

accumulate on the top of the pulp is collected as concentrates-- which averages around 30% copper. Then, the copper concentrates undergoes smelting and refining to make copper cathodes like what is being done by PASAR [3].

Gold is also mined in the same way as copper--either by underground or open-pit operations. The slight difference lies in the milling stage. It employs an additional process called cyanidation in gold recovery. Silver is also mined from gold and copper ores. Consequently, it is recovered as a by/co-product of gold and copper.

Chromite mining is similar with that of the others. Its concentrates are recovered using the gravity concentration method. Nickel is mined and beneficiated (sizing and drying). Thereafter, they are shipped as ores since the country's only nickel refinery in Nonoc was shut down.

Cost Structure

Mining is a raw material intensive activity. In a lesser degree, it is also energy intensive depending on the type of mineral that is produced. What is very evident, though, is that mining and milling costs comprised the bulk of total production costs--about 50% of the total in 1985.

With regard to copper operations, 31% of the unit cost of production went to fuels and utilities. This is not surprising since most surface mines are highly mechanized using power shovels and dump trucks. Besides, the milling process of copper is known to be energy intensive. Raw materials and supplies comprised 26% of total production costs. This includes chemicals,