

Largo's Maracas mine will turn Brazil into one of the world's top vanadium producers

✘ Largo Resources ('Largo', TSXV: LG0) is a Canadian miner developing the Maracas vanadium property in Brazil. Early in March, Largo announced that the processing facility for the project have started in the State of Bahia. With the commissioning of the processing facility, Largo has effectively shifted phase from construction to commissioning. The Maracas mine is set to become one of the most important in the world and it is one of the three vanadium projects conducted by Largo Resources in Brazil. Moreover, Largo has signed an offtake agreement to supply Glencore International with 100% of its vanadium for six years. Largo expects to produce, with a total investment of USD\$ 555 million, an initial amount of 5,100 tons of vanadium pentoxide per year. In 2015, production will rise to 7.5 million tons. Brazil's Ministry of Energy and Mines granted Largo the definitive concession to mine vanadium at the Maracas mine last November and expects for Bahia to become the world's largest supplier of vanadium. Vanadium is used to make high-end steel, such as is used in aerospace, precision tools and railways – among other things. Largo expects to supply customers in Canada, USA, Germany, Korea, China, Japan, India, Argentina and Scandinavia through Glencore.

Largo's production timing is ideal because, until very recently – and especially in 2012-2013, most vanadium end users were worried by disruption of supplies, given the geographical concentration of vanadium producers in South Africa, Russia and China. These three nations together control more than 97% of global production, making vanadium even more

geographically concentrated than platinum. Labor unrest in South Africa had raised serious concerns causing cuts in production with the consequent rise in prices. That reduction of production levels in South Africa also affected vanadium. Indeed, last year, the world's largest producer of vanadium (Evraz) revealed that the strikes forced a 21% cut in production of pure vanadium and 13% for ferro-vanadium and all related chemicals.

The negative impact of the cuts was partially offset by increased production in Russia but more sources will be needed considering the potential for trade sanctions against Russia in response to the crisis in Crimea. Given the concentration of vanadium production, major mining companies have been looking for vanadium in other parts of the world. Geologists have considered new production sites in countries such as Australia, the United States and Sweden; however, Brazil will be the first to come online with Largo and at a time when the upheavals in the South African market of vanadium have forced a sharp supply contraction and a price increase. Technological advances will further stimulate vanadium demand. Even as there was large variation in the price of vanadium in the world market, the drop in prices during the end of the Cold War was linked to the fact that there was a flooding of vanadium in the market because countries had stocked it for weapon production. Vanadium is a mineral used in special steels for tanks and weaponry. The current geopolitical situation with several regional arms races should continue to boost demand for some time.

Largo's vanadium presents certain advantages compared to South African varieties. The content of its reserves is equivalent to 1.34% V₂O₅ (vanadium pentoxide), double the South African content, which puts Largo's Maracas at a higher level from the start. In addition, the ore has a low contaminant (like silica) content, which reduces the processing cost and improves quality, suggesting Largo could be producing the

world's purest vanadium. The initial estimate for the mine's production is an optimum of 14 million tons of vanadium, which gives a useful life of 15 years for the mine reserve. The estimate is only the first step and the prospect is to increase this period to 29 years. Largo has the potential to become one of the dominant players (if not the dominant) in the vanadium industry thanks to its low cost, high quality and thanks to ideal global market conditions.