

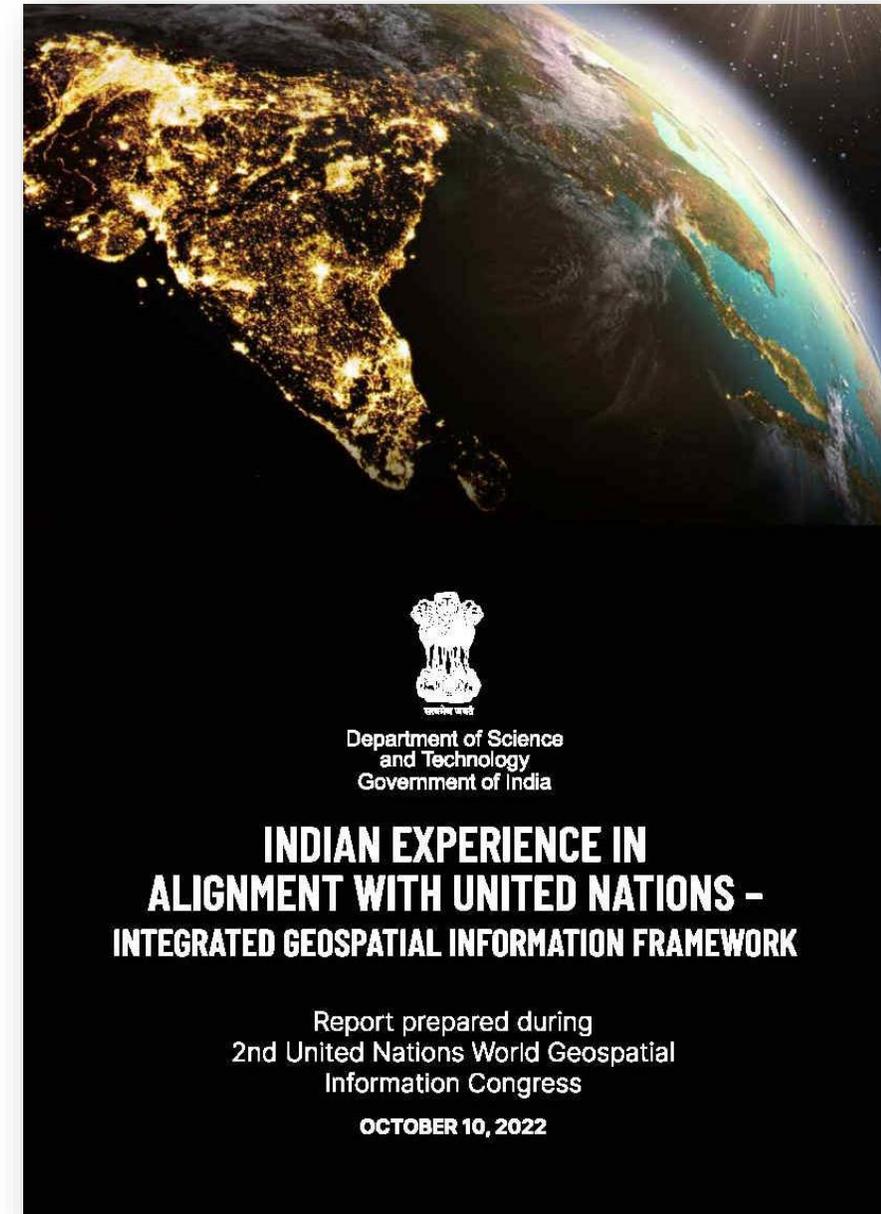
Experiences in IGIF Implementation: Case study from India

27th November, 2024

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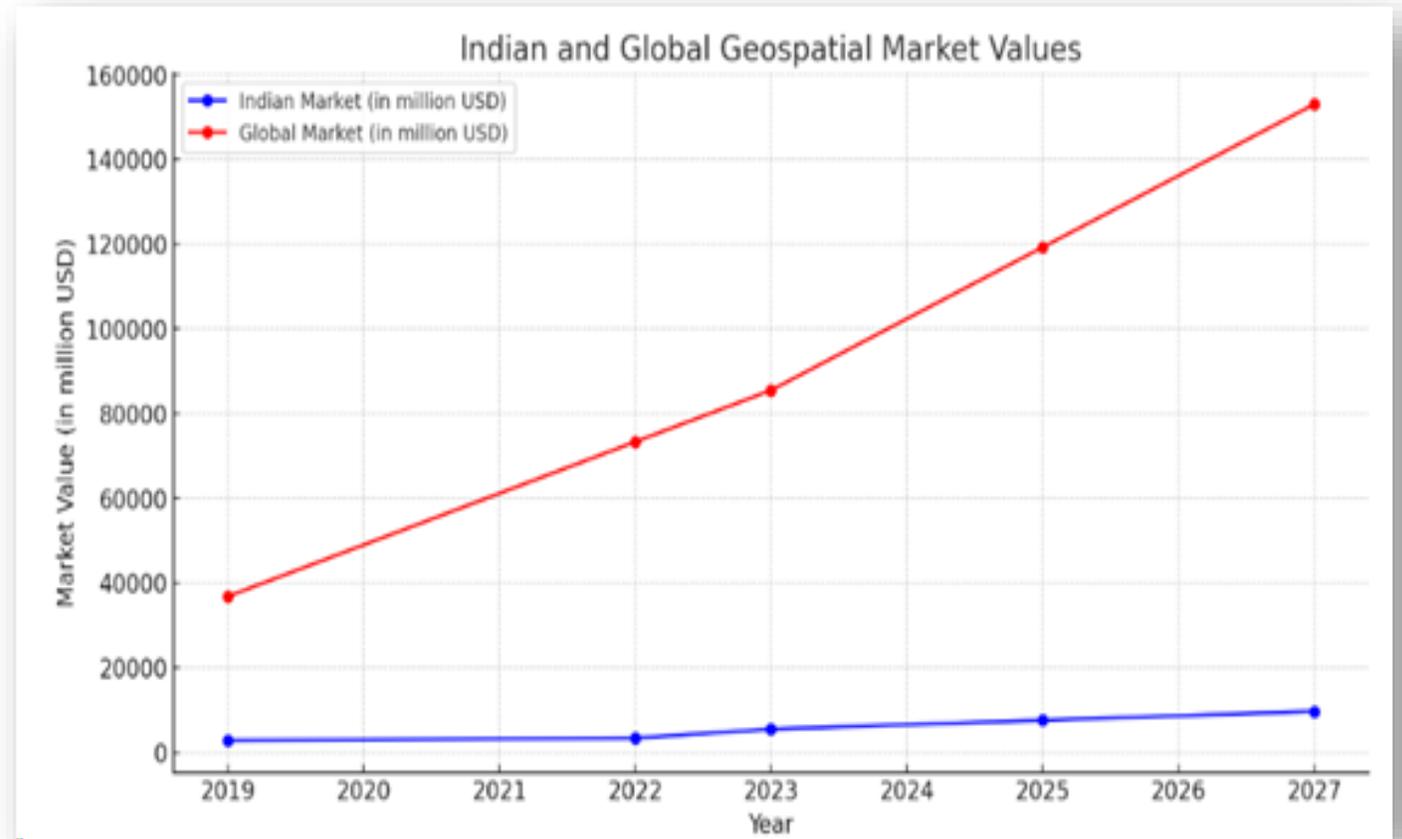
Introduction

- The rich and diverse Indian Geospatial Economy resonates with the **dynamic socio-economic structures** to rapidly grow and be impactful.
- The recent Indian Government initiative towards geospatial **democratization, advocacy, and integration** is commendable.
- These developments, along with private investments, academia, and civil society engagement, will be the backbone of reforms to achieve the **economic, social, and environmental goals of sustainable development**.
- This geospatial ecosystem is considered a critical pillar for India's Vision of ***Atmanirbhar Bharat*** (Self-reliant India) and ***Vikshit Bharat*** (Developed India) by 2047.



