



REPORT



PROJECTION & OPPORTUNITIES





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| | CONTENTS |
|---|----------|
| 01. Introduction | 4 |
| 02. Logistic Serving the Mining Sector | 8 |
| 03. Copper, Chile's King of Metals | 12 |
| 04. Main Players and Operations | 13 |
| 05. Geological Potential of the Country | 22 |
| 06. Mining Legislation | 26 |
| 07. Relevant Information and Business Opportunities in Mining | 32 |
| 08. Relevant Mining Associations | 41 |

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01. Introduction

Chile is a mining country. Mining has historically been the country's largest economic sector and a major growth driver in recent decades. In 2021 it accounted for 9 % of the country's GDP. When considering indirect chains – transportation, energy consumption, water desalination and production and trade of inputs – the figure exceeds 20%. It also accounts for over half of exported goods (62% in 2021), according to FOB (Free On Board) values in dollars.

One of the best-known mining districts in the world, Chile is always in the eyes of investors. Proof of this is the long-term presence of leading global mining companies, whose planned projects for the 2022-2030 period top US\$69 billion in investments, according to data from Chile's state Copper Commission (Cochilco). Even as its share of the country's investment matrix has decreased in recent years, as the Services and Energy sectors picked up the slack, the mining industry accounted for 18% of investment in 2020, according to the Central Bank of Chile.

Chile has a skilled workforce dedicated to the sector. In 2020, it had 268,800 workers in its mining operations and sites, which represents 3% of the total workforce. Additionally, 130,000 workers ply their trade in supplier companies.

Given the size and importance of the mining sector, Chile has a deep talent pool. In 2020 there were 78,000 students enrolled in mining related programs at universities and technical schools, according to a study from the Council of Mining Competencies. The most recent projections suggest that the mining sector will require almost 25,000 new workers from 2021 to 2030.

The Chilean mining industry is heavily focused on copper. With production of 5,62 million metric tons of fine copper (Mt) in 2021 (98% of the country's total mining exports that year), Chile is the world's largest producer of the red metal – accounting for about 26% of the global total – and houses a third of the planet's reserves. CCopper mining is dominated by nine companies that control nearly 85% of total production.



But Chile is not just copper – the country is also one of the world's leading molybdenum producers and a significant producer of gold and silver. Molybdenum is obtained as a by-product of copper production, as is much of the silver produced. Gold mining is also an important investment and exploration destination. Likewise, iron ore mining, although small in global terms, is relevant in the local market.

Chile is also an important producer of lithium, iodine and potassium. In fact, lithium – a light metal that is key in the manufacturing of batteries for electric vehicles – is the mineral attracting the most attention in Chile after copper. Chile is the second largest lithium producer in the world and home to approximately 45% of the world's proven reserves, which will undoubtedly offer new business opportunities in the coming years.

In the following pages, we invite you to explore all the opportunities that the Chilean mining sector offers.



Chile Metallic Mining Production















Exports

| CHILE: Mining exports (US\$ mn FOB) | | | | | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|--|--|
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Copper | 29967 | 27928 | 34006 | 36056 | 33564 | 38528 | 53276 | | |
| Cathodes | 14171 | 12857 | 14759 | 15387 | 13439 | 14593 | 20904 | | |
| Concentrates | 12999 | 12512 | 16560 | 18512 | 18627 | 21762 | 29793 | | |
| Iron Ore | 665 | 848 | 999 | 961 | 675 | 1694 | 2521 | | |
| Silver | 211 | 213 | 298 | 275 | 228 | 350 | 414 | | |
| Gold | 779 | 776 | 680 | 734 | 709 | 849 | 877 | | |
| Molybdenum | 167 | 152 | 217 | 348 | 306 | 278 | 446 | | |
| Lithium carbonate | 245 | 499 | 694 | 950 | 816 | 618 | 885 | | |
| Other mining products | 306 | 282 | 126 | 276 | 164 | 115 | 137 | | |
| Total Mining Exports | 32340 | 30698 | 36894 | 39600 | 36462 | 42485 | 58630 | | |
| Total non-mining Exports | 29695 | 30020 | 37084 | 35600 | 33427 | 30995 | 36047 | | |
| Total Exports | 62035 | 60718 | 68823 | 75200 | 69889 | 73480 | 94677 | | |

Source: Chile Central Bank

02. Logistics Serving the Mining Sector

Chile has significant and growing port capacity to meet the increasing needs of the industry. The country has made improving its logistics network a priority in order to enhance the competitiveness of its supply chains. It's part of a philosophy that has made Chile the top-ranked Latin American country in the 2021 World Bank's Logistics Performance Index. In the so-called northern macrozone, between the regions of Arica and Parinacota and Atacama, where most of the mining operations are located, there are 34 operating port terminals, including 14 focused on exports of mineral products (including lithium and non-metallic minerals), in addition to copper.

