

In the sixth place there is Glencore, which in former times was only a trading company, but has in the meantime bought some copper mines.

Anglo American - number seven - founded 1917 as a gold mining company is also diversified and the biggest producer of platinum in the world. Besides copper and platinum Anglo American is active in diamonds, nickel, iron ore and coal.

Grupo Mexico in the eighth position was originally in 1942 a engineering company. Today their main product is copper and the associated metals like molybdenum and silver. But they have also activities in zinc, lead and gold.

Number nine is KGHM in Poland which is a pure copper and silver company mining ores mainly in Poland.

Russian Norilsk Nickel - number 10 - is by value mainly a nickel and platinum company even if they produce more copper than nickel.

5.1.6 Cost Structure of Copper Concentrate Production

The main cost factors of a mine are financing costs, operating costs, administration cost, license costs (royalties) to the country of the mine and depreciation and amortization. To compare the cost of different copper mines, mainly the cash costs are compared.

In the cash cost model of a copper mine the total costs are considered from ore to copper cathode. If a mine does not produce cathodes, then also the treatment and refining charges (TC/RCs) given to the smelter and refinery are considered as cash costs. The cash costs includes mining costs, milling costs, royalties and administration costs of the mining site, but no costs of the headquarter. Cash costs do not include financing costs and depreciation and amortization. Some times cash costs are also termed "direct costs " abbreviated as C1.

A special feature of the cash costs calculation of a copper mine is that the value of the by-products is deducted from the final cash cost of the metal. For example, if a copper mine produces molybdenum or gold as a by-product, then the value of the molybdenum and gold produced will be deducted from the cash cost of the copper. This is the usual accounting treatment for by-products in most industries. That leads sometimes to the curious effect that for some mines cash costs can be negative, as the value of the by-products is higher than than the cash cost of a mine.

As an example for calculating different costs the cost model for the Codelco mines is shown in table 5.6.