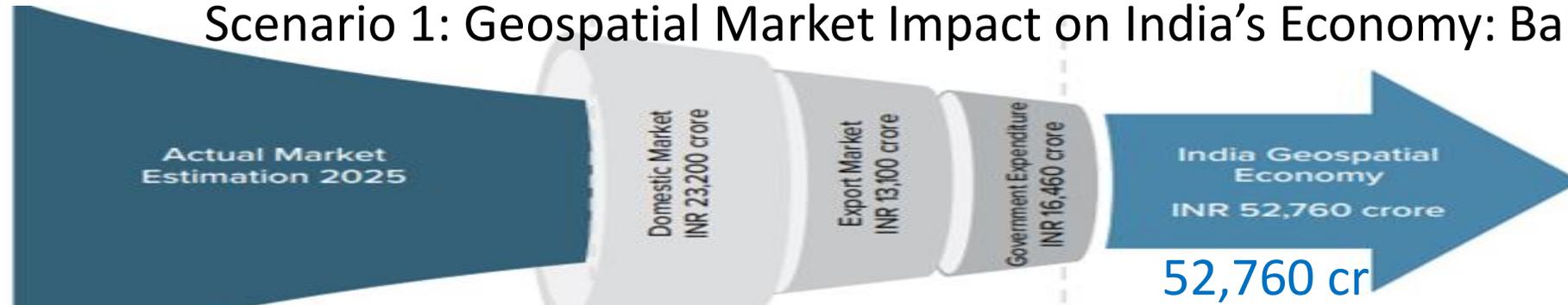
India's Geospatial Economy Outlook

- **Market Size (2022):** Rs 28,000 crore (approx. 3,373 million USD)
- **Projected Value by 2025:** Rs 63,000 crore (approx. 7,590 million USD)
- **Annual Growth Rate:** 12.8%
- **Job Creation:** Over 1 million jobs
- **Current Industry Value Share (2022):** Defense and Intelligence (14.05%), Urban Development (12.93%), Utilities (11%)
- **Impact:** Driver of socio-economic development and public service delivery

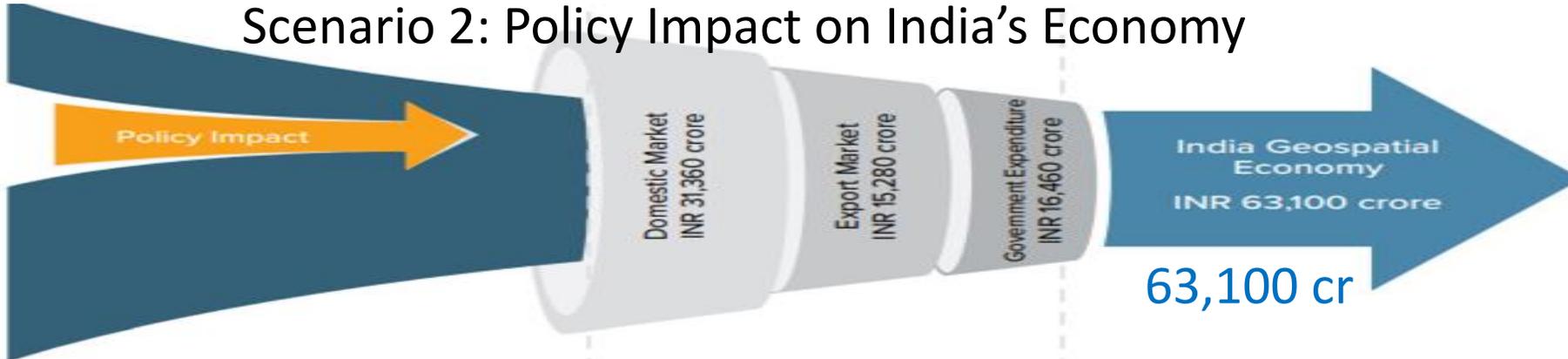


Indian Geospatial Economy Forecast of 2025

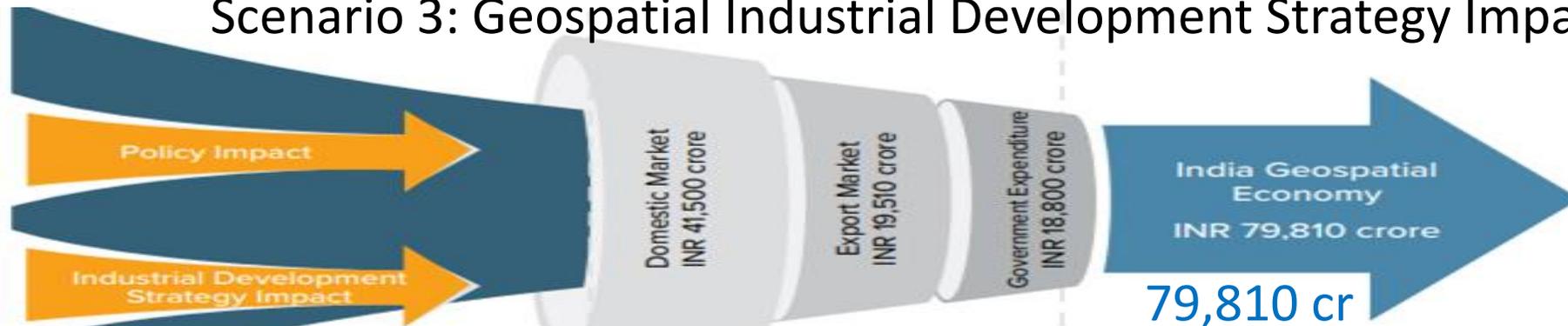
Scenario 1: Geospatial Market Impact on India's Economy: BaU