This area also has six border crossings for all types of vehicles (one with Peru, three with Bolivia and two with Argentina), which are connected to a network of 20,700km of interurban roads. The strategic network – used to transport major loads – totals about 5,000km.



In recent years, several of these ports have made investments to serve mining exports. The use of container systems for the transfer of copper concentrates stands out. The port of Iquique, for example, made its first shipment of copper concentrates in 2020 using open-top containers. The port of Antofagasta has 407 rotainers (container rotation system units) for zinc and copper concentrates for lease. The port of Mejillones installed a mechanized system in 2020 for the storage and loading of concentrates, also using rotainers, with the capacity to ship 1,300t per hour.









Road Networks

| e | Road | International route to | Length (i |
|--------------------------|--------------|--|-------------|
| Arica v | Route 11 CH | Chungará - Tambo Quemado | 192 |
| Parinacota | Route A - 27 | Valle de Azapa | 51 |
| | Route A - 93 | International route to Paso Visviri | 106 |
| | Route 16 | Connection Route 5 - Iquique | 47 |
| | Route 15 CH | International route to Paso Colchane | 162 |
| Tarapacá | Route A-750 | Route 1 - Patillos - Route S | 5 84 |
| | Route A-65 | Pozo Almonte- | 115 |
| | Route A-97-B | Collandasi | 240 |
| Tarapacá/ Antofagasta | Route 1 | Connection Iquique- Antofagasta | 599 |
| | Route 24 | Tocopilla - Calama | 161 |
| | Route 23 CH | International route to Paso Sico | 311 |
| | Route 25 | Route 5 crossing to Calama | 121 |
| | Route B-262 | North Access Mejillones | 7 |
| Antofagasta | Route B-272 | South Access Mejillones | 18 |
| | Route 21 CH | International route to Paso Ollagüe | 196 |
| | Route B-400 | Connection Route 1 - Route 5 Eje Mejillones - Calama | 32 |
| | Route 27 CH | International route to Paso Jama | 156 |
| | Route 28 | South Access Antofagasta from Route 5 | 16 |
| | C-13 | Chañaral - El Salvador | 145 |
| | URBC314 | Connection Route 5 - Puertos Caldera | 7 |
| Atacama | Route C-35 | Copiapó - Tierra Amarilla | 96 |
| | Route 31 CH | International route to Paso San Francisco | 281 |
| | Route C 33 | International route to Paso Pircas Negras | 219 |
| | Route C-46 | Connection Route 5 - Guacolda | 48 |
| Ma average 1 | Route 5 | Arica - Límite Región de Coquimbo | 1.561 |







03. Copper, Chile's King of Metals

Copper has become a must-have metal in the global economy. It's consumption has tripled in the last 50 years thanks to the increasing production of electrical and electronic products, the construction industry and machinery and equipment. It's also making inroads into the health sector due to its antibacterial properties, and benefits from growing demand for renewable energy equipment, electric vehicles and conductive components.

The price of copper is determined by the markets. The three main trading venues for the red metal are the London Metal Exchange (LME), the Commodity Exchange (Comex, in New York), and China's Shanghai Futures Exchange (SHFE). The global market for mined copper is worth over US\$125 billion a year.

Chile is a major player in this market. The country's copper production has been in the range of 5.5-5.8Mt over the last seven years, with production of 5.62 Mt in 2021. Cochilco estimates average annual production growth of 1.7% from 2020 to 2031, when output will reach around 7.1Mt with a peak around 7.35Mt in 2028. The sector hauls in over US33 billion a year in exports.

Chile is adjusting its methods of mining production. The country's declining refined copper production – a trend that started in 2009, when it reached 60% of total output – is expected to continue over the next decade, with concentrate production picking up an increasing share. This is due to the depletion of leachable oxide mineral reserves and the ensuing decline of solvent extraction and electrowinning (SX/EW) operations, together with the absence of new smelting and refining projects for concentrates in the country. SX/EW cathode production in 2018 was 1.58Mt.

Although the electro-refining capacity in Chile is 1.22Mt, output has remained below 1Mt/y since 2011, weighed down by environmental requirements and other external factors.

Hence, Cochilco expects copper production in 2028 to reach 7.15Mt, with SX/EW cathodes accounting for 1.09Mt and anodes and electro-refined cathodes 1.54Mt.



