

## **GEO-PLANNING – KEY TO ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT IN SMALL SCALE MINING**

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The application of Geo-planning techniques to small-scale-mining sector has been recognized as an important tool for the assessment of geo-mining conditions to safeguard environmental conditions and sustainable development. Small-scale mining is an important agent or catalyst in economic development. The operation of small-scale mines has several peculiar attributes, which the large-scale mining sector is not endowed with. The sector has the ability of utilizing small and otherwise unexploitable mineralizations which are not of interest to large mining enterprises. Thus, Geo-Planning involves the integrated application of engineering geology and rock mechanics at all stages of the small-scale mining project development. Most of the small-scale mines cannot afford to conduct expensive geo-technical investigations. Since the life cycle of small-scale mining is relatively of shorter duration, due to lack of these inputs, proper scientific planning could not be achieved. Thus Geo-planning helps to control these deviations by identifying the requirements of the small scale mines to conduct in-expensive field investigations to generate through formats relevant data on mine geology, hydro-geological conditions, land use requirements, rock properties and distribution, for developing proper mining methods, minimizing waste generation and land use planning. The paper deals with the adoption of these methods to small scale mining sector for proper planning and conservation of resources, environmental and mitigation measures. Case studies of few mines were discussed