Scenario 2: Policy Impact on India's Economy

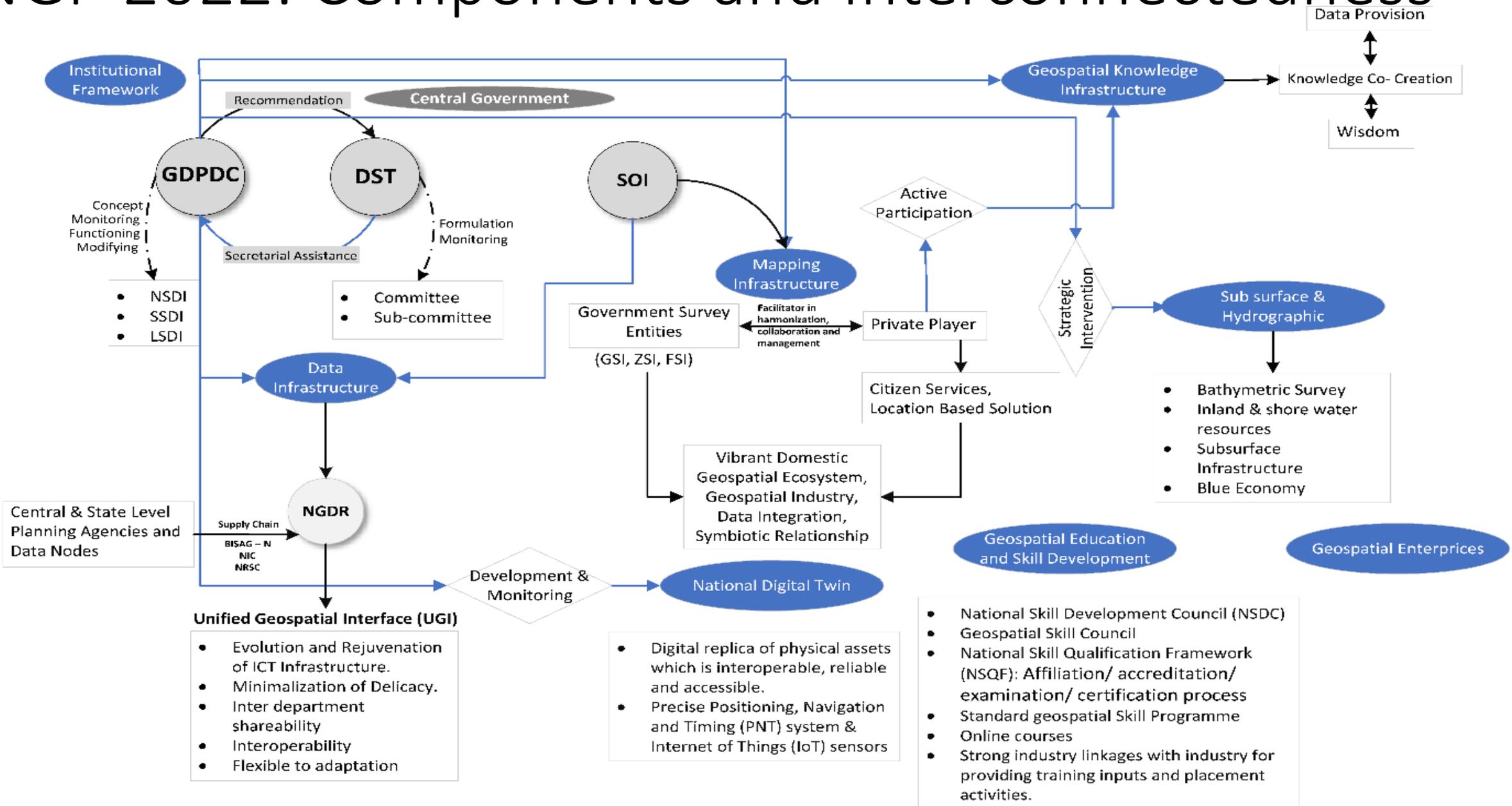


Scenario 3: Geospatial Industrial Development Strategy Impact on India's Economy



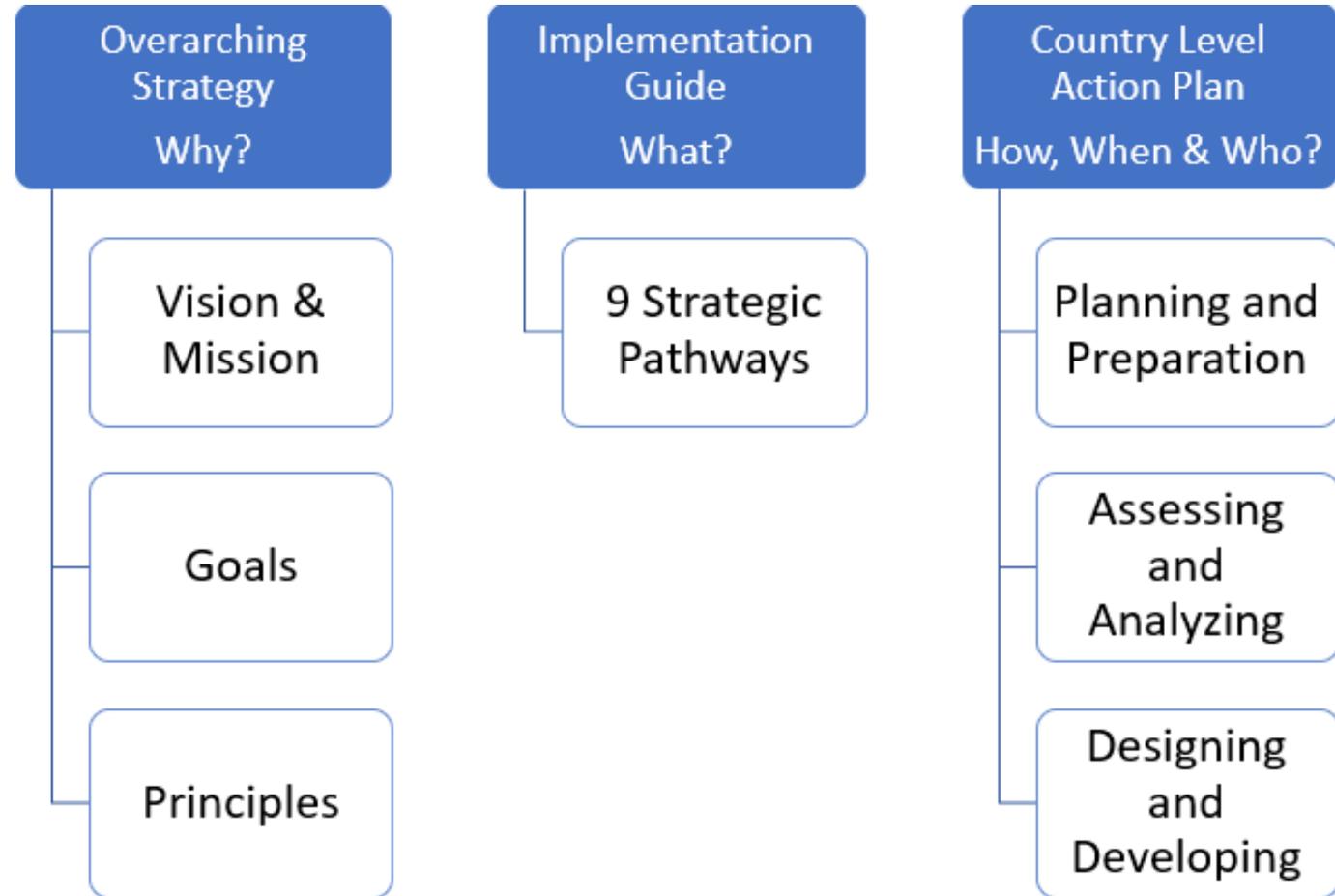
: Method vs Strategy

NGP 2022: Components and Interconnectedness



IGIF Framework

- IGIF is the foundational guide for developing, integrating and strengthening geospatial information Management.
- The adaptable and scalable framework aims at accelerating the advancement towards inclusive and engaging e-economies, e-services and e-commerce.
- This framework is a key enabler for geospatial capacity development, decision making and governance support, private sector facilitation, digital transformation and implementation of national strategic priorities and the 2030 Agenda for Sustainable Development.





Annual sessions

- ▶ Fifteenth session
- ▶ Fourteenth session
- ▶ Thirteenth session
- ▶ Twelfth session
- ▶ Eleventh session
- ▶ Past sessions

Overview

- ▶ Mandates
- ▶ Aims and Objectives
- ▶ Bureau
- ▶ Regional Committees
- ▶ Functional Groups
- ▶ Thematic Networks

Quick links

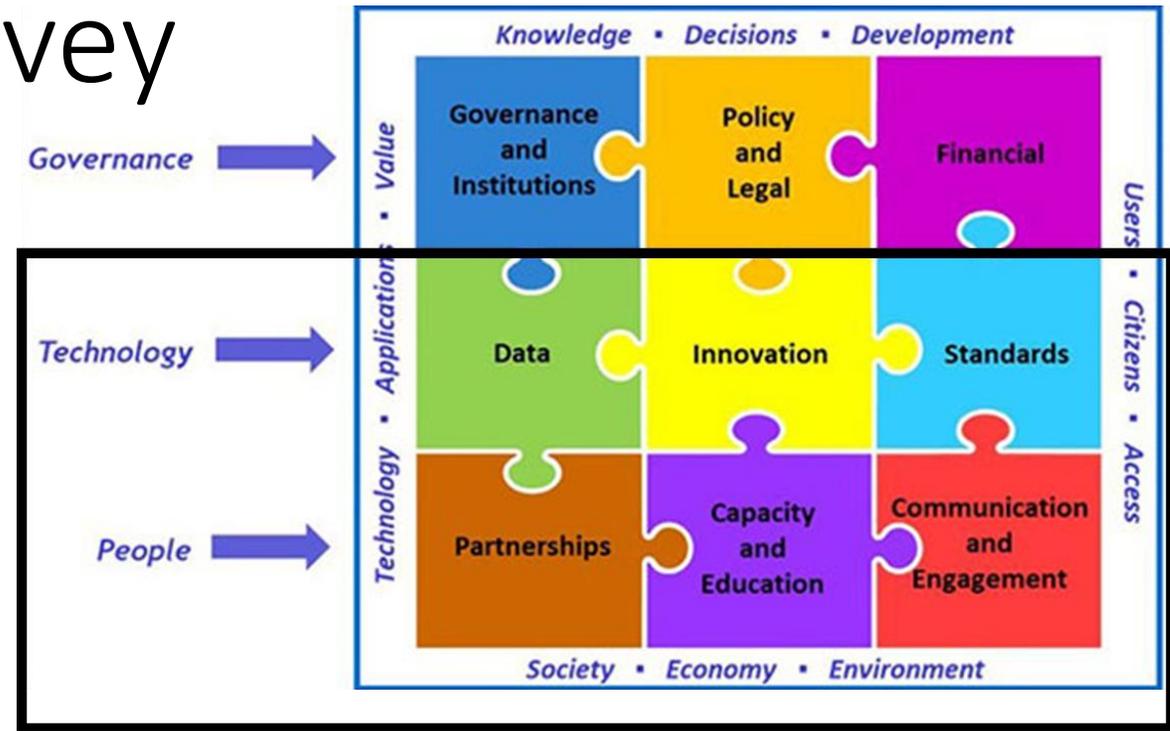
- ▶ UN-GGIM Events
- ▶ Past Events
- ▶ UN-IGIF
- ▶ UNGEGN
- ▶ UN-GGCE
- ▶ UN-GGKIC

ECOSOC established the Committee of Experts as the apex intergovernmental mechanism for making joint decisions and setting directions with regard to the production, availability and use of geospatial information within national, regional and global policy frameworks. Led by United Nations Member States, UN-GGIM aims to address global challenges regarding the use of geospatial information, including in the development agendas, and to serve as a body for global policymaking in the field of geospatial information management

Read more...

