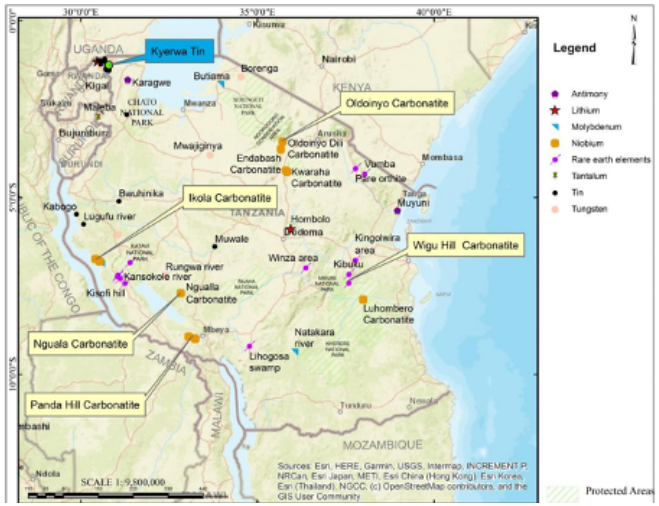

Figure 4: A map of Tanzania showing the location and distribution of various occurrences or deposits for critical minerals such as lithium, rare earth elements in carbonatites and tin.

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GEOLOGICAL SURVEY OF TANZANIA
GST

The United Republic of Tanzania
Geological Survey of Tanzania

Tanzania's Critical Minerals Overview

Tanzania is endowed with abundant and diverse mineral resources that range from precious metals (e.g., gold, silver, PGE) and stones (e.g., diamond, spinel, sapphire, ruby, tanzanite, garnets, emerald, aquamarine etc.); critical minerals (e.g., graphite, nickel, cobalt, lithium, niobium, neodymium, praseodymium, vanadium, titanium, tin); energy minerals (e.g., uranium, coal, helium gas and carbondioxide) to industrial minerals (e.g., gypsum, dolomite, salt, soda ash, limestone, kaolin, feldspars, quartz, clays, heavy mineral sands, phosphates, bauxite, white sands, marble etc.).

This endowment is a result of its favorable geology that comprises a wide range of rock types of all ages from Archaean to recent (Figure 1), each with different mineral potential. Despite its interesting geology and mineral resources potential, large part of the country is still under explored especially geophysical survey.

Summary Geology of Tanzania (Geological Setting)

The main geological units/blocks on the basis of their age, include;

o Archean Tanzania Craton: 4.0 to 2.5 Ga years (gold, silver, copper, diamond – biggest gold mining companies in Tanzania occur in this block);

o Paleoproterozoic Mobile Belts (2.5 to 1.6 Ga years): Ubendian and Usagaran Belts (gold, silver, lead and copper);
o Mesoproterozoic Karagwe – Ankolean Belt (1.6 to 1.0 Ga years) (nickel, cobalt, iron, platinum group elements, tin, niobium, tantalum and tungsten);

o Neoproterozoic Mozambique Belt (1.0 to 0.54 Ga years) (gemstones: tanzanite, garnets, ruby, sapphire, spinel, emerald, tourmaline, graphite, aquamarine, alexandrite, (REE, Nb, Ta), industrial minerals (feldspar, moonstone, quartz, mica);

o Neoproterozoic Malagarasi Supergroup known for copper;

o Phanerozoic geology (0.54 Ga to present) that include coastal basins, Karoo sediments, younger volcanics related to East African Rift System – rich in: coal, geothermal energy, helium gas, uranium, natural gas, salts, REE, bauxite, limestone, gypsum, kaolin, calcite, dolomite etc.

