

Market development



We develop initiatives that combine innovation and technology to open new markets for our products.

Our strategy to open new markets is applied locally, through our subsidiaries Molyb, PRM, EcoSea and Codelco Lab; and internationally, by actively participating on international copper and molybdenum associations.

International agencies

International Copper Association, ICA

International Copper Association, ICA

As relevant partners, we actively participate in the International Copper Association. The efforts of this organization are based on control, development and implementation of the 2014-2016 strategic plan, to elaborate programs with high impact on copper consumption. During 2015, the ICA Executive Committee approved US\$ 51 million budget.

The association progressed particularly in optimizing resources and leveraging new initiatives, developments and products. The main emphasis was on consumption defense programs with China, where the demand on the power transmission sector is relevant regarding other markets. In addition, programs will continue to focus on promoting and defending global markets of high copper usage, as well as innovation in new applications for the metal.

In this sense, in 2017 is expected to validate ICA's committed goal of increasing by one million tonnes the global demand for refined copper compared to 2014. For this purpose, more than 100 projects and initiatives will be implemented worldwide, related to the following fields:

- **Sustainable energy:** To create high standards in energy policies and efficiency.
- **Regulations:** Initiatives to support policies and regulations to foster the use of copper in relevant markets, maritime transport of concentrate, product hazard classification and regulatory agenda associated with the United Nations, through the globally harmonized system of classification and labelling of chemicals.
- **Construction:** Projects advocating the use of copper and its benefits in the construction market, particularly in public areas.
- **Health and environment:** Projects that use the antimicrobial properties of copper, beneficial to both human health and the environment. At the same time, it aims to provide access to commercial products with these features to different markets and with as much impact as possible.

International Molybdenum Association, IMO A

IMO A Our Company is a founding member of the International Molybdenum Association (IMO A) that since 1989 promotes the use of this metal and studies its impact on human health and the environment. Furthermore, the organization conducts research and studies on regulatory issues related to public health and sustainable development.

IMO A had a US\$ 3.54 million budget in 2015, destined to fund molybdenum market development, sustainability, communications and market intelligence. For 2016 a US\$ 3.1 million budget was approved, which means 12% savings over the previous year.

Market access projects

Molybdenum treatment plant

An increase of 89% had the building of the molybdenum concentrate treatment plant located in Mejillones, which operation will be controlled by our subsidiary Molyb. In 2015 advances were implemented in roasting, leaching, gases treatment, electrical rooms buildings, among others. With this project we expect to consolidate our strategic position as the world's second largest molybdenum producer.

Once in operation -in the second half of 2016-, the plant is expected to annually produce 16,500 tonnes of molybdenum trioxide and 30,000 tonnes of sulphuric acid; in addition to recovering copper and rhenium as by-products.

With an investment close to US\$ 400 million, this development considers high environmental and safety standards, such as an effluent treatment plant that recirculates virtually all process water used during the operation; meanwhile, the project uses the best technology for abatement and control of environmental emissions.

Metal recovery plant

In July 2014, Codelco and LS- Nikko Copper Inc., a Korean company, entered into a strategic alliance to jointly build a metal recovery plant in Mejillones, Antofagasta Region. In 2015 we continued to work on the realization of the subsidiary Planta Recuperadora de Metales (PRM) along with our Korean partner (will be the operating partner and shall hold a 66% ownership interest). This structure allows complementing expert operational knowledge of LS-Nikko with the production of intermediate products of our refineries, to improve productivity in metal recovery.

Construction of the plant began in late 2014 and in 2015 had a progress of 80%. We expect to begin operation during the second half of 2016. With this development we will increase our product portfolio, since the plant will produce gold, silver, palladium, platinum and tellurium ingots. Thus we will have products with higher added value and better access to markets.

The plant has been designed to meet high environmental standards thanks to its state-of-art technology and expert operation. The project also offers a training programme to young people of Mejillones and scholarships in Korea, providing training and direct job opportunities.

Codelco lab: accelerator of innovative projects

A year and a half of its redesign, our subsidiary Codelco Lab continues to support projects around new applications of copper that will expand the supply of metal value and impact with initiatives that improve the quality of life of people.

Through its privileged position in the market, Codelco Lab achieves synergies required to promote innovative products, creating a support network and working with entrepreneurs, innovation centers, universities, researchers and other actors, providing support from early stages to its consolidation in new markets, including technological packaging and internationalization.