Baseline Assessment Survey

- An attempt to assess the current state of the country's vibrant geospatial ecosystem.
- The concepts for the methodology are based on the Integrated Geospatial Information Framework (IGIF) and its Strategic Pathways (SP), which was adopted by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), August 2018.
- We adopted the **Diagnostic Tool designed by the World Bank.**
- Three main components, namely—Governance, **Technology** and **People** which as **58 questions of 6 SPs.**

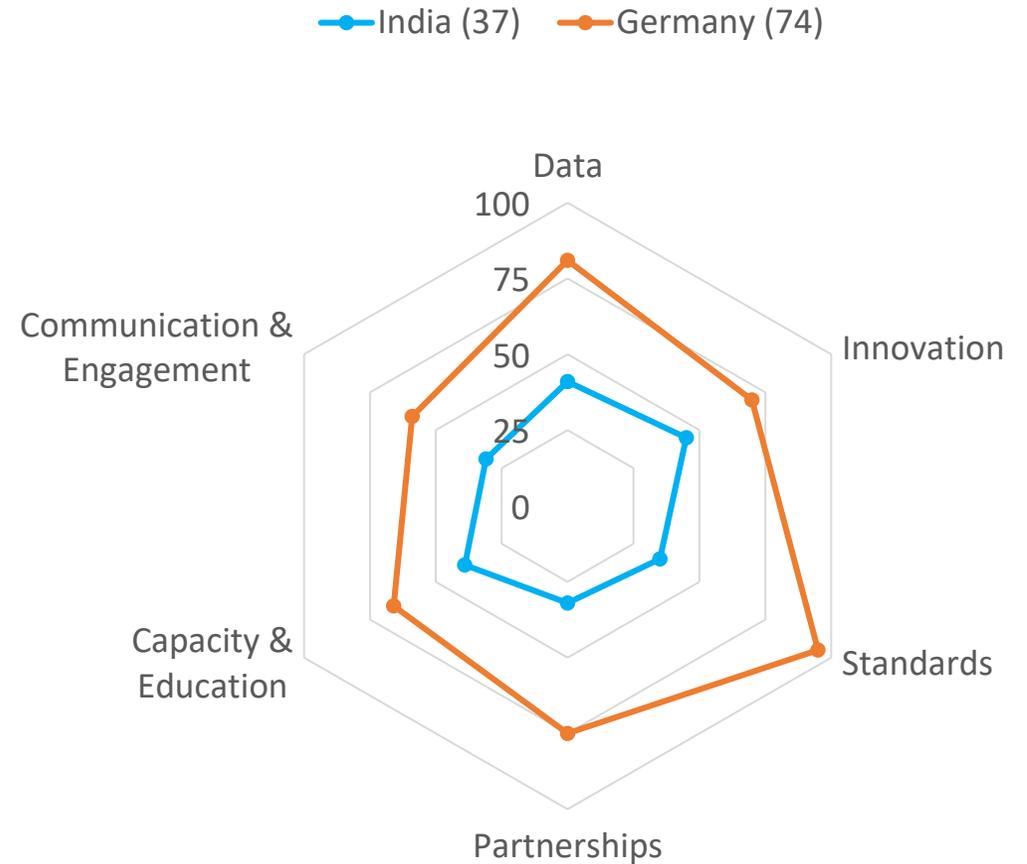


| Government | Industries | Academia | Civil Society |
|---|---|---|--|
| <ul style="list-style-type: none"> • Survey of India • Geological Survey of India • Registrar General of India • ICAR-NBSS&LUP, ICAR-CAZRI • National Institute of Disaster Management • State Space Application Centers • Development Authorities • Others | <ul style="list-style-type: none"> • ESRI India, • Hexagon, • ML InfoMaps • Many others | <ul style="list-style-type: none"> • School teachers • University Departments • Research Institutes • Practitioners | <ul style="list-style-type: none"> • NGOs |

IGIF Baseline Survey Insights

- India's geospatial ecosystem is at developing stage as a whole.
- India is progressing rapidly in the strategic pathway of Innovation and Data.
- It needs further emphasis on communication and engagement; partnerships and formulation with regular maintenance of standards of geospatial infrastructure.
- India should focus on the capacity and education for sustenance of the system.
- NGP 2022 will act as a catalyst towards progressive development of country's vibrant geospatial ecosystem.

IGIF Baseline Assessment of Geospatial Ecosystem



| IGIF Strategic Pathways | Key Survey Insights |
|--|--|
| <p>SP 4: Data</p> <p>Major Themes: Data Framework, Geodetic Infrastructure, Data Inventory, Custodianship, Data Quality, Metadata, Data Sharing, Data Interoperability</p> | <ul style="list-style-type: none"> • The national fundamental Geospatial Data theme identified. • Data custodianship and guidelines has been assigned but few agencies comply. • Need for enhance data acquisition Programme as there is high chances of data duplication. • Data quality and metadata standard are inconsistent. |
| <p>SP 5: Innovation</p> <p>Major Themes: Geospatial Innovation Strategy, Core ICT Infrastructure, Modernizing Data Asset, Process Improvement, National Innovation System, Integrated System of Systems.</p> | <ul style="list-style-type: none"> • The need for leadership in an active innovation group have been identified along with a government innovation strategy. • The SDI and geoportal development is undergoing to support sharing, viewing, accessing and using geospatial information. • Govt have attempted to integrate some systems but there are no holistic government plans for integrative technologies. |

IGIF Strategic Pathways

Key Survey Insights

SP 6: Standard

Major Themes: **Standard Governance, Need Assessment and Prioritization, Strategy, Awareness, Implementation. Compliance, Community of Practice**

- Secure **strategic direction and funding** for data standards.
- **Raise awareness** of geospatial standards among stakeholders.
- **Engage with Standard Development Organizations.**

SP 7: Partnerships

Major Themes: **Partnership Awareness and Opportunities, Cooperation, Collaboration, Citizen Engagement**

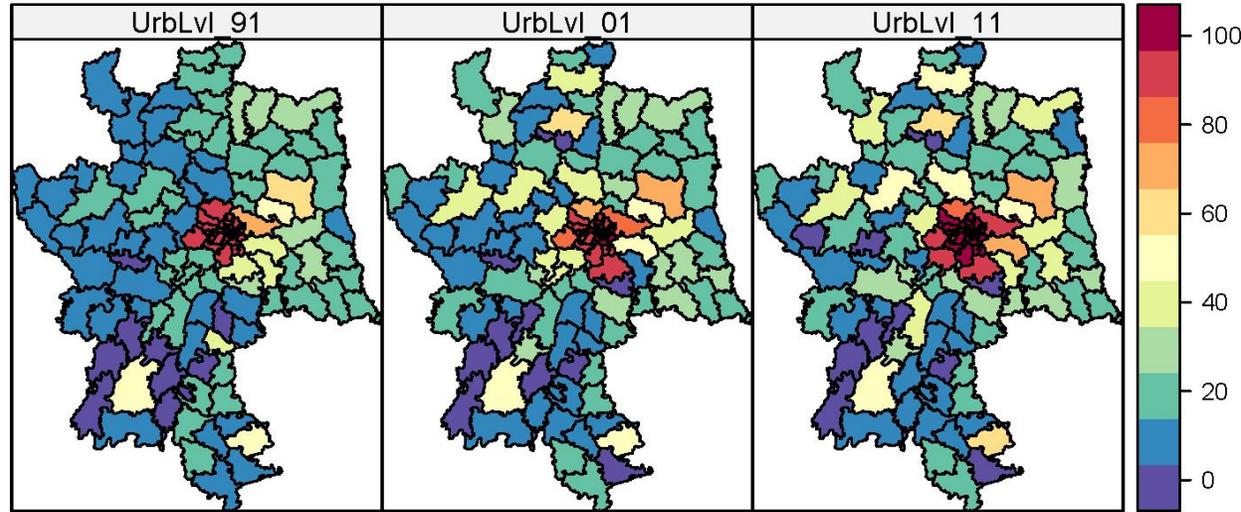
- A limited number of **ad hoc and informal collaborations** are present among public sector institutions.
- Results indicated strong **support** for a policy encouraging Public-Private Partnerships (**PPPs**) in geospatial information to enhance product and service offerings.
- **Cooperation** between **public sector** and **academic institutions** is in its **early stages**, with potential to leverage scientific and research capabilities identified.

| IGIF Strategic Pathways | Key Survey Insights |
|---|--|
| <p>SP 8: Capacity & Education</p> <p>Major Themes: Working Group, Assessment and Analysis, Strategy and Implementation Plan, education Programs, Professional development, Entrepreneurship</p> | <ul style="list-style-type: none"> • The results reveal that capacity building and education strategies are essential for strengthening organizational capabilities. • Emphasize the role of on-the-job training, study tours, and fellowship programs in maintaining expertise and facilitating knowledge sharing. |
| <p>SP 9: Communication & Engagements</p> <p>Major Themes: Communication Governance, Engagement Strategy, Communication Team, Stakeholder Engagement, Case study Database, Link to SDGs</p> | <ul style="list-style-type: none"> • The governing body prioritizes communication with stakeholders and users. • Respondents recognize the need for a dedicated team to enhance engagement strategies. • While stakeholder engagement is developing, it remains limited and inconsistent. • Engagement and communication materials must fully relate the national SDI to the UN SDGs. |

