

# Comparison between Fit-for-Purpose and Conventional Cadastral Mapping Practices in Ekiti State; Nigeria

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**Key words:** Access to land; Cadastre; Digital cadastre; Land management; Photogrammetry; Security of tenure; Comparison

## SUMMARY

Cadastral mapping plays a crucial role in managing and governing land resources, ensuring secure tenure, and supporting sustainable development. In Ekiti State, Nigeria, where land-related conflicts and challenges persist among communities and individuals, and the extent of registered and unregistered land remains uncertain, the adoption of effective cadastral mapping practices is essential for facilitating land governance. This research examines the differences and consequences of employing conventional techniques vis-à-vis the "fit-for-purpose" (FFP) approach. Specifically, this study contrasts the conventional use of theodolite traverse and Real-Time Kinematic Global Navigation Satellite System (RTK GNSS) surveys with the application of high-resolution aerial imagery for cadastral mapping as an FFP alternative in Ekiti State Nigeria. The comparison of cadastral mapping methods was carried out by evaluating the processes and outcomes based on time, cost, and accuracy. Additionally, an analysis of relevant documents guiding cadastral mapping in Nigeria was conducted to understand the possible adoption of earth-observation data for fit-for-purpose cadastral mapping approaches and their potential to accelerate land registration in Ekiti State. The study found that using high-resolution aerial imagery produces results that are consistent with conventional surveying instruments used for cadastral mapping in Nigeria. In terms of efficiency, the RTK GNSS method was the quickest for data collection, while the theodolite method was the slowest. The very high-resolution imagery obtained gives the notable advantage of its abundant topographic data, which supports the creation of a detailed 3D cadastral dataset. This dataset can be used to build a more accurate digital representation, benefiting land administration, management, and sustainable development efforts. However, the research identified a challenge related to obtaining high-resolution imagery. This underscores the need for regulatory adjustments concerning the use of Unmanned Aerial Vehicles (UAVs) in cadastral mapping processes and the importance of having tools to aid faster UAV imagery processing. In conclusion, this research contributes valuable insights into cadastral mapping, administration and governance, particularly in

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Ekiti State, Nigeria. It advocates for a progressive shift towards technology-driven cadastral mapping approaches, capable of accelerating land registration processes and enhancing the responsible management of land resources. It recommends regulatory reform and innovative solutions to promote sustainable development through effective land governance and emphasizes the need for improvements to the legal and institutional frameworks of land administration in the state.

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