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Development of time-robust geoinformation for enhancing sustainable mining in Northwest Ghana

Mineral resource-rich developing countries, which are challenged with growing populations and food security issues, look towards the mining sector for economic diversification. However, decisions about mineral resource development are often made in these countries without understanding the environmental and social realities on the ground. Hence, this project aims to develop local-level geographical information and models for enhancing sustainable mineral resource development, to empower local communities and local governments. Regulatory acts and standard practices are used to supervise activities of the mining industry, agriculture, urban growth and other land uses. Nonetheless, the applicability of these measures is limited in developing countries due to a dearth of geographic information, especially at the local level. This prevents identification of potential threats posed by mining to sources of livelihood, such as farmlands, in remote areas.

Without local data, it is difficult to develop comprehensive mediation tools for environmentally and socially responsible mining. Hence, this study uses a systems engineering approach, which involves environmental, economic and social analysis, to develop five major land-use categories based on physical and socioeconomic factors. The project focuses on the emerging northwest mining region of Ghana, where little geographic information is available and mining is a new land-use activity, to develop basic geographic data for sustainable mining. The study's findings will aid local government and policymakers with regards to generating relevant information for natural resource management and provide evidence-based resource development constraints and opportunities in the local landscape.

It includes testing of the MapX platform of the United Nations Environment Programme (UNEP) for data management, visualization and communication to stakeholders. This provides opportunities for integrated planning at the district and community levels. The project also contributes to the relevance of Goals 2 (Zero Hunger and Food Security), 3 (Good Health and Well-being), 6 (Clean Water and Sanitation), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 14 (Life Below Water) and 15 (Life on Land) of the UN Agenda 2030 Sustainable Development Goals (SDGs) for shared economic prosperity, social development, and environmental protection in the emerging northwest mining region of Ghana.

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