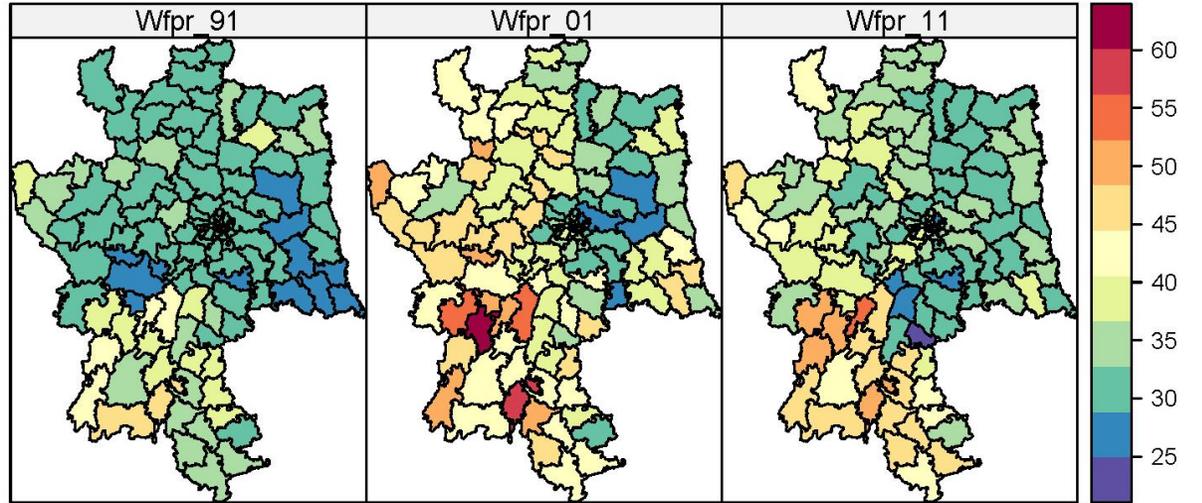
Integration of Statistical and Geospatial Information

Statistical Information for Census of India 1991, 2001 and 2011

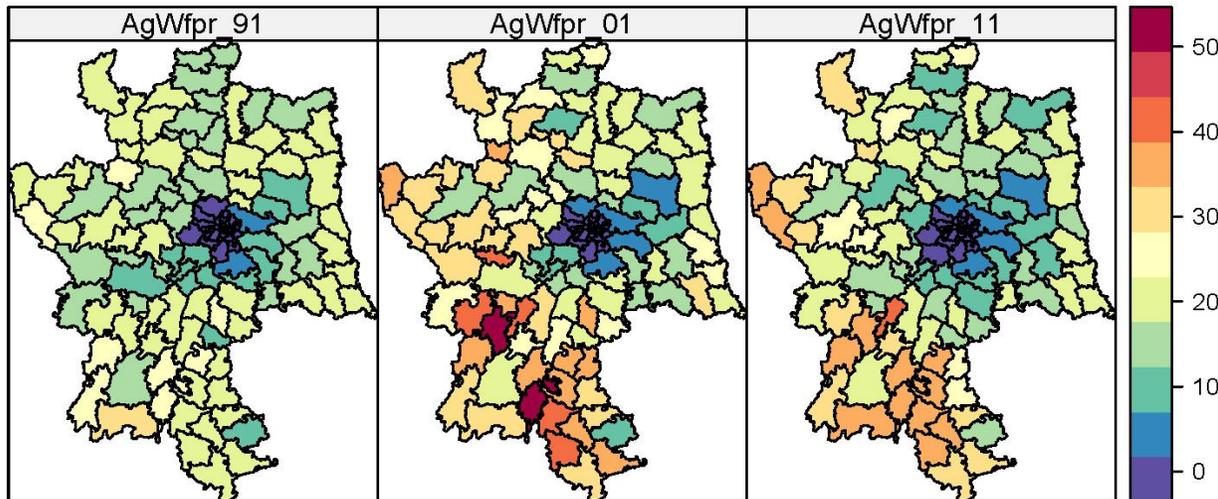
Level of Urbanization



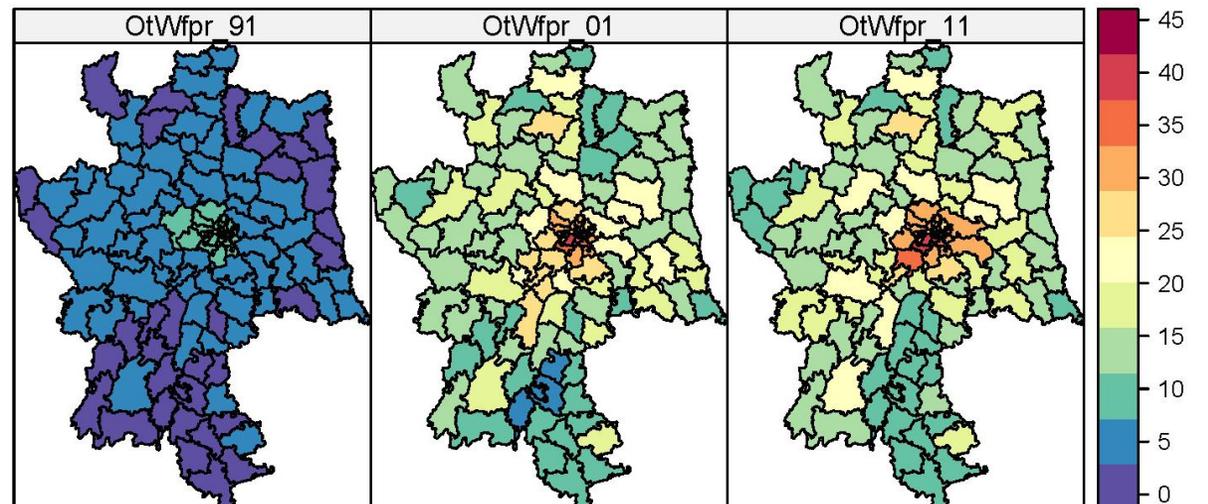
Workforce Participation Rate



Agriculture Workforce Participation Rate



Others Workforce Participation Rate



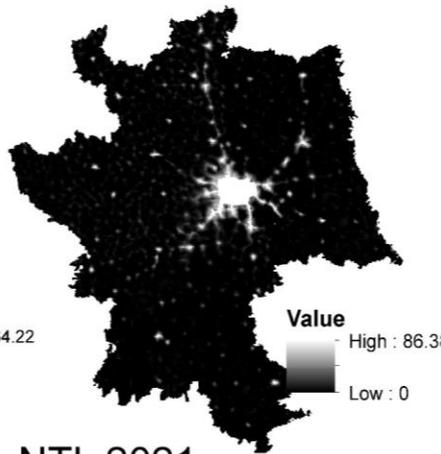
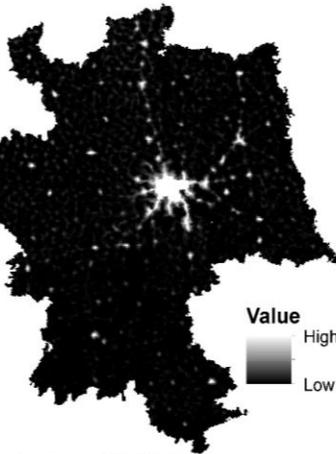
Integration of Statistical and Geospatial Information

Geospatial Information 1991/1992, 2001, 2011 and 2021

Night time light

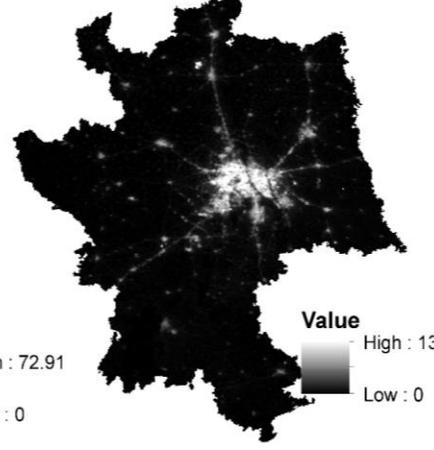
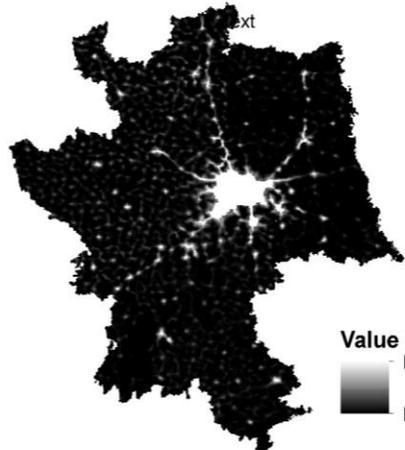
NTL 1992

