

Metallogeny of Gold Deposits in the Republic of Guinea (Conakry), West Africa

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The Republic of Guinea is located in the southern part of the West African craton. Guinea has a rich and varied mining potential with reserves estimated of several billion tonnes of bauxite and iron ore, plus gold, diamonds, and base metals. The gold ore occurs as secondary (alluvium beds and terraces of rivers) or primary (veins, quartz veins) deposits. The major gold deposits are located in the Birimian Domain in Upper Guinea, and current annual production is about 8 to 10 tons of gold, divided between small-scale miners and industrial companies. The four main known gold metallogenic areas of Guinea include (i) the Siguiiri Basin of Upper Guinea (Kankan, Siguiiri, Kouroussa, Mandiana) and Dinguiraye; there are lateritic and/or saprolitic deposits or indications of gold-bearing quartz veins and stockworks; (ii) the Siguiiri Basin of savanna Guinea (Kankan, Siguiiri, Kouroussa, Mandiana); (iii) the Kouroufing (Mamou and Kerouané) and Beyla areas located in the southeast also have auriferous quartz veins; and (iv) primary deposits of N'Zérékoré sheet NZE-Q2 (Au), coordinates 8°12' to 8°08' W longitude and 7°40' N latitude (Kogota-Guipo), hosted in amphibolite gneisses; Au and Ag of 1.25 to 2.1 g/t and 3.45 to 41.3 g/t, respectively. The primary deposit NZE-zone Q3 (Au) has coordinates 8°26'59'' longitude W and 7°37'30'' latitude N; the orebody is characterized by tuffites with hematite. These lithologies are located in Lower Proterozoic and Archean domains. In these areas, there are faults observed and/or interpreted, as well as kimberlite veins and pipes. The genesis of these gold deposits remains poorly understood compared to others in the West African region. Future research work on these deposits should be oriented on the model, type, and genesis (tectonic setting, host environment, texture and mineralogy of ore, age of host rocks and ore, source and composition of ore-forming fluids, hydrothermal alteration and zoning, structural setting, etc.) to assist their interpretation. The regional geology and metallogeny of gold resources in Guinea will be discussed, including the challenges to better understand these gold-bearing resources.