04. Main Players & Operations

Copper production in Chile is a concentrated market, with nine companies accounting for almost 85% of the country's output in 2021. The main producers are:

CODELCO – The state-run miner is the second largest copper producer in the world after Australia's BHP. It produced a total of 1.62Mt of copper in 2021, and operates seven mines:

Chuquicamata: Located in the Antofagasta region, the mine produced 319.28tm of copper in 2021. After more than 100 years of open-pit operations, it was transformed into an underground operation in 2019 to reach the deepest reserves of the mine. Part of the concentrates produced in Chuquicamata are refined in a complex linked to the mine.

El Teniente: Located in the O'Higgins region, it is the largest underground copper mine in the world and produced 459,817 t of copper in 2021 – transformed into anodes at Caletones, the smelter linked to the mine – in addition to 8.2 t of molybdenum and 114t of silver.

Radomiro Tomic: This mine in the vicinity of Chuquicamata produced 326,456t of copper in 2021. Part of its mine production (leachable ore) is transformed into SX/EW cathodes while the rest (sulfides) is sent to the Chuquicamata concentrator for processing.

Andina: This mine in the Valparaíso region has underground and open pit operations. It produced 177,226t of copper and 39t of silver in 2021.

Ministro Hales: This mine near Chuquicamata produced 181,704t of copper and 284t of silver in 2021.

Gabriela Mistral: Located in the Antofagasta region, this operation produces SX/EW copper cathodes. It is the only mine in Chile that has a completely autonomous truck fleet. It produced 199,908t of copper in 2021.



Salvador: Located in the Atacama region, it is the smallest of Codelco's operations. It produced 52,885t of copper in 2021.

BHP – The largest copper producer in the world. Its operations in Chile are:

Minera Escondida: BHP is the operator and main shareholder of what is the largest copper mine in the world, located in the Antofagasta region. It shares ownership with Anglo-Australian miner Rio Tinto and JECO, a consortium made up of Japanese companies. Escondida produced 1.01 Mt of copper in 2021.

BHP Spence: 100% owned by BHP, it operates two mines in Antofagasta: Spence, which produced 203Mt of copper in 2021, and Cerro Colorado, which reported production of 57t.

ANGLO AMERICAN PLC - Operates three mines and a smelter in Chile:

Minera Doña Inés de Collahuasi: Anglo American owns 44% of this company and is a partner of Glencore, a company based in Switzerland, and of Japan Collahuasi, a consortium of Japanese companies. It operates the Rosario and Ujina deposits in the Tarapacá region. It produced 630t of copper in 2021.

Anglo American Sur: Operates the Los Bronces mine, in the Metropolitan region, and El Soldado in the Valparaíso region, as well as the Chagres copper smelter. Anglo American owns 50.1% of this subsidiary, in which it is a partner of Japan's Mitsubishi and a consortium formed by Codelco and Japan's Mitsui. It produced 412t of copper in 2021.

ANTOFAGASTA MINERALS – This is the largest Chilean private mining company. It controls four subsidiaries in Chile:

Minera Los Pelambres: which operates the mine of the same name in the Coquimbo region (336t of copper in 2019)



Minera Centinela: which operates the deposit of that name in the Antofagasta region and produced 274t of copper in 2019, including cathodes and in concentrates.

Minera Antucoya: which operates the mine of the same name in the Antofagasta region. It produced 79 t of copper cathodes in 2021.

Minera Zaldívar: where it is the operator and shares ownership with Canada's Barrick, each with 50%. The Zaldívar deposit, in the Antofagasta region, produced 88t of copper cathodes in total in 2021.

Caserones – This company, owned by Pan Pacific Copper and Mitsui, both Japanese, operates the Caserones deposit in the Atacama region. In 2021, it produced a total of 110t of copper between cathodes and copper contained in concentrates.

SIERRA GORDA – A company owned by the Polish mining company KGHM and Japan's Sumitomo, it operates the Sierra Gorda deposit in the Antofagasta region. It produced 114,000t of copper in concentrates in 2019.

CANDELARIA – A company controlled by Canada's Lundin, where it has as a partner Sumitomo, which operates two adjacent mines, Candelaria and Ojos del Salado, located in the Atacama region. It produced 181t of copper in 2021.