NTL 2001



NTL 2011

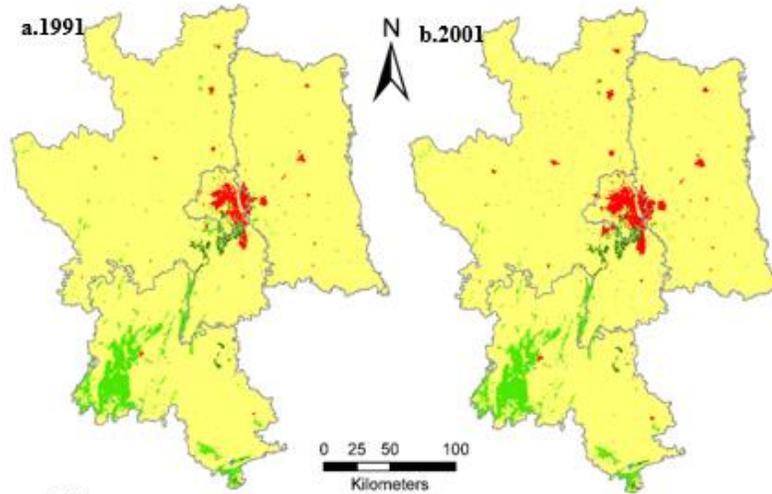
NTL 2021



Land Use Land Cover Classification

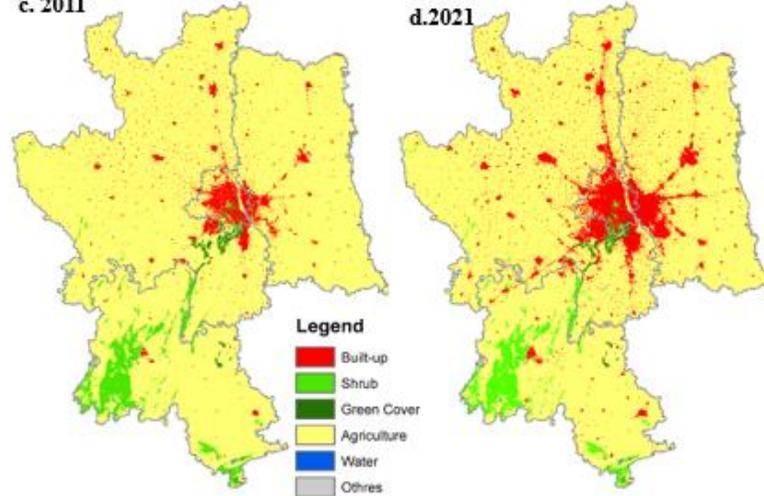
a.1991

b.2001



c. 2011

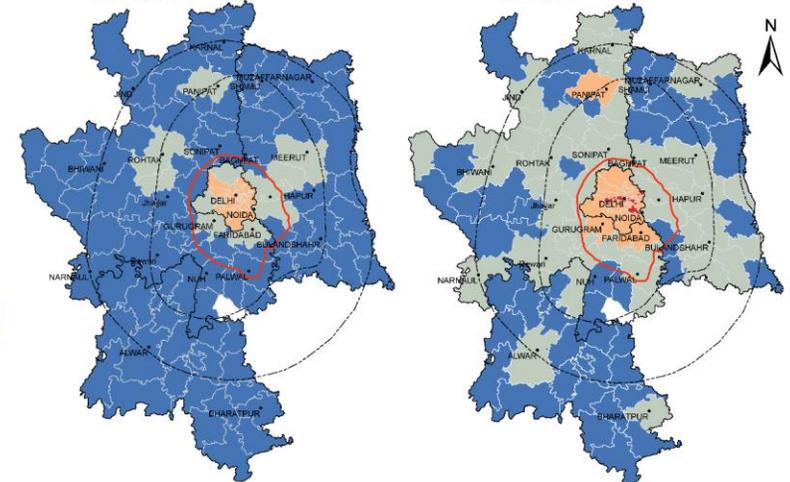
d.2021



Multi-dimensional Urbanization

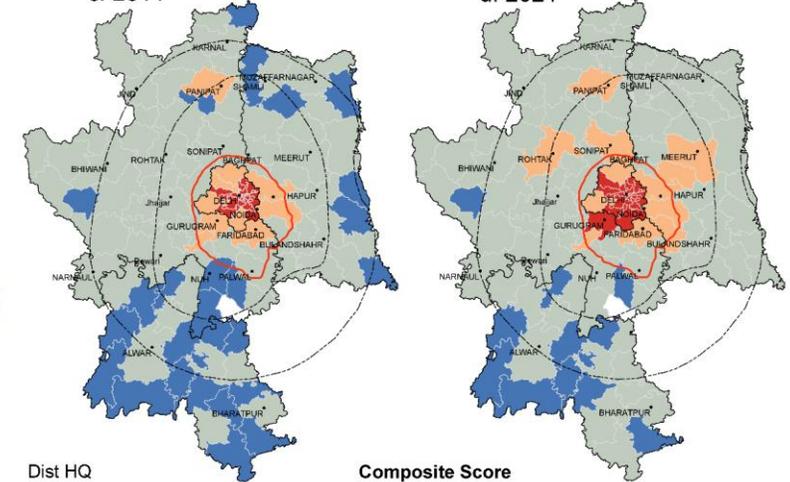
a. 1991

b. 2001

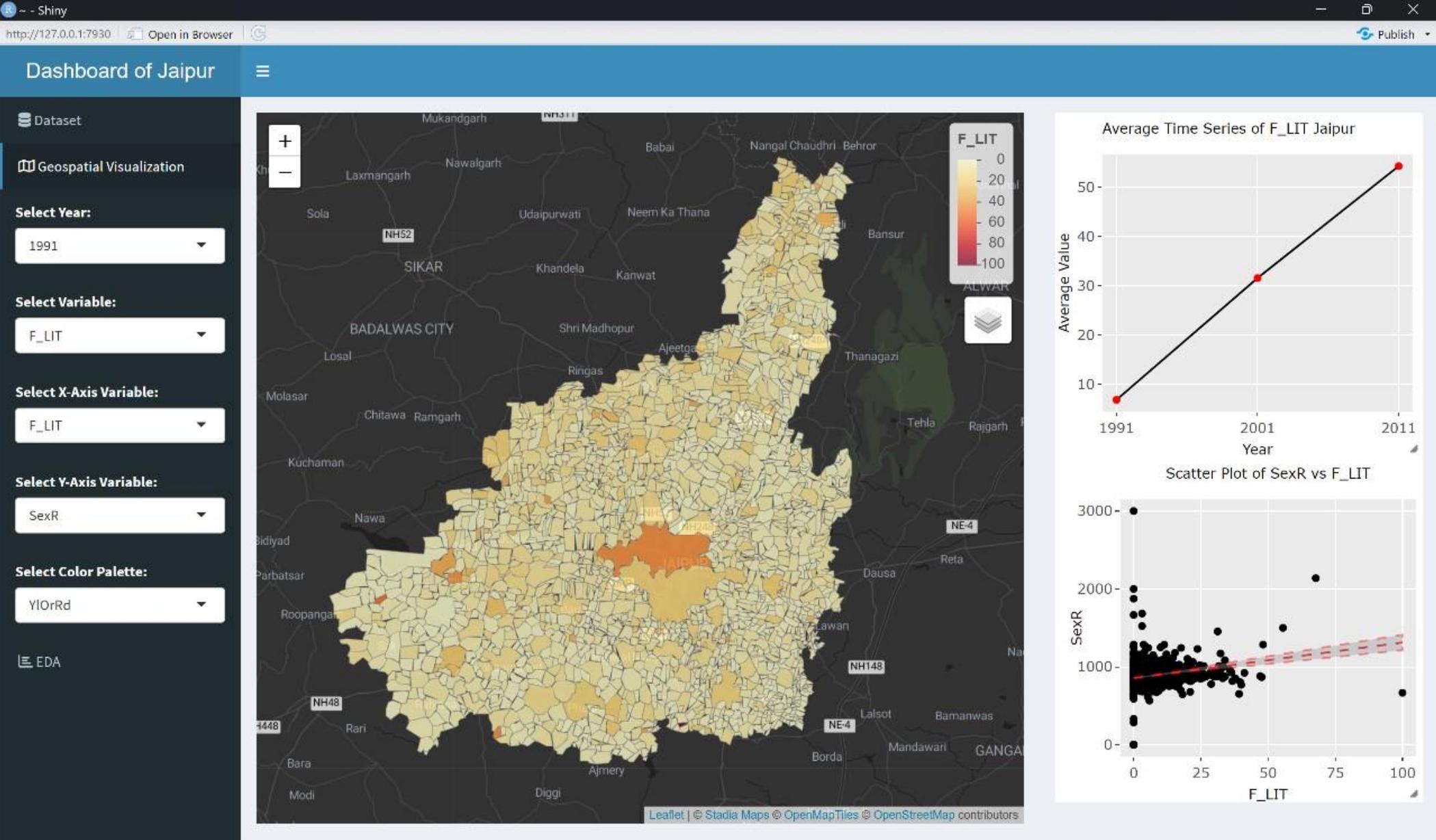


c. 2011

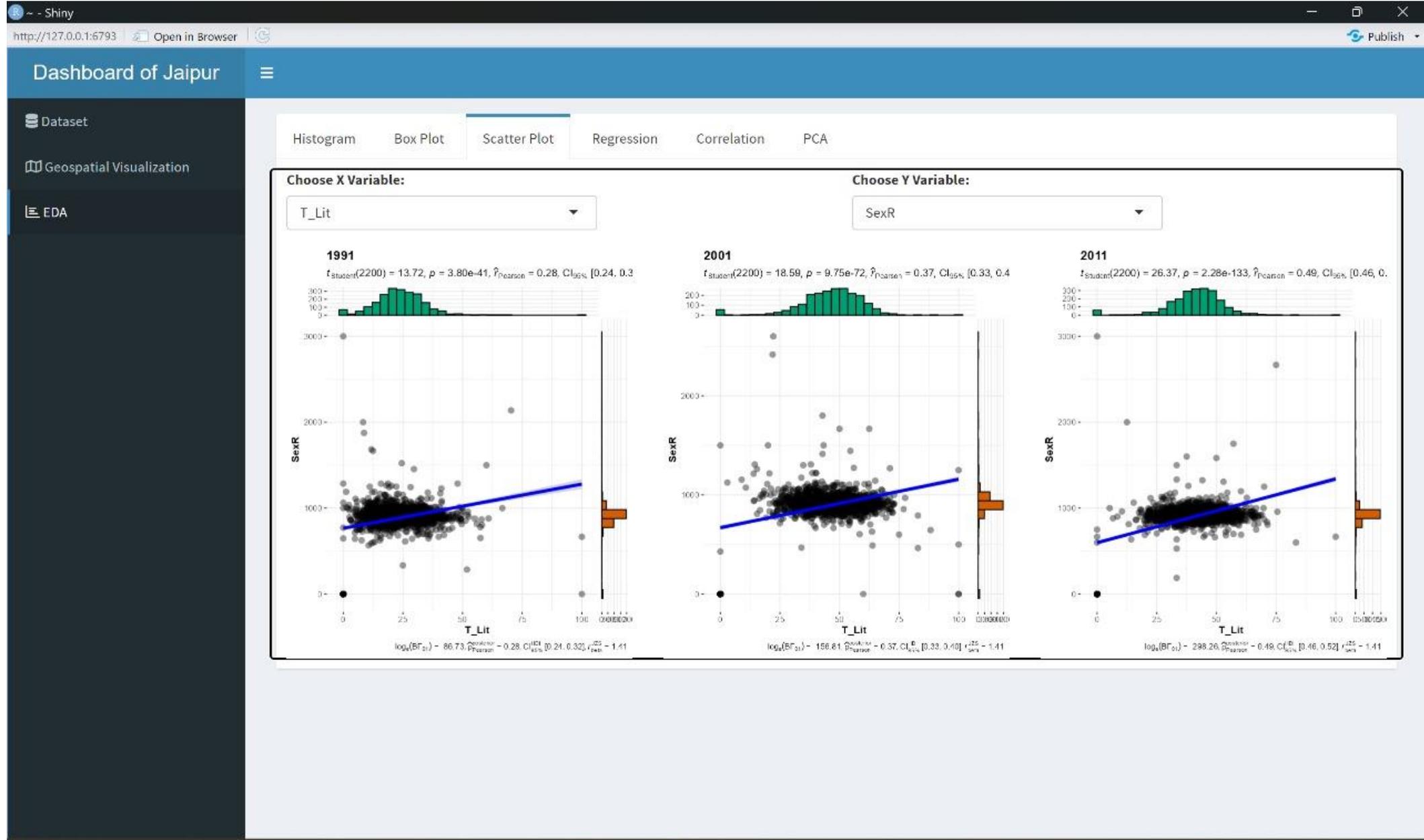