With more than 15 projects successfully supported and 25 in its portfolio, Codelco Lab has five specific areas of action: welfare and human and animal health; water and environment; world food; energy and energy efficiency.

These projects will have a significant impact on copper demand and added value thanks to its new applications and beneficial properties.

Codelco Lab is an engine of innovative projects, with more than 15 successful projects and over 25 in the current portfolio.

Among the most important highlights of 2015 are the following offices:

New offices: Codelco Lab was installed at the Centro de Innovación Anacleto Angelini, of the Pontificia Universidad Católica de Chile. This has strengthened synergies with the most important actors of innovation.

Industrial test: In August, Codelco Lab with Cow Guard, company that developed to develop a copper gel to prevent bovine mastitis in the dairy industry, started an industrial test in one of the largest dairies in the country in order to check, on a large production scale, copper effectiveness in the milk production process.

Alliance Codelco Lab-Agrosuper: Under the collaborative agreement signed in late 2014, Codelco Lab and Agrosuper are working to develop a protocol and methodology to intervene using antimicrobial properties of copper in different work surfaces from slaughtering plants.

Mayo Clinic research: After three years of research, Codelco Lab will develop in 2016 new uses and innovation projects for copper, molybdenum, lithium and other byproducts obtained our company and the Chilean mining.

Supported by Codelco Lab, the study on the incorporation of surface coating of copper for titanium prostheses to reduce the risk of rejection by periprosthetic infection was concluded. Research conducted at Mayo Clinic, was admitted on the world-leading journal on orthopedics, Clinical Orthopaedics and Related Research.

Codelco Lab will develop in 2016, new uses and innovation projects for copper, molybdenum, lithium and other byproducts obtained our company and the Chilean mining.

New copper applications in the high grade program: Codelco Lab with Corfo are conducting a roadmap of new copper applications, under the High Grade Program, implemented by Fundación Chile. The work is focused on the following main areas: energy, water and environment, human and animal health and welfare, food industry and new materials. The program results should be reflected in public policies and strategic investment programs.

Agreements with universities: To develop new projects, technologies and knowledge associated with new copper applications, Codelco Lab has alliances with universities. In 2015 consolidated its work with Universidad del Desarrollo and Universidad Adolfo Ibáñez; while in 2016 it is generating agreements with Pontificia Universidad Católica de Chile and other national and international universities.

From 2016, we will expand the purpose of Codelco Lab to develop projects for new applications and innovation in copper, molybdenum, lithium and other by products obtained by our company and Chile from its mining operations, in line with the guidelines of the company to implement an open and high impact innovation model for the country.

Innovation for aquaculture

Our subsidiary EcoSea established itself as a leading company in designing, building, installing and maintaining copper alloy mesh systems used in the aquaculture industry. This product has the property of copper to eliminate up to 99.9% of viruses and bacteria, including the ISA virus. In addition to this, they have advantages over nylon technology in aspects of productivity, safety and sustainability.

During 2015, EcoSea continued to develop and improve the technology for farming species in copper systems offshore, both in Chile and abroad.

In addition, excellent results from the first farming center of excellence developed in Chile, located in Aysen region, with harvests of fish more than 6 kilos: productivity indicators, percentage of harvested biomass and growth rates above to the average levels of the industry were obtained, validating the benefits of copper and broadening the horizons of aquaculture for new species and geographical areas.

Innovation investment fund

Codelco Lab along with Japanese Mitsui, the Inter-American Development Bank (IDB), Development Bank of Latin America (CAF) and Corfo (the Chilean National Agency for Innovation), are founding members of Aurus Venture III fund for innovation in the copper's value chain.

The venture capital investment fund began operations in January 2015 and have resources available totaling US\$ 50 million, to invest in projects related to new copper applications, technologies for more efficient and competitive mining processes and sustainable initiatives for the industry's critical inputs, such as water and energy.

2015 was marked by a significant flow of projects from more than 160 companies, of which 20 were selected for analysis. Finally, the Investment Committee approved four to start the due diligence process.

2015 was marked by a significant flow of projects from more than 160 companies for the Innovation Investment Fund.

2015

was marked by a significant flow of projects from more than

160 companies

for the Innovation Investment Fund.