Mining production by year (ton)

| Mine | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|----------------------|--------|--------|--------|--------|--------|--------|------|
| Escondida | 1152.5 | 1002.0 | 925.4 | 1242.7 | 1187.8 | 1187.3 | 1011 |
| Collahuasi | 455.3 | 506.5 | 524.0 | 559.2 | 565.4 | 629.1 | 630 |
| El Teniente | 471.2 | 475.3 | 464.3 | 465.0 | 459.7 | 443.2 | 460 |
| Anglo American Sur | 437.8 | 354.2 | 348.7 | 422.2 | 389.2 | 370.5 | 370 |
| Chuquicamata | 308.6 | 302.0 | 330.9 | 320.7 | 385.3 | 400.7 | 319 |
| Los Pelambres | 375.8 | 367.8 | 356.3 | 370.5 | 375.9 | 372.1 | 336 |
| Radomiro Tomic | 315.7 | 318.3 | 318.9 | 332.7 | 266.4 | 260.6 | 326 |
| Centinela (Súlfuros) | 145.2 | 180.4 | 163.8 | 155.4 | 195.5 | 153.5 | 170 |
| Spence | 175.6 | 167.4 | 198.6 | 176.4 | 193.4 | 146.7 | 203 |
| Andina | 224.3 | 193.4 | 220.0 | 195.5 | 170.3 | 184.5 | 177 |
| Ministro Hales | 238.3 | 237.0 | 215.1 | 195.5 | 151.8 | 170.6 | 182 |
| Caserones | 74.9 | 117.3 | 122.8 | 136.5 | 145.5 | 126.4 | 110 |
| Zaldívar | 103.4 | 103.4 | 103.3 | 94.5 | 116.1 | 96.5 | 88 |
| Sierra Gorda | 87.9 | 98.1 | 101.7 | 101.9 | 114.0 | 156.1 | 198 |
| Candelaria | 150.2 | 135.4 | 150.3 | 101.7 | 111.4 | 94.8 | 181 |
| Gaby | 125.0 | 121.7 | 122.7 | 107.3 | 104.1 | 102.1 | 101 |
| Anglo American Norte | 106.3 | 99.1 | 87.8 | 83.5 | 86.3 | 78.6 | 0 |
| El Abra | 147.2 | 99.9 | 78.4 | 91.3 | 81.9 | 71.9 | 73 |
| Centinela (Oxides) | 75.9 | 55.8 | 64.5 | 92.6 | 81.1 | 93.3 | 104 |
| Lomas Bayas | 70.6 | 80.1 | 78.0 | 72.7 | 78.9 | 73.9 | 64 |
| Antucoya | 12.2 | 66.2 | 80.5 | 72.2 | 71.9 | 79.3 | 79 |
| Cerro Colorado | 74.4 | 74.0 | 66.2 | 66.2 | 71.7 | 68.9 | 57 |
| Andacollo | 73.0 | 73.2 | 76.0 | 67.2 | 54.0 | 57.4 | 45 |
| Salvador | 48.6 | 59.8 | 62.0 | 60.8 | 50.6 | 56.3 | 53 |
| Quebrada Blanca | 39.1 | 34.7 | 23.4 | 25.5 | 21.1 | 13.4 | 12 |
| Michilla | 29.4 | 0.0 | 0.0 | 0.0 | 12.5 | 19.5 | 0 |
| Otros | 253.7 | 229.6 | 219.9 | 221.9 | 245.6 | 225.9 | 275 |
| Total Chile | 5772.1 | 5552.6 | 5503.5 | 5831.6 | 5787.4 | 5733.1 | 5624 |
| Total Codelco | 1731.7 | 1707.5 | 1733.9 | 1677.5 | 1588.2 | 1618.0 | 1618 |

Source: Cochilco



Smelting and refining

There are seven smelters operating in Chile, of which three have associated refineries:

CHUQUICAMATA – Owned by Codelco and associated with the mine of the same name, it is the largest smelter in Chile by treatment capacity: 1.4Mt of copper concentrates per year. It uses flash furnace technology on one production line and Teniente Converter on another. It has an associated refinery with the capacity to produce 540,000t of electrorefined cathodes.

ALTONORTE – Owned by Glencore, it has the capacity to process 1.16Mt of concentrates per year. It uses Noranda technology.

POTRERILLOS – Owned by Codelco and associated with the Salvador mining unit in the Atacama region, it has the capacity to process 680,000t of copper concentrate per year with Teniente Converter technology. It has an associated refinery with the capacity to produce 130,000t of cathodes per year.

HERNAN VIDELA LIRA – Also known as Paipote, this smelter is operated by the state-run company Empresa Nacional de Minería (Enami) in Atacama region. It has the capacity to process 450,000t of concentrate per year with Teniente Converter technology.

CHAGRES – It is owned by Anglo American Sur and is located in the Valparaíso region. It has the capacity to treat 660,000t of concentrates per year with flash furnace technology.

VENTANAS – Property of Codelco, it is located in the Valparaíso region. It has the capacity to process 430,000t of concentrates per year with Teniente Converter technology. It has an associated refinery with the capacity to produce 410,000t of copper cathodes and which processes anodes from its own smelter and from third parties.