d. 2021



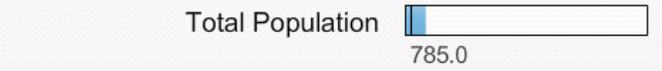
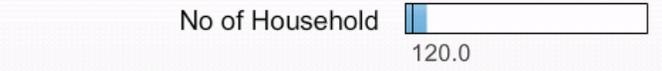
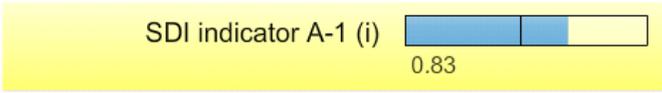
Visualisation of Integrated Database and Insights



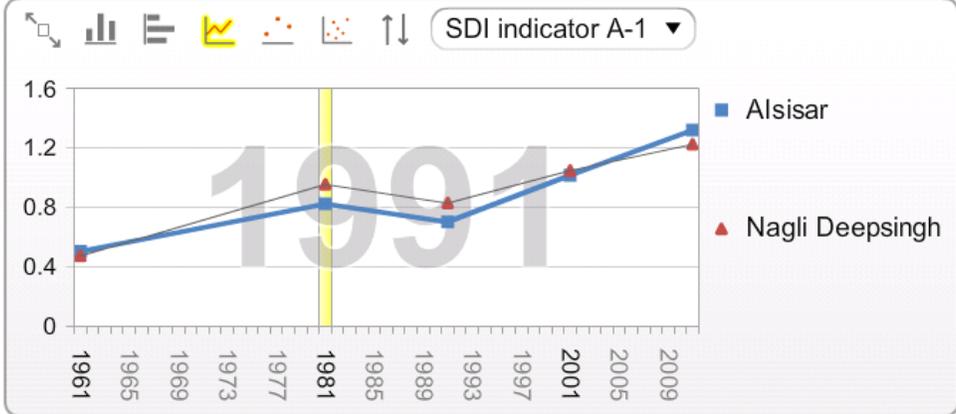
Exploratory Data Analysis in the Dashboard



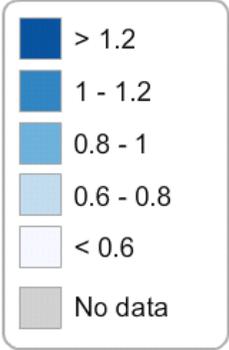
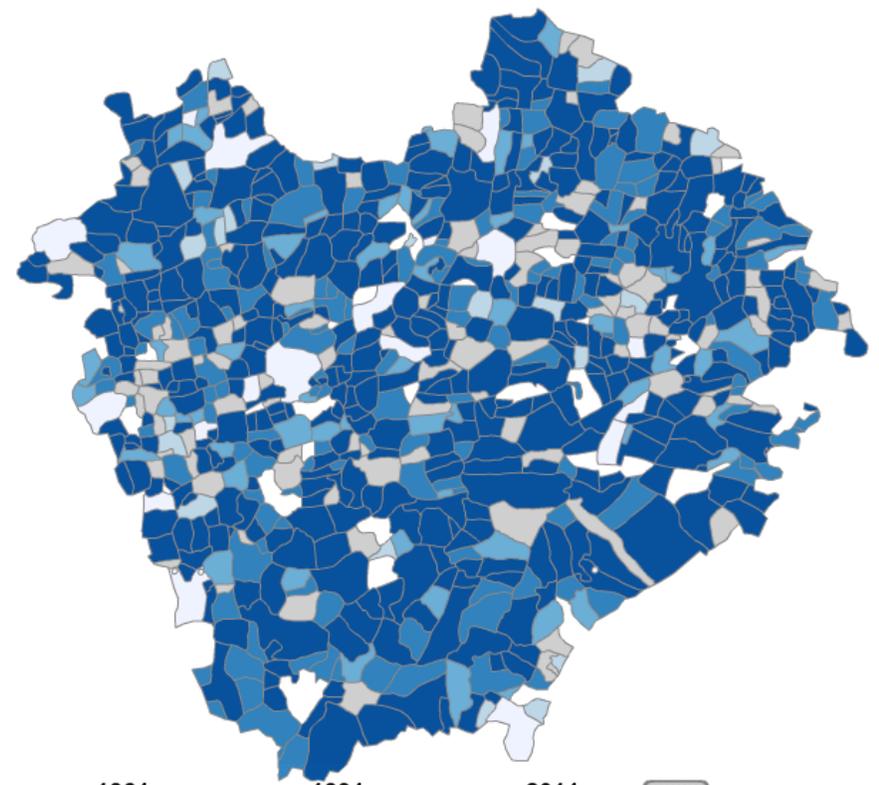
Select a category...



