

# Seven technology metals that need watching – very closely



Only seven? Clearly there are more than that in the technology metals mix – after all, there are 17 rare earth elements, but today we deal with only one of those REE. But there are six other metals that will have technology stories to tell but are still [to some extent] waiting in the wings, yet ready to figure more prominently and to acquire fully realized exposure to the market.

First, a development this week (and as reported here on InvestorIntel): London's *Daily Telegraph* says that Telsa and its battery manufacturing could require up to 10,000 tonnes a year of **cobalt**. That would add about 10% to the size of the cobalt market. But what is really at stake is that it is estimated cobalt's consumption for batteries is on a steep growth path, from 20,000 tonnes a year in 2010 to 50,000 tonnes in 2024.

There are reports this week that Chinese refiners are gearing up to lift production. But the concern is that the world still depends to a large extent on the Democratic Republic of Congo and Zambia for the mined metal; any disruptions there could impact the price significantly, just as it did in the late 1970s when the DRC (it was then called Zaire) saw internal disruptions that impacted on cobalt exports. The price, which according to the U.S. Geological Survey had rarely risen above \$2.50/lb for almost half a century up until the mid-1970s, went to \$50/lb. (With the return of Zaire exports and development of substitutes in permanent magnets, cobalt plunged again, to as low as \$3.79/lb in 1986). By comparison, the metal is now fetching around \$14/lb. But clearly a space

to watch – and, fortunately, unlike with many technology metals, we know its price movements, cobalt being traded on the London Metal Exchange.

The other African story we have to watch is South Africa, on which the world relies for a large proportion of its platinum and palladium. But let us focus on the rare platinum group metals (or PGMs): **osmium, rhodium, ruthenium and iridium**. Used in many specialist metal alloys, electronics and catalytic converters, prices of these are holding up well.

For rhodium, for which there is no substitute as a catalyst to control nitrogen oxide emissions in motor vehicles, Deutsche Bank is predicting \$1,300/oz next year, \$1,700/oz in 2017 and \$1,900/oz in 2018. Recent trading has been around the \$1,100/oz level. Rhodium has a similar boom and bust story to that of cobalt: rhodium reached just under \$10,000/oz in 2008 – making it about 10 times as valuable as gold that year.

More than 80% of rhodium comes out of South Africa, and there are just a handful of mines producing it. The other three rare PGMs are said to be commanding premium prices, although well back from rhodium – ruthenium, for example, which is used in alloys (adding 01.% to titanium makes the latter 100 times stronger – and it's also used in pen nibs), is expected by Deutsche Bank to fetch \$100/oz next year, \$130/oz in 2017 and \$160/oz in 2018.

As the Geoscience Australia website explains, “osmium, iridium, and platinum are the densest metals known and have some of the highest melting points (1550 to 3030 °C) of all metallic elements. They also are hard-wearing, highly reflective, brittle, malleable, electrically and thermally conductive and have unique catalytic characteristics” and are regarded as strategic metals because of the variety of applications ranging across chemicals, electronics and aerospace.

Five technology metals down, two to go.

**Scandium.** Think upside. Think about “produce it and they will come”. Present production is only 15 tonnes a year at most, and one Australian hopeful, Platina Resources (ASX:PGM) estimates that, if scandium was available, the market could reach 250 tonnes a year, a figure also assumed by others. The general view in the scandium space is that the only thing holding back development of new technologies containing scandium is the problem of getting one’s hands on scandium.

Platina’s analysis is that two companies look to dominate output in the short term, and both of those have projects in the state of New South Wales: Platina (of course) and InvestorIntel member **Scandium International Mining Corp. (TSX:SCY)**. The latter owns the Nyngan project, and plans to be the first scandium play in production. Platina is also at the stage of heading into feasibility studies. What is important here is Platina’s projections of production. It sees itself producing 30 tonnes a year and Scandium International 36 tonnes – and the Australian company sees Scandium International being in production a year ahead of it – in 2016 for the Canadian company, 2017 for Platina.

Platina quotes scandium prices at \$3,700 a kilogram. One of scandium’s applications is in aerospace, and Platina notes that Boeing and Airbus between them estimate they will build 36,770 new aircraft by 2033. Those aircraft will include between 70kg and 700kg of scandium, depending upon their size.

Sidebar: It is worth remembering a point I made in 2013, that with scandium the rest of the world has a clear run as this is one rare earth element that China does not dominate (although, it presumably could lift output as the REE is found as a by-product in iron, tin and tungsten deposits in Fujian, Guangdong, Guangxi, Jiangxi and Zhejiang provinces, according to the U.S. Geological Survey).

Our seventh technology metal is **tin**. According to a presentation at a tin conference held in China last week, in 2014 176,200 of the 361,300 tonnes produced last year went into solder for electronics. And, even with miniaturization, tin solder demand is rising due to the growing LED lighting and automotive use. In addition, the tin component in lead acid batteries has been rising from an average 0.2% to 1.2%.

The huge tonnages of tin in concentrate now being exported from Myanmar to China to be refined, the factor that has put a lid on the tin price (by delaying the deficit of supply), is not expected to be sustainable. It is interesting that in the past two weeks tin prices have stabilized. The deficit problem has not been cancelled, just postponed.

Seven technology metals well worth keep a very close eye on.