Strategic minerals, mining and society in the D.R. Congo
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Population exposure and vulnerability to mining-Induced geo-hydrological hazards in the Eastern Democratic Republic of the Congo

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ABSTRACT. — Mining activities in Eastern Democratic Republic of the Congo (DRC) have significantly reshaped the region's socio-environmental systems, causing land cover and land use changes that disrupt ecosystems, heighten geo-hydrological hazards, and endanger local livelihoods. The region's mountainous terrain, coupled with socio-economic vulnerability, further amplifies risks, leaving populations highly exposed to mining-induced environmental changes. This research, as part of the EDITOR project, aims to evaluate the spatiotemporal dynamics of population exposure and social vulnerability to mining-related geo-hydrological hazards and resource degradation.

Key objectives include evaluating the extent and drivers of land cover and land use changes using remote sensing and geographic information systems. It will further explore the impact of these changes on geo-hydrological hazards such as landslides and flooding, as well as the degradation of essential resources like water, forests, and agricultural land. The study will identify areas with high population exposure to such hazards and analyze socio-economic factors that exacerbate community vulnerability while examining local coping strategies.

Using a mixed-methods approach, which combines remote sensing, geographic information systems, field surveys, and socio-economic analyses. The study will map the extent and drivers of mining-induced land use changes, assess their environmental impacts, and analyze social vulnerability factors such as demographic patterns, economic conditions, and community resilience. A vulnerability index, tailored to the South Kivu context, will be developed to identify high-risk communities and understand how socio-environmental factors shape vulnerability. Expected outcomes include a comprehensive understanding of the interplay between mining activities, land degradation, and community vulnerability. Recommendations for sustainable land management, hazard mitigation, and responsible mining practices will be provided to guide policy interventions and enhance resilience.

This study contributes to bridging knowledge gaps about mining's socio-environmental consequences in Eastern DRC, offering actionable insights to promote sustainable practices and protect vulnerable populations. The poster will be a presentation of the study research design.

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