Power Supply in Chile

In 2006, approximately 2.3 Mtpy (~43%) of Chilean mine copper capacity, roughly 13% of world capacity, was run on either hydroelectric power or power produced by burning natural gas from Argentina. Hydroelectric plants are currently running at their lowest levels since the last droughts in 1999 and 2000 and there is a real chance of another Argentinean gas supply crisis like those that cut supplies in 2004 and late 2006. Power supply in Chile has now become another stumbling block for copper and will lead to delays in production expansions in the near future.

Chile's power system is essentially split into two major networks; Sistema Interconectado Central (SIC) covers 66% of power generation within the country and provides for ~90% of the population, Sistema Interconectado Norte Grande (SING) produces 30% of the total power and provides for the mines within regions I & II. Aysen and Magllanes are two smaller networks that produce less than 1% of total supply.

Roughly 60% of SIC's power is produced through operation of hydroelectric plants, however, La Niña years in the Pacific Ocean mean that Chile receives inadequate rainfall to fill the reservoirs and the hydroelectric plants lose operational hours. Chile currently has the total capacity to produce 8,500 MW of power, approximately 4,000 MW can come from hydroelectric sources. Currently the hydroelectric plants can only produce 2,300 MW (*Santiago Times, February 15th 2008*). This led to the President warning that power rationing may be necessary to prevent brown/blackouts across the country. In 1999 and 2000, similarly low levels of water in the reservoirs led to some power rationing. Since then power firms in the SIC have been diversifying power production sources. This situation was further exacerbated by a fire at Cobrun's (a contributor to the SIC network) Nehuenco plant, situated in Quillota, near Santiago, further reducing power production in the SIC network. It has been estimated that Chile's total production capacity is currently under 4,000 MW but demand remains at approximately 6,000 MW.

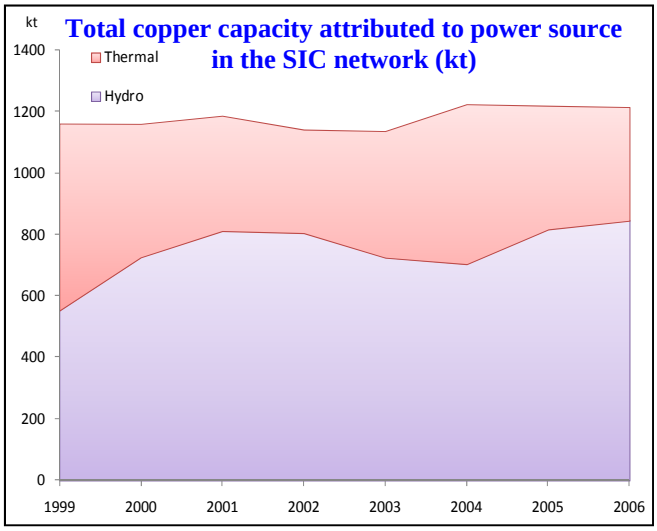
The SING network is in the arid regions I & II, which cover the Atacama desert, there is only one small hydro electric plant on the northern border of the country. The majority of power in the network is produced by burning Argentinean natural gas. There are four main pipes that take gas from the Tierra del Fuego and Neuquen regions of the country. In the third quarter of 2006 imports were cut completely as domestic demand for gas far outstripped capacity. This forced many mining firms in northern Chile to install independent power plants at their operations. However, these plants can account for only 10-20% of the power required to operate the mines, and will not allow the mines to lose their reliance upon the SING network and gas imports.

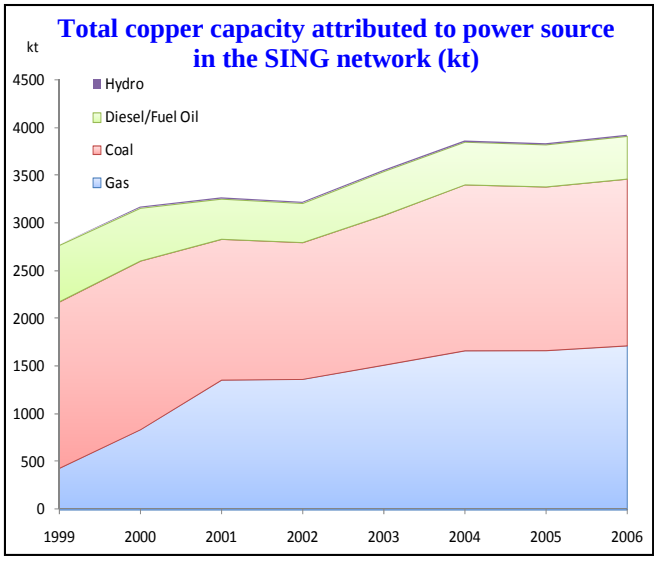
Some gas burning plants have been converted to burn diesel and fuel oil, however, the process is expensive and produces higher amounts of emissions.

