

SEG 2024 Conference: Sustainable Mineral Exploration and Development

Overview of the Potential of Strategic Minerals in Bahia State - Brazil

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The energy transition to a low-CO₂ economy is occurring now, and the global demand for strategic metals and minerals is exponentially increasing because of their use in solar energy, electric vehicles, and batteries. Investing in the product chain from mineral exploration to production will be necessary. The strategic metals nickel, cobalt, and copper are highly required. Brazil accounts for 8% of the Ni production in the world. Bahia state has numerous resources of Ni, Co, Cr, Cu, and V, mainly associated with the layered mafic intrusions (LMI), including the Santa Rita mine. The Santa Rita (Ni-Cu-platinum group element [PGE]) deposit is situated within the Archean-Paleoproterozoic high-grade metamorphic sequences in the São Francisco craton and is an example of a high-Ni sulfide tonnage deposit (88 Mt @0.61% NiS) developed in LMIs. Its age of 2.06 Ga is similar to the age of several large world-class deposits such as Bushveld and Sakati. In the center of Bahia state, mafic-ultramafic complexes occur associated with Cr mineralization as Jacurici Valley, Campo Formoso, and the Riacho do Mocambo. The western region of the state, close to Barreiras city, has been highlighted due to the numerous occurrences of Mn-Co with anomalous values of cobalt (200–5,000 ppm). The genesis of cobalt has not yet been discussed, pointing to the dramatic need for investments in mineral exploration projects. The LMIs of Bahia State present a valuable geologic and economic resource, with Ni, Cu, Cr, and Co deposits playing a pivotal role in the industries and energy transition. More than 40 deposits were described, but few studies about metallogenic process. We intend to present an overview of Bahia state's layered mafic complexes and prospective maps about critical minerals mineralization and its potential for Bahia state, with the intention of encouraging investments in new mineral projects.