Source: Census data of India



- ✓ ✕
- Alsisar
- Amarpura
- Amarpura Kalan
- Amarpura Khurd
- Amarsar
- Amarsinghpura
- Ambedkarnagar



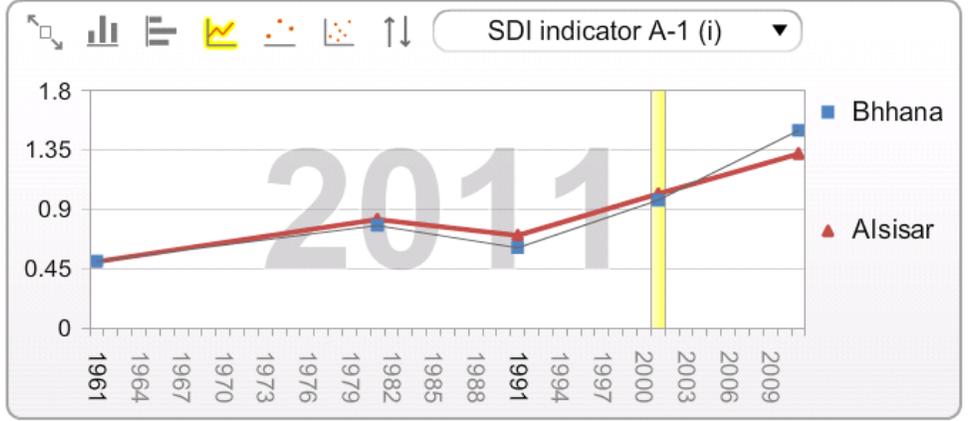
Select a category...

SDI indicator A-1 (i)

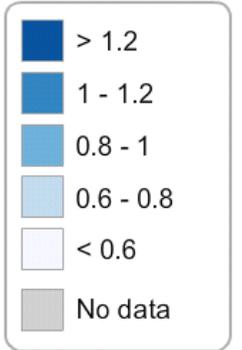
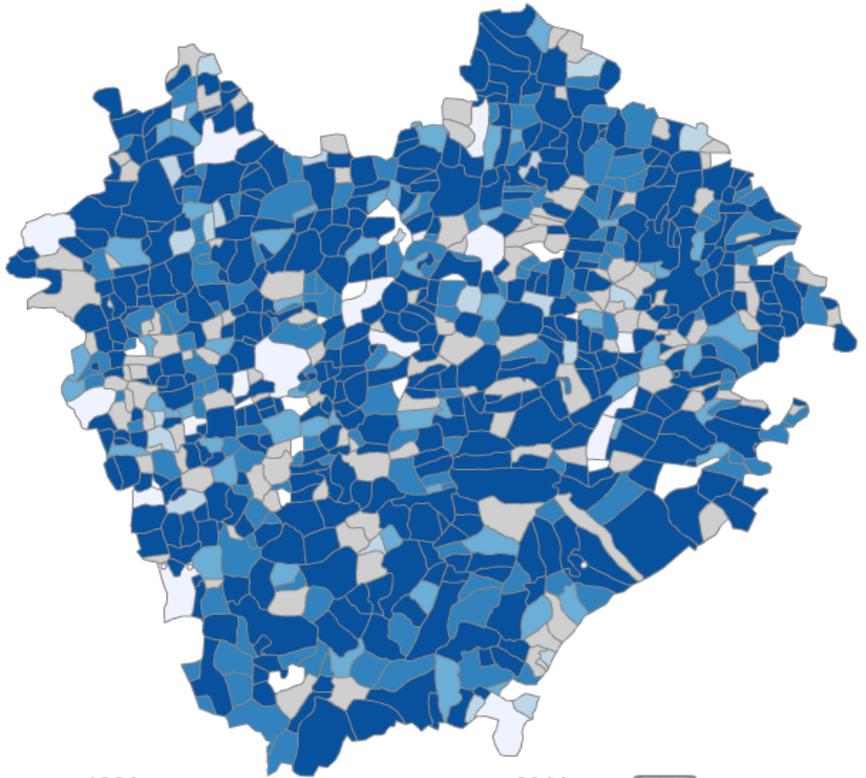
No of Household

Total Population

Source: Census data of India



- ✓ ✕
- Alsisar**
- Amarpura
- Amarpura Kalan
- Amarpura Khurd
- Amarsar
- Amarsinghpura
- Ambedkarnagar

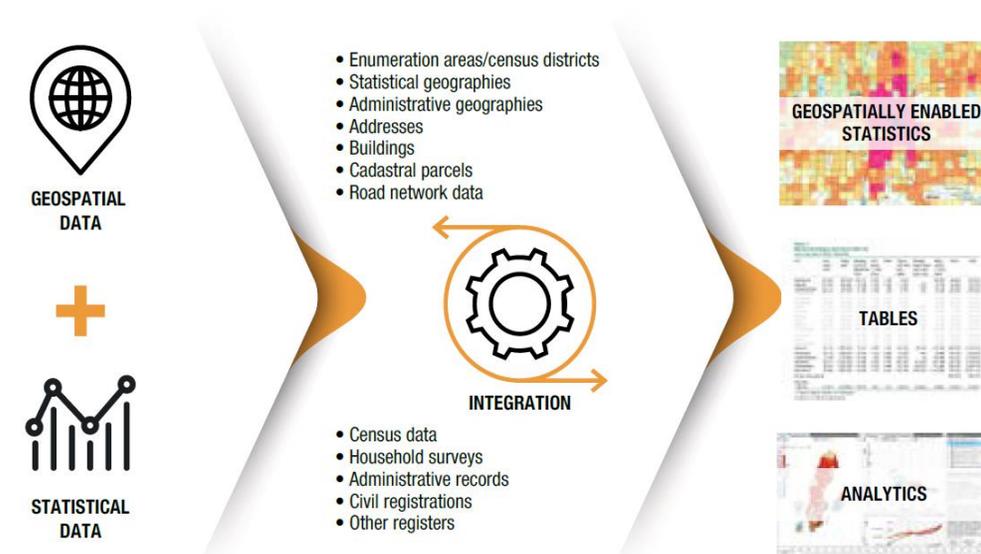


1961 2011

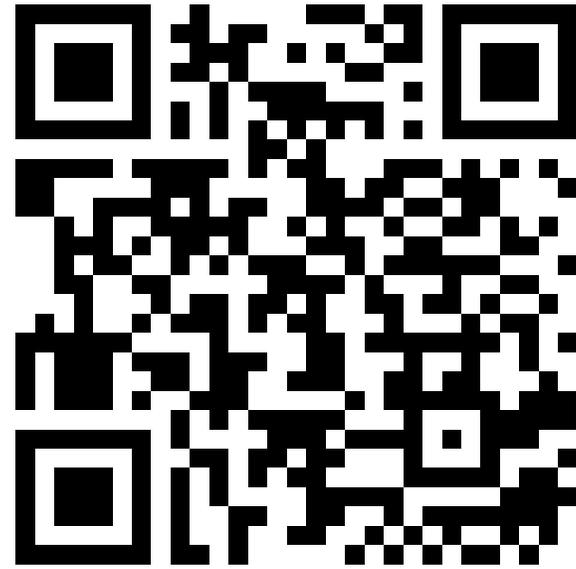
Integrating datasets

| Dataset | Name of the Variable | Level | Year |
|-----------------------------|---|-------------------------------|-----------|
| Census of India, 1991-2011 | Primary Census Abstract | Village level | 1991-2011 |
| Census of India, 1961-2011 | Primary Census Abstract | Sub-districts | 1961-2011 |
| Jal Jeevan Mission | Percentage of households with 100 percent FHTC | Subdistricts, Villages | 2023 |
| Mission Antodaaya | Village Facilities | Village level | 2020 |
| Socio-economic Caste Census | Household Income, Facilities, Educational level | Subdistricts, GP and Villages | 2011 |
| ESRI Living Atlas | Sub-district Population projection | Subdistricts | 2011-36 |
| ESRI Living Atlas | Healthcare Facilities | Point Location | 2021 |
| CGWB | Groundwater Quality | Point Location | 2020 |
| CGWB | Groundwater Level | Point Location | 2020 |
| CGWB | Groundwater Fluctuation | Point Location | 1994-2020 |
| CGWB | Hydrogeological Data | Point Location | |
| IMD-Grided | Meteorological Data | Grided | |
| IMD-Station | Meteorological Data | Point Location | 1980-2020 |
| BHUKOSH | Geology-Geomorphology | Shapefile | |
| NSSO | All Rounds of NSSO Survey | District, Region | |

Figure 2. A conceptual illustration of statistical-geospatial integration



Source: Authors' adaptation based on information from Statistics Sweden.



**Scan this QR Code to participate in the ongoing survey for
Baseline Assessment Survey for IGIF**

For any queries please mail us: jnu.unggim@gmail.com

THANK YOU