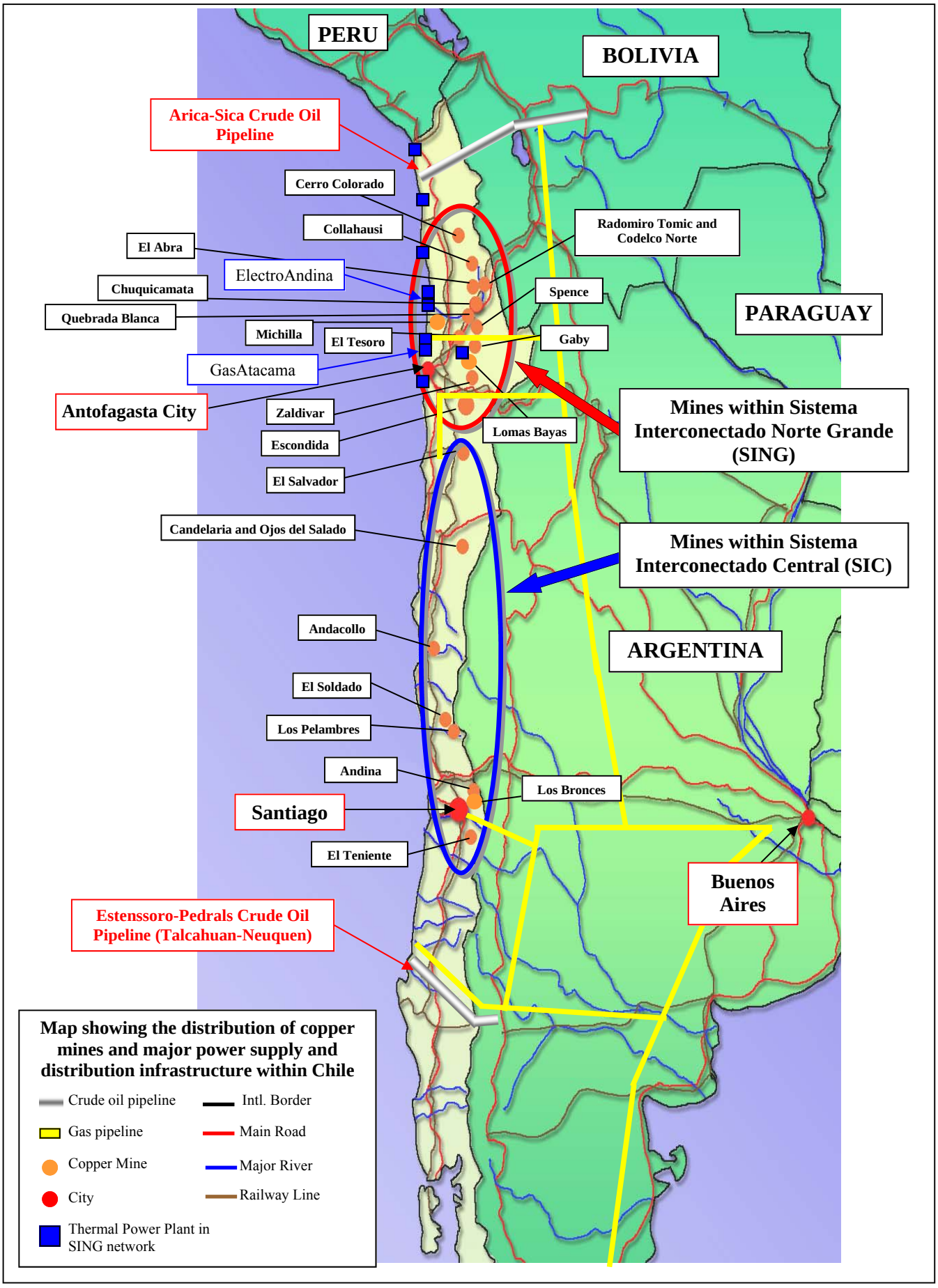
There are initiatives to increase the power production capacity within Chile, mostly through construction of LNG terminals and more hydroelectric dams which are expected to give the country ample power supply by 2012. However, the hydroelectric plant reservoirs and dams are facing local opposition and may be delayed, or forced to stop by the government. In particular, the HydroAysen plant appears to be the focus of environmental groups fighting against the industrialisation of Chile. LNG can be converted to burn as cleanly as natural gas and there is a good supply chain but it is more expensive than coal. Also, the costs of constructing LNG terminals is increasing rapidly, much the same as the construction of new copper mines.

Inadequate power capacity in Chile is another problem that is going to constrain copper production increases and will help push back the wave of new growth expected in 2012.

By Christopher Welch







Map produced with help from Minecost.com (www.minecost.com).

Sources: Natural Gas Pipelines in the Southern Cone. *David R. Mares, May 2004, Stanford Pub.s.*