CALETONES – Owned by Codelco, this smelter is associated with the El Teniente mine. It has the capacity to process 1.37Mt of copper concentrates per year with Teniente Converter technology, developed for this smelter.



Copper production by product (thousands MT)



Source: Cochilco



GOLD

Chile's gold production totaled 34.3 metric tons in 2021, which represents just over 1% of world production. Two thirds of this corresponds to gold obtained as a by-product of copper mining, while the remaining third comes from gold and gold/silver mines, a sector with a significant degree of fragmentation. In the sector, the state agency Enami plays a key role as the purchaser of medium and small producers' gold output. There are several relatively large gold production projects that will be developed in the medium term.

Main players and their operations

YAMANA GOLD – This Canadian mining company operates two mines in Chile:

El Peñón: an underground mine located in the Antofagasta region. In 2021 it produced a total of 176,439 oz of gold and 3.59 M oz of silver.

Minera Florida: an underground mine located in the Metropolitan region. It produced 84,768 oz of gold equivalent in 2021.

AUSTRAL GOLD – An Australian mining company that operates the Guanaco/Amancaya complex in the Antofagasta region. It produced 34,532 oz of gold and 114,481 oz of silver in 2021.

IRON

Chile is a small producer in the global iron ore market. The bulk of its production is destined for export. Before suffering the impact of the pandemic, the country exported US\$2,237 million of this mineral in 2021. The main producers are CAP Minería, a local company owned by a group that also produces steel, Santa Fe Mining and Hierro Taltal. The latter, however, has not operated in recent years because of low iron ore prices. CAP Minería produced a total of 16.2t of iron ore in 2021, 30% less than in



2018. The company operates three mining complexes – Cerro Negro Norte and Los Colorados, in the Atacama region, and El Romeral, in Coquimbo – as well as a magnetite plant, a pellet plant and three port terminals. It mainly produces pellet feed, blast furnace pellets and sinter feed.

SILVER

Chile is responsible for around 5% of the world production of silver. In 2021, Chilean silver production reached 1,280t, most of which – more than 80% – corresponded to its production as a by-product of copper mining.

LITHIUM

Chile is the world's second-largest lithium producer, behind Australia. According to the latest US Geological Survey Report, it is the country with the largest reserves on the planet (42% of the total). Chile's lithium production is concentrated in the Salar de Atacama, one of the most competitive reservoirs of this mineral in the world, and where the two companies that currently produce lithium in the country, Albemarle and SQM, operate. Chile produced 162,477 of lithium carbonate equivalent in 2021.

Expectations for future lithium demand, due to the development of electric energy storage infrastructure and electromobility, has attracted the attention of investors in this mineral. Cochilco's report on mining projects with start-up planned between 2021 and 2027 includes four initiatives focused on lithium. The BNamericas project database, which includes projects in the initial exploration stage as well as those reporting the most progress, contains 18 projects. The speed with which these projects advance will depend on the development of the lithium market, which in 2019 was affected by oversupply.

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05. Geological Potential of the Country

Chile is one of the main countries in the world in terms of mining potential. It has the largest known copper reserves on the planet, as well as important reserves of molybdenum, gold, lithium and nitrates.

Chile also has attractive potential for mining exploration, which is highly concentrated in copper and gold. With investments in exploration of US\$548 million in 2021, the country ranked fifth worldwide in terms of total company exploration budget. The National Geology and Mining Service (Sernageomin) has an open information system on geological data and exploration projects, which is a useful tool to observe the country's potential and attractiveness.

Most of Chile's mineral resources are located between the regions of Arica, in the extreme north of the country, and Rancagua, in the central zone, and are found in formations that have their origin in the magmas generated by the convergence of the Nazca and South American plates. The most economically important metallogenic strips in Chile correspond to the Jurassic, early Cretaceous, Paleocene-early Eocene, late Eoceneearly Oligocene, early to middle Miocene and middle to early Pliocene Miocene ages.

The Jurassic belt is close to the coast between Antofagasta and Atacama regions. It contains stratum bonded copper deposits, copper vein deposits and gold and silver veins. The main mining operations in this strip are Mantos de la Luna, Michilla and Mantos Blancos.

The Cretaceous extends into the interior of the Jurassic, from Antofagasta region to Valparaíso region. It has copper porphyry of discrete occurrence; deposits of iron oxide-apatite (IOA), deposits of the oxidized iron ore ore-copper-gold type (IOCG), bound strata of copper, skarns of copper and iron, and deposits of the epithermal and mesothermal veins of gold-copper (base metals) and silver. It houses operations such as Manto Verde, Candelaria, El Algarrobo, Andacollo and El Soldado.



