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Mapping Nigeria's Mineral Frontier: AI-Driven Prospecting for Investment Opportunities

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Increasing demand for mineral resources, exploring previously overlooked areas has become essential. This presents a unique opportunity for African countries endowed with mineral-rich geological settings to present their mineral resource potentials for investment promotion with the use of scientifically verifiable artificial intelligence algorithm. Nigeria, traditionally focused on oil production has been actively promoting its mining industry over the past five years. Recent geoscientific projects have provided valuable data, confirming the country's potential for key commodities.

The Mining Investment Facilitation Mission played a crucial role in consolidating recent data, identifying promising target areas for various commodities, including Gold (Au), Tin (Sn) – Niobium (Nb), Lithium (Li) – Tantalum (Ta) Pegmatites, and Lead (Pb) – Zinc (Zn). The methodology required the definition of a new metallogenic scheme for Nigeria, categorizing regions, and utilizing machine learning algorithms to generate favourability and prospective maps. Derivation of information from existing data by understanding the respective mineral systems was crucial to obtain applicable findings. The results allowed identification of several undocumented considerable mining areas as a validation control.

Outcomes, compiled in prospectuses with relevant information, revealed at least eight main targets per commodity, indicating favourable conditions for large deposits, often only mined by artisanal miners. These findings have facilitated engagement with investors and provided guidance for future exploration efforts by the Nigerian Ministry of Solid minerals development and Geological Survey agency.