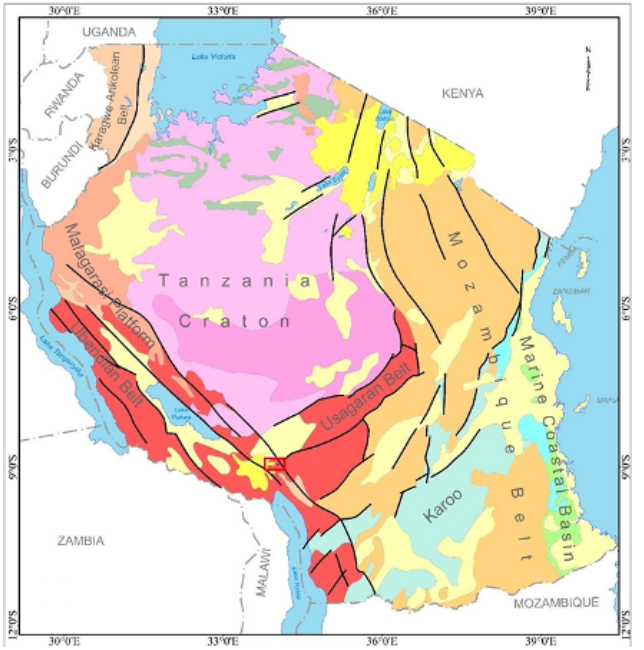

Figure 1: Geological map showing the main stratigraphic units of Tanzania from Archean to present. Each of these blocks has unique geology and mineral potential.

Critical Minerals Occurrence in Tanzania

Given its wide stratigraphy and unique geology, Tanzania is potential for all kinds of minerals including critical minerals. Figure 2 shows the map of Tanzania that has been divided into various blocks based on their unique geological characteristics with potential of the critical and strategic minerals currently in high demand specifically for clean energy technology and other high-tech industry such as electronics.

These blocks are designed to prioritize exploration strategies especially high resolution airborne geophysical survey that is driven by demand for some of these commodities including critical minerals. The Ministry of Minerals believes that upon completion of geoscientific surveys in these blocks, there will be significant discoveries to supplement the existing critical and strategic mineral deposits and/or projects (Figures 3 & 4).

The Geological Survey of Tanzania (GST), being a custodian of all geoscientific data in the country, has in its database all the information needed for critical minerals including occurrences that can be used as a guide during exploration. Various investors have used this information from GST to carry out studies that eventually came up with discoveries of major deposits of critical minerals such as those shown in Figures 3 and 4 below

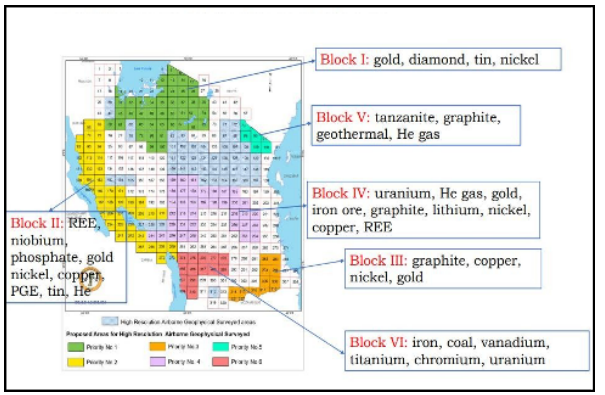

Figure 2: A map of Tanzania showing priority blocks designed for high resolution airborne geophysical survey. Each block represents unique geological characteristics and mineral potential including critical minerals.

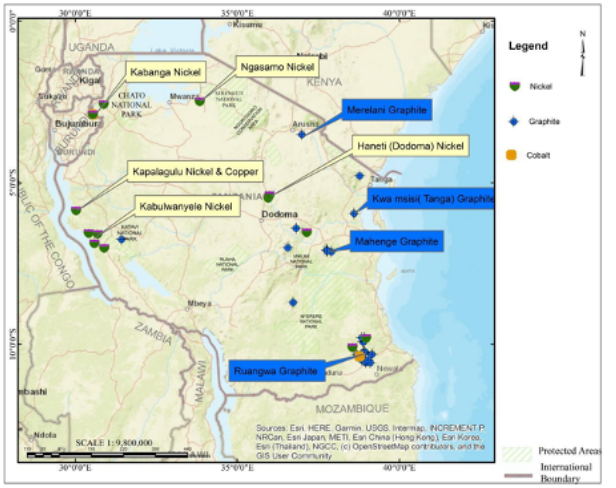

Figure 3: A map of Tanzania showing the location and distribution of various deposits and/or advanced projects for critical minerals such as graphite, nickel and cobalt. Cobalt in this case is recovered as a by-product during nickel extraction.