The Paleocene-early Eocene extends further into the early Cretaceous between Tarapacá and Coquimbo regions. It has copper porphyry type deposits, epithermal gold and silver vein deposits, and minor occurrences of copper breccia chimneys. It houses operations such as Spence, Centinela, Sierra Gorda and El Peñón.

The late Eocene-early Oligocene is located towards the highlands between the regions of Arica and Atacama. It hosts massive porphyry copper deposits and houses some of the most emblematic copper deposits in Chile, such as Collahuasi, Chuquicamata and Escondida.

The early to mid-Miocene is located south of the late Eocene-early Oligocene, between Atacama and Coquimbo regions. It is home to the main gold-silver deposits in Chile, such as Cerro Casale, Pascua Lama and El Indio.

Finally, the middle Miocene to early Pliocene is between Coquimbo and Libertador O'Higgins/Rancagua regions. It presents epithermal deposits of precious metals and gold porphyries, and massive deposits of the porphyry copper type. It hosts large copper operations, such as Los Pelambres, Andina, Los Bronces and El Teniente.

Project Portfolio

The portfolio of mining projects drawn up by Cochilco – which considers initiatives scheduled to start up between 2021 and 2030 – amounts to US\$ 69 billion, with a strong concentration in copper projects, representing 87% of the investment.

State company Codelco plays an important role in this portfolio, with almost a quarter of the planned investment, such as projects to replenish reserves and expand operations, which account for the largest amounts for expansions. Geographically, the main investments are planned for the regions of Tarapacá, Antofagasta and Atacama.



In the case of copper, the most important projects correspond to the production of concentrates, a trend that has been observed for some years due to the depletion of copper reserves that can be processed using SX/EW technology. The only smelting project in the portfolio is Nueva Paipote, owned by state company Enami, which is part of the investments that the firm is making to comply with current regulations on sulfur dioxide and particulate matter emissions.

The development of these projects is subject to the processing of environmental permits, which must be considered when planning a new initiative. In the case of Chile, and for some projects, permit requirements for water usage is an important factor to take into account.

From the point of view of access to financing and risk management of these projects, Chile is very well positioned in international rankings such as the Heritage Foundation's Index of Economic Freedom (ranked 33rd) and the World Economic Forum's Global Competitiveness Report (ranked 33rd). The macroeconomic and legal stability of the country, lack of foreign exchange controls and open access to international credit markets are some of the highlights in the evaluations, in which the country leads Latin America.

In terms of mining exploration, Cochilco identified 82 companies with 177 projects in Chile in 2021, although only a quarter of these registered activity during the year. The exploration budget in Chile totaled US\$548 million in 2021. Most of the exploration projects are focused on copper (48%), followed by gold (28%) and lithium (8%).



