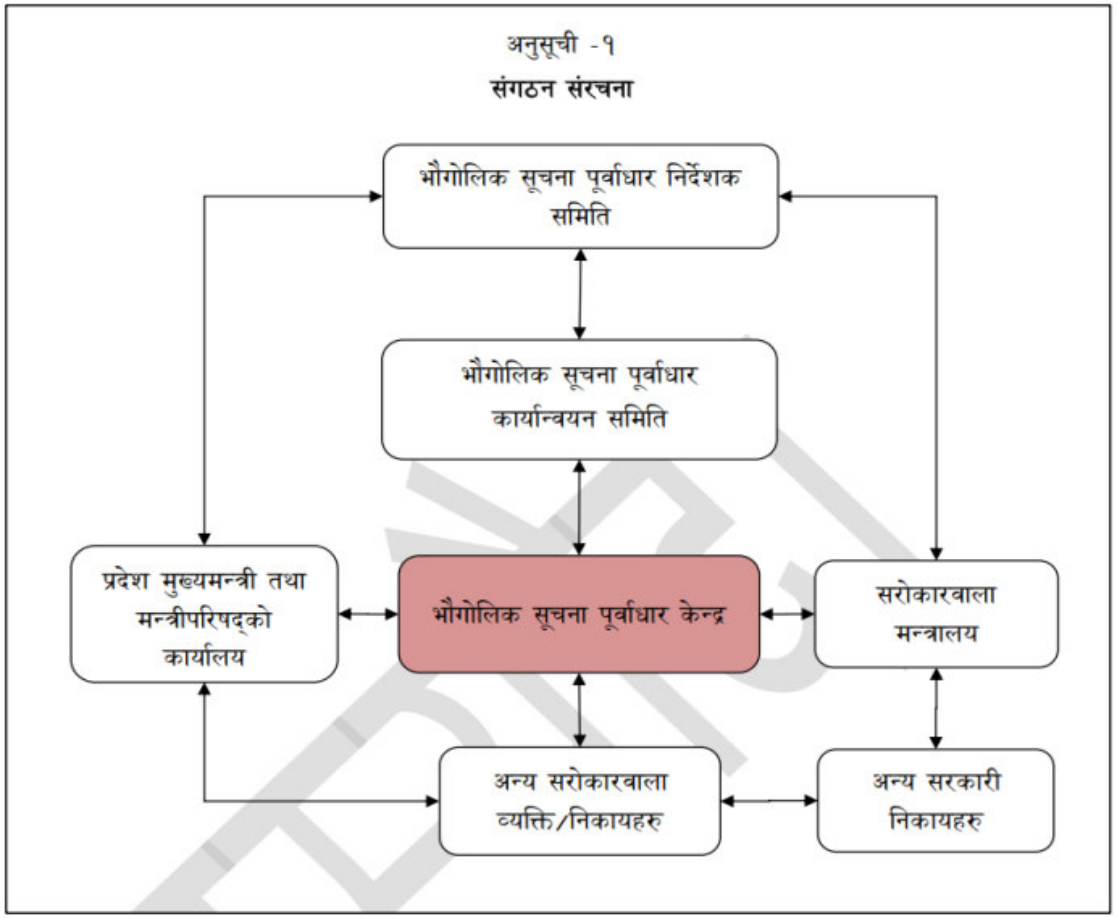
NSDI of Nepal : *Organizational Aspect*

Future

Organizational Structure as per draft NSDI (GII) Policy

The draft policy envisions establishment of a three major structures:

a) **Geographic Information Infrastructure Center**
b) **Geographic Information Infrastructure Steering Committee**
c) **Geographic Information Infrastructure Implementation Committee**



NSDI of Nepal : *Legal Aspects (Policy/Standards)*

Presently approved Policies / Guideline on which division' activity is being directed:

- **Digital Data Distribution, Use and Regulation Directive, 2069** : provisions on data pricing, distribution structure, distribution prohibition, distribution policy, control of unauthorized use of data
- **Geographical Data Interoperability Report, 2078 :** Elaborates on existing situation of Geographic data interoperability and makes suggestion on future course to maintain data interoperability

Policies under Development

- **National Geospatial Information Infrastructure Policy, 2075** : Preliminary Draft Ready
- **Geospatial Information Infrastructure Policy, 2081 (2024)** : Draft Ready – Under Discussion

However, the Big Question is –

Is this Enough for now or in a long run ??

