

## **The Geology and Economic Potential of the Xiluvo Carbonatite Complex, Mozambique.**

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The Xiluvo Carbonatite Complex occurs in the Sofala Province of Mozambique some 110km inland of Beira along the main road to Zimbabwe and forms part of a magmatic province of Karoo-aged carbonatite and alkaline silicate complexes including the better studied Zimbabwean centres of Dorowa, Shawa and Chishanya.

Xiluvo consists of a central plug of carbonatite surrounded by a volumetrically greater apron of volcanic breccia. The volcanic breccia is composed of angular clasts of accidental lithic fragments 10-40 cm in size. Clasts are predominantly of country rock fragments: quartzo-feldspathic gneiss and phyllite. Rarely, and only towards the innermost parts of the breccia apron, are fragments of carbonatite found. The matrix of the breccia is carbonate-poor.

The carbonatite intrusion is composite: an early coarse to banded aegirine-pyroxhlore-apatite-calcite carbonatite [phase 1] is cut by medium- to fine-grained ("alvikitic") hematite-calcite carbonatite sheets [phase 2]. There is no field or petrographic evidence to suggest that the hematite in the phase 2 intrusives is secondary: it appears to be a primary phase. The carbonatites are cut by late-stage hematite-rich tuffisitic dykes the matrix of which are enriched in LREE but depleted in Nb and P<sub>2</sub>O<sub>5</sub> relative to the carbonatites.

No alkali silicate magmatic rocks are found in the complex: clasts of phonolite have been found in a satellite vent outside the complex and a plug of phonolite occurs some 14km east of Xiluvo at Monte Cura.