List of mining projects in Chile 2021-2030

| Startup | Projects | Operator | Mining sector | Region | Type of project | Condition | Development stage | Env. permit status | Investment (US\$ million) |
|---------------|--|--|---------------------------|-------------|---------------------|-------------------|---------------------------------|-----------------------|---------------------------------|
| 2021- 2025 | OTHER DEVELOPMENT PROJECTS | Codelco Chile | State - Cu/Met. Plants | Various | Replacement/ New | BASE/ POSSIBLE | Implementation / Feasibility | n/i | 6,043 |
| 2021 | EXPANSION SALAR DEL CARMEN | SQM Salar S.A. | Lithium | Antofagasta | Expansion | BASE | Implementation | EIA approved | 180 |
| 2021 | MINE-PLANT TRANSFER | Codelco Div. Andina | State - Cu | Valparaíso | Replacement | BASE | Implementation | EIA approved | 1,580 |
| 2021 | MANTOS BLANCOS CONC. DEBOTTLENECKING | Mantos Copper | Large min Cu | Antofagasta | Expansion | BASE | Implementation | EIA approved | 250 |
| 2022 | EL PEÑÓN RES.& RES. ACT. | Minera Meridian Ltda. | Gold | Antofagasta | Replacement | BASE | Implementation | EIA approved | 172 |
| 2022 | LOS PELAMBRES MARG. EXP. PHASE I | Minera Los Pelambres | Large min Cu | Coquimbo | Expansion | BASE | Implementation | EIA approved | 1,700 |
| 2022 | LA NEGRA PLANT EXP PHASE 3 | Rockwood Litio Limitada | Lithium | Antofagasta | Expansion | BASE | Implementation | EIA approved | 300 |
| 2022 | MARICUNGA SALTS PROD. | SIMCO SpA | Lithium | Atacama | New | PROBABLE | Feasibility | EIA approved | 350 |
| 2022 | RAJO INCA | Codelco Div. Salvador | State - Cu | Atacama | Expansion | BASE | Implementation | EIA approved | 1,570 |
| 2022 | SOBERANA (Ex MARIPOSA) | Admiralty Minerals Chile PTY LTD | Iron | Atacama | New | BASE | Implementation | EIA approved | 84 |
| 2022 | LITHIUM CARBONATE EXP. 180 KTPY | SQM Salar S.A. | Lithium | Antofagasta | Expansion | BASE | Implementation | EIA approved | 450 |
| 2022 | ZALDÍVAR OPERATIONAL CONT. | Compañía Minera Zaldívar SpA | Large min Cu | Antofagasta | Replacement | PROBABLE | Feasibility | EIA presented | 190 |
| 2022 | LA COIPA RESTART (Ex PHASE 7) | Kinross Minera Chile Ltda. | Gold | Atacama | Replacement | BASE | Implementation | EIA approved | 225 |
| 2023 | CONCENTRATE LEACHING | Ecometales Limited Agencia en Chile | Met. Plants | Antofagasta | New | PROBABLE | Feasibility | EIA approved | 371 |
| 2023 | SALARES NORTE | Minera Gold Fields Salares Norte SpA | Gold | Atacama | New | BASE | Implementation | EIA approved | 1,021 |
| 2023 | NEGREIROS WORKS - INC. MINING PROPERTY | SCM Cosayach Iodine | Ind. Mining | Tarapacá | Replacement | POSSIBLE | Feasibility | No EIA | 1,000 |
| 2023 | MAGNETITE PLANT OP. CONT. | Compañía Minera del Pacífico S.A. | Iron | Atacama | Replacement | POSSIBLE | Feasibility | No EIA | 95 |
| 2023 | BLANCO PROJECT | Minera Salar Blanco S.A. | Lithium | Atacama | New | PROBABLE | Feasibility | EIA approved | 527 |
| 2023 | DIEGO DE ALMAGRO | Compañía Minera Sierra Norte S.A | Med. Min Cu | Atacama | New | PROBABLE | Feasibility | EIA approved | 597 |
| 2023 | COLLAHUASI COMPL. INST. 170 KTPD | Doña Inés de Collahuasi | Large min Cu | Tarapacá | Expansion | BASE | Implementation | EIA approved | 302 |
| 2023 | QB2 (QUEBRADA BLANCA HYPOGENE) | Cía. Minera Teck Quebrada Blanca | Large min Cu | Tarapacá | New | BASE | Implementation | EIA approved | 5,200 |
| 2023 | FENIX GOLD (Ex CERRO MARICUNGA) | Minera Atacama Pacific Gold Chile Ltda. | Gold | Atacama | New | POSSIBLE | Feasibility | EIA presented | 206 |
| 2023 | ARQUEROS | Compañía Minera Arqueros S.A. | Med. Min Cu | Coquimbo | New | POSSIBLE | Feasibility | EIA presented | 200 |
| 2023 | CARMEN DE ANDACOLLO PLANT OP. CONT. | Cía. Minera Teck Carmen de Andacollo | Large min Cu | Coquimbo | Replacement | BASE | Implementation | EIA approved | 100 |
| 2024 | MANTOVERDE DEVELOPMENT | Mantos Copper | Large min Cu | Atacama | New | BASE | Implementation | EIA approved | 783 |
| 2024 | NUEVA ESPERANZA - ARQUEROS | Laguna Resources Chile | Gold | Atacama | New | PROBABLE | Feasibility | EIA approved | 215 |
| 2024 | LOMAS BAYAS 2034 | Compañía Minera Lomas Bayas | Large min Cu | Antofagasta | Replacement | POSSIBLE | Feasibility | No EIA | 255 |
| 2024 | POLO SUR | Minera Centinela | Large min Cu | Antofagasta | Replacement | PROBABLE | Feasibility | EIA presented | 300 |
| 2024 | LOS BRONCES INTEGRATED | AngloAmerican Sur S.A. | Large min Cu | Metrop. | Replacement | PROBABLE | Feasibility | EIA presented | 3,000 |
| 2024 | SIERRA GORDA EXP. 230 KTPD | Sierra Gorda SCM | Large min Cu | Antofagasta | Expansion | PROBABLE | Feasibility | EIA approved | 2,000 |
| 2024 | EL TENIENTE DEV. PLAN | Codelco Div. El Teniente | State - Cu | O'Higgins | Replacement | BASE | Implementation | EIA approved | 5,573 |
| 2024 | PLAYA VERDE | Copper Bay | Med. Min Cu | Atacama | New | PROBABLE | Feasibility | EIA approved | 95 |
| 2024 | EL ESPINO | Pucobre | Med. Min Cu | Coquimbo | New | POSSIBLE | Feasibility | EIA approved | 624 |
| 2025 | N. VICTORIA - NEW IODINE PLANT | SQM S.A. | Ind. Mining | Tarapacá | Expansion | POSSIBLE | Feasibility | EIA presented | 350 |
| 2025 | COSTA FUEGO (Ex PRODUCTORA) | Sociedad Minera El Águila Ltda. | Med. Min Cu | Atacama | New | POTENTIAL | Pre-feasibility | No EIA | 725 |
| 2025 | PELAMBRES FUTURO 13 | Minera Los Pelambres | Large min Cu | Coquimbo | Expansion | PROBABLE | Feasibility | EIA presented | 1,000 |
| 2025 | NUEVA PAIPOTE | Hernán Videla Lira smelter | Met. Plants | Atacama | Expansion | POSSIBLE | Feasibility | No EIA | 646 |
| 2025 | SANTO DOMINGO | Santo Domingo SCM | Large min Cu | Atacama | New | PROBABLE | Feasibility | EIA approved | 2,178 |
| 2025 | CENTINELA DISTRICT DEV. | Minera Centinela | Large min Cu | Antofagasta | New | PROBABLE | Feasibility | EIA approved | 4,350 |
| 2025 | NUEVAUNIÓN PHASE I | NuevaUnión SpA | Large min Cu | Atacama | New | POTENTIAL | Feasibility | No EIA | 3,500 |
| 2025 | 210-KTPD COLLAHUASI PROD. CAP. IMP. | Doña Inés de Collahuasi | Large min Cu | Tarapacá | Expansion | POSSIBLE | Feasibility | EIA presented | 3,200 |
| 2025 | MINERA CANDELARIA OP. CONT. | Lundin Mining | Large min Cu | Atacama | Replacement | PROBABLE | Feasibility | EIA presented | 600 |
| 2026 | PELAMBRES FUTURO II4 | Minera Los Pelambres | Large min Cu | Coquimbo | Expansion | POSSIBLE | Feasibility | No EIA | 500 |
| 2026 | DOMINGA | Andes Iron SpA | Iron | Coquimbo | New | POSSIBLE | Feasibility | EIA presented | 2,888 |
| 2027 | RT SULFIDES PHASE II | Codelco Div. Radomiro Tomic | State - Cu | Antofagasta | New | POSSIBLE | Feasibility | EIA approved | 3,735 |
| 2027 | LOBO-MARTE | Kinross Minera Chile Ltda. | Gold | Atacama | New | POTENTIAL | Feasibility | No EIA | 995 |
| 2028 | EL ABRA CONC. (Ex EL ABRA MILL) | Cía. Contractual Minera El Abra | Large min Cu | Antofagasta | New | POTENTIAL | Feasibility | No EIA | 5,000 |
| 2028 | NUEVAUNIÓN PHASES II & III | NuevaUnión SpA | Large min Cu | Atacama | New | POTENTIAL | Pre-feasibility | No EIA | 3,700 |

