



Expert Consultation and Meeting on Enhancing Geospatial Information Management Arrangements

Implementing geospatial strategies: challenges and opportunities

Astana, Kazakhstan 15-19 September 2025

Accelerating Implementation of the Sustainable Development Goals and the Sub-regional Workshop on the United Nations Integrated Geospatial Information Framework (UN-IGIF) for Central Asia, South Asia, and neighboring countries



Bhutan



National Land Commission Secretariat

*Spatially Enabled Nation with Par
Excellence Land Governance by 2034*





Current State: Where We Stand Today

Our nation has made significant strides in establishing foundational geospatial infrastructure and governance frameworks.

NSDI Foundation

National Spatial Data Infrastructure system developed and launched as the "single source of truth" for geospatial data across government agencies.

GI Utilization

Integrated Land Use and Spatial Planning framework for seamless inter-agency coordination and spatial decision making.

Standards & Integration

ISO-aligned Metadata adopted, plus developed Bhutan Standards for GI Data Quality and Data Product Specification

Geospatial programs are strategically aligned with national development plans, supported by ongoing capacity-building initiatives across agencies in GIS, remote sensing, and emerging technologies.



Future Vision: Our Five-Year Goals



Operational Excellence

Fully operational NSDI integrated seamlessly with sectoral agency workflows, ensuring real-time data updates and accessibility.



Strategic Integration

Seamless geospatial intelligence supporting national planning, zoning, and development monitoring aligned with national development frameworks.



Institutional Strength

Institutionalized data governance with clear mandates, accountability frameworks, and sustainable financing mechanisms.



AI-Ready Platforms

Advanced geospatial platforms leveraging artificial intelligence for smart cities, disaster resilience, and enhanced citizen services.

Our vision encompasses leveraging geospatial intelligence for key economic sectors including tourism, hydropower, agriculture, and climate resilience under national economic roadmaps.

Key Challenges Ahead

Several critical barriers must be addressed to achieve our five-year vision and maximize geospatial information potential.

Data Management Issues

Inconsistent and delayed data updating by sectoral agencies, creating gaps in real-time information availability and decision-making capabilities.

Capacity Constraints

Limited institutional capacity and technical expertise in advanced geospatial domains including AI, ML, and big data analytics integration.

Resource Limitations

Fragmented funding streams and continued dependence on external partners for technology advancement and infrastructure development.

Coordination Risks

Potential duplication of efforts and need for stronger legal frameworks to enforce data sharing and interoperability standards across agencies.

Strategic Opportunities



Political Alignment

Strong political will and strategic integration of geospatial priorities within national development frameworks and economic roadmaps provides unprecedented support.



Global Partnerships

Leveraging established partnerships with UN-GGIM, JICA, World Bank, and regional knowledge networks for technical expertise and resource mobilization.



Technology Adoption

Adoption of standards, cloud solutions, and AI-driven geospatial applications creating opportunities for leapfrogging traditional development barriers.



Institutional Framework

Institutionalization of National Framework for Inter-Agency Coordination on Land Use & Spatial Planning ensuring sustainable implementation mechanisms.

Public-Private Partnership models offer innovative pathways for sustainable financing and technology advancement, reducing dependency on external funding sources.





UN-GGIM Engagement Experience

Current Involvement

- Actively following UN-GGIM global processes and knowledge products
- NSDI development strongly guided by IGIF principles and frameworks
- Participation in UN-GGIM Asia-Pacific activities and IGIF implementation practices

"Our national spatial data infrastructure development has been fundamentally shaped by UN-GGIM's Integrated Geospatial Information Framework, providing us with proven pathways for implementation."

We seek to deepen our engagement through technical sessions, capacity building programs, and regional knowledge exchange initiatives.



Support Needs and Partnership Priorities



Technical Implementation

Support in operationalizing IGIF pathways, particularly in financing mechanisms, partnership development, and data governance frameworks.



Capacity Enhancement

Advanced training in geospatial analytics including AI/ML integration, big data processing, and IoT applications for government operations.



Legal Framework

Advisory support on developing robust legal frameworks for enforcing data sharing mandates and interoperability standards across sectors.



Knowledge Exchange

Facilitation of regional knowledge networks and twinning programs with countries that have successfully implemented advanced NSDI systems.



We are committed to sharing our experiences and lessons learned with regional partners, contributing to collective advancement in geospatial information management across Central and South Asia.



Thank

From the **You**
Land of
Thunder
Dragons