

# National Land Use Zoning; A Harmonized Land Use System Towards Climate Responsive Land Governance.

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**Key words:** Access to land; Land management; Spatial planning; National Land Use Zoning, Land Use Conflicts, Climate Responsiveness, Sustainable Land Management, Climate Change, Spatial Planning, Socio-economic Development, and Geospatial Data.

## SUMMARY

The National Land Use Zoning (NLUZ) initiative in Bhutan is pivotal for sustainable land management and addressing climate change challenges. It aims to establish a cohesive national land use system to mitigate sectoral conflicts including conservation and climate responsiveness. Guided by Bhutan's constitutional mandates and international frameworks like the IPCC and UNCCD, the NLUZ integrates climate-responsive actions and spatial planning into its objectives. These efforts are essential for promoting socio-economic development while safeguarding environmental integrity.

The initiative categorizes Bhutan into nine macro zones, subdivided further into 23 micro and 23 nano zones, each designated for specific land uses such as agriculture, urban development, nature conservation, industrial activities, settlement areas, and disasters and risk overlaying to assess climate responsiveness aspects. Utilizing advanced GIS technologies like QGIS and ArcGIS, a robust database was developed to manage diverse geospatial data, facilitating accurate zoning and conflict resolution. This comprehensive approach ensures informed decision-making at various administrative levels, enhancing governance effectiveness.

The identification of Unzoned Areas (UA), covering 35.43% of Bhutan's total land area, underscores opportunities for future development amidst existing land use conflicts. However, these designate areas must be ascertained by ruling out topographical limitation and forest coverage by technical and administrative definition. Strategic Development Zones (SDZ) were introduced to streamline planning efforts and accommodate evolving socio-economic needs.

Despite challenges in data integration and validation, the Technical Working Group (TWG) members from over 12 agencies' lessons learnt underscore the importance of accurate data

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acquisition and comprehensive ground truthing. The initiative has already yielded benefits such as improved sectoral collaboration, reduced land use conflicts, and enhanced spatial data utilization. Future actions focus on resolving integration issues, enhancing data quality, and capacity building to support sustainable and climate responsive land governance.

In conclusion, the NLUZ initiative serves as a cornerstone for Bhutan's spatial envisioning and national policy formulation, aimed at achieving a 'Spatially Enabled Nation with Par Excellence Land Governance.' By harmonizing land use system and promoting resilient and climate responsive development practices, Bhutan aims to achieve its developmental goals while preserving its natural heritage and fostering socio-economic prosperity.

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