Source: Compiled by COCHILCO using information about each project from public sources.



06. Mining Legislation

In Chile, legislation establishes that the State is the ultimate owner of the country's mineral resources and can award concessions for their exploration and/or exploitation, with the exception of hydrocarbons – liquid or solid – as well as lithium and other minor minerals. A concession is awarded via a judicial resolution and not by an administrative act. Among the main points of the <u>Mining Concessions Law</u>, regulated by the <u>Mining Code</u>, establishes that:

• Mining concessions are real property rights; different and independent from the domain of the surface property, even if they have the same owner.

• They are governed by the same civil laws as other properties, so they are transferable, as well as susceptible to mortgages.

• Concessions can be awarded for all metallic and non-metallic mineral substances, including those existing in the subsoil of maritime waters subject to national jurisdiction and that are accessed through tunnels from the land.

• Mining concessions can also be awarded for mineral substances contained in waste, slag heaps or tailings dams abandoned by their owner.

• Any interested party can constitute a mining concession.

• The law does not allow concessions for liquid or gaseous hydrocarbons or lithium.

• Mining concessions will be awarded by resolution of the ordinary courts of justice, without the decisive intervention of another authority or person.



• The discoverer will be the person who first initiates the process of constituting a mining concession.

• The owner of a mining concession has property rights over it, protected by the Constitution.

There are two types of mining concession: exploration and exploitation concessions

Exploration concession

The registration process for an exploration concession begins with a request presented before