

A Comparison between Fit-for-Purpose Land Demarcation and Conventional Land Demarcation Practices in Ekiti State, Nigeria

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Key words: Access to land; Cadastre; Digital cadastre; GNSS/GPS; Land management; Low cost technology; Photogrammetry; Professional practice; Security of tenure; Land Demarcation; Land Administration; Land Governance

SUMMARY

Land demarcation 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 land demarcation practices is essential for facilitating land governance. This research examines the differences and consequences of employing conventional techniques vis-à-vis the contemporary "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 land demarcation as an FFP alternative in Ekiti State Nigeria. The comparison of land demarcation methods was carried out by evaluating the processes and outcomes based on factors such as time, cost, and accuracy. Additionally, an analysis of relevant documents guiding land demarcation in Nigeria was conducted to understand the possible adoption of earth-observation data for fit-for-purpose land demarcation approaches and their potential to accelerate land registration in Ekiti State. The study found that using high-resolution aerial imagery with a 3.52 cm per pixel resolution for land demarcation in Ekiti State, Nigeria, produces accurate results that comply with the accepted 1:3000 cm specification for cadastral mapping. In terms of efficiency, the Real-Time Kinematic Global Navigation Satellite System (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 also identified a challenge related to obtaining high-resolution imagery from orthophotos. This highlights the need for regulatory adjustments concerning the use of Unmanned Aerial Vehicles (UAVs) in land demarcation processes and the

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need for tools to aid faster UAV imagery processing. In conclusion, this article recommends a fundamental shift in land demarcation practices to strengthen land governance for sustainable development in Ekiti State, Nigeria. It also recommends improvements to the legal and institutional frameworks of land administration as it affects the states.

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