GIS-based Property Valuation: Lessons Learned from Banepa Municipality

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SUMMARY

Land taxation is a key aspect of land administration, making land valuation essential. In Nepal, multiple organizations, governed by various laws and regulations, conduct land valuation. However, traditional approaches lack uniformity, causing complications in tax collection, land acquisition, property clearance, land market regulation, and other areas. Currently, district land valuation committees base valuations on incremental increases from previous years, leading to overly generic assessments that make it difficult to determine the value of individual parcels. A study was conducted in Banepa Municipality, Ward 12, to identify parcel-specific land values based on multiple valuation criteria. The study used Geographic Information System (GIS) tools to analyze data and prepare a land value map for the area, assuming identical land use across the study zone. A comparison between the generated map and actual market prices revealed significant deviations, largely because land valuation is highly dependent on land use. Furthermore, the use of a small-scale topographic database affected accuracy, which could be improved with up-to-date cadastral and topographic data. Since land values vary based on land use, valuation must be conducted separately for each land use zone, considering the most relevant factors for each. Implementing such a system would require amendments to existing land laws and up-to-date, large-scale databases, which would demand significant human and financial resources. Managing these resources effectively presents a challenge. The study emphasized that land valuation requires input from multiple experts, and the results must be socially acceptable. As an alternative to the current system, this study proposed a spatial Multi-Criteria Decision Analysis (MCDA) approach, using the Analytic Hierarchy Process (AHP). This method considers a wide range of factors, physical, economic, environmental, legal, and social, and weights them according to their influence. A relative land value map, produced by the MCDA approach, can then be used to derive absolute land values based on real market price surveys.