4. NSDI of Nepal : *User Needs / Limitation / Challenges*

User Needs (Demands)

- More diverse / updated data – e.g. of census, environment, forest, infrastructure related etc.
- More enriched/updated metadata.
- Online download availability of all data (Ease of service)
- User friendly and always running interface
- More enriched user guide on use and value of data

Limitations

- Limited data only (less stakeholder coordination)
- Incomplete/Missing metadata.
- Not all data as OWS service / Online downloadable.
- System/Portal goes down sometimes (security threats too).
- Limited user manual/guides.

Challenges

- Lack of integrated law (act) or policy on SDI.
- Institutional Coordination challenges
- Limited knowledge of SDI's importance to all stakeholders.
- Financial Constraints
- Human Resource constraints.

5. NSDI of Nepal : *Future Prospects*

Getting perspective from some successful SDI around the world:

NSDI of Singapore

- Set up in 2008 ----- In 2018 as SG Space
- Now as Geospatial Singapore (Geospatial SG) :
  - Lead by Singapore Land Authority
  - Geospatial Master Plan – envisions GeoSmart Government ; GeoEmpowered People and a Thriving Geoindustry
  - Integrated Land Information Service (ILIS)
  - OneMap : free open-source online Geospatial portal

One Map in 3D view (Geospatial SG)

https://www.onemap.gov.sg /

5. NSDI of Nepal : *Future Prospects*

Getting perspective from some successful SDI around the world:

NSDI of Canada

- CGDI (Canadian Geospatial Data Infrastructure)
- Different geoportals (for open data (almost 7000 records), earth observation data, ATLAS etc.)
- Web services available
- Information available in geospatial data (separately)
- Reports/Information on data and insights on different topics
- Funding and partnership opportunities for successful NSDI development
- Research and Lab information and many more…

User Links in NSDI of Canada

Data portals, tools and services

Access open, shared, trusted geospatial data, services, and applications.

Standards and operational policies

Learn about the geospatial operational policies and standards that facilitate the development, sharing, and use of geospatial data.

Funding (GeoConnections)

Check out the GeoConnections Program Calls for Proposals, supporting the development of innovative adoption and further development of the CGDI by co-funding projects with eligible recipients.

Geospatial collaboration and governance

Discover the collaboration and partnerships that make the Canadian Geospatial Data Infrastructure possible.

Canadian Geospatial Data Infrastructure Resource Centre

Access a wide variety of publications, including primers, case studies, user needs assessments, operational policies, and studies on the use of geospatial data in the Canadian context.

Geospatial Web Services

Consult an evergreen list of geospatial web services that are growing the Canadian Geospatial Data Infrastructure, updated weekly

5. NSDI of Nepal : *Future Prospects*

- So, getting lessons/perspective from these successful NSDI implements and overviewing Nepal's need of SDI, limitations and user demands, Future efforts for NSDI development in Nepal needs to focus on:
  - Identifying user needs in a long run and planning on how those can be met technically
  - Stakeholder coordination
  - Long term policy --- develop and implement it as soon as possible.
  - Organizational Redesign / Stakeholders coordination

Short Term Goals:

- Approve National Policy as soon as possible
- Identify user needs/demands scientifically and plan accordingly

Long Term Goals:

- Organizational Restructuring / Stakeholder Coordination
- Development of Standards on data / metadata / etc.

The most relevant SDGs related to the presentation and theme of this session

1st relevant SDG

2nd relevant SDG

3rd relevant SDG

SUSTAINABLE DEVELOPMENT GOALS

International Federation of Surveyors supports the Sustainable Development Goals

Thank You!

Any Questions?

Source: Nepal Tourism Board