

Metallogenic Prospects of the Central Chagai Arc: A Review

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Numerous types of ore deposits have been identified in the Chagai Metallogenic Belt (CMB) in western Pakistan, including porphyry Cu-Au-Mo, epithermal Cu-Au, skarn-related Cu-Fe-Zn-Pb, and polymetallic VHMS-type deposits. The metallogenic/magmatic belt is divided into three major segments: Western, Central, and Eastern Chagai. The geological and geochemical characteristics and the isotopic ages of these deposits indicate a sequence of structural-magmatic processes. The Central Chagai arc is composed of granites, granodiorites, and diorites, making it a potential target for metallogenic prospecting. The eastern and western parts of the CMB host several types of metallic minerals, while the central part remains unexplored. These deposits formed in response to Neo-Tethys oceanic plate subduction beneath the Eurasian plate and present an Andean-type arc at the southern boundary of the Afghan block. Granitoids in the Central Chagai arc, covering over 1000 km², potentially created ideal conditions for metallogeny and mineralization.

Keywords: Chagai; metallogenic belt; porphyry; isotopic; neo-tethys; Balochistan