



Copper's Role in the Transition to a Low-Carbon Economy

Codelco Reduces Reliance on Fossil Fuels

Copper is key in the move to a low-carbon economy. Collaborating with a variety of partners—such as the DecarbEurope initiative—the Copper Alliance® has been actively working toward cost-effective decarbonisation for many years. Our member companies are at the forefront of implementing low-carbon energy solutions. One in particular, Codelco, tells a compelling story about transforming existing business operations based on fossil fuels into greener solutions fit for a cleaner future.

The Challenge

Mining processes are highly energy intensive. Like most mining operations, Codelco's Gabriela Mistral mine in Chile utilised fossil fuels for many years to meet its heat demands. The opportunity was there to reduce reliance on fossil fuels and significantly decrease CO₂ emissions.



A sustainable benchmark: the world's largest copper mining company uses solar as its main heat source, moving away from fossil fuels

The Solution

Looking for cleaner and greener initiatives, the Gabriela Mistral Division of Codelco created a consortium with Energia Llama (Chile) and Arcon-Sunmark (Denmark) in 2012 to build and operate a solar thermal plant. The aim was to cover most of the annual heat demand using renewables rather than fossil fuels going forward. Delivering more stable temperatures to the system—hence optimising the current mining processes—while at the same time being a clean alternative to fossil fuels, a solar heat plant was identified as the perfect complement for mining operations.

The Result

Comprising a surface of 43,920 m² of flat solar collectors and a 4,300 m³ tank for the storage of hot water, the solar thermal plant provides energy 24 hours a day.

With 80% of the Gabriela Mistral Division's annual heat demand now supplied by a renewable source, the significant decrease in fossil fuels helped operations reduce CO₂ emissions by 15,000 tonnes per year. Savings include emissions from the 250 trucks once required to transport the fuel. Operations have also seen an increased stability of supply and significant savings in energy costs.

Codelco is now working on other projects to further improve its green footprint, looking into the supply of sustainable copper cathodes to meet the rising demand for products with strong green credentials. The company is in the process of building a desalination plant, which will process 630 litres/second, supplying water at competitive prices. Codelco is also searching for and applying new technologies to reduce CO₂ emissions, introducing and implementing sustainability KPIs to its mining operations, and working closely alongside communities.

"Gabriela Mistral Division has endeavoured to be a benchmark in the mining industry and we work each day to reach and sustain this. Pampa Elvira Solar—the most powerful solar thermal plant in the world—is proof of this."

Nelson Salazar, Plant Manager, Codelco

About the Copper Alliance®

The Copper Alliance® is a network of regional copper centres and their industry-leading members. It is responsible for guiding policy and strategy and for funding international initiatives and promotional activities. Headquartered in New York, the organisation has offices in four primary regions: Europe and Africa, Asia, Latin America and North America. Copper Alliance® programs and initiatives are executed in more than 60 countries through its regional offices and country-level copper promotion centres.

About Codelco

Codelco is an independent company, owned by all Chileans. It is the world's top copper producer, with the largest reserves of copper in the world, and is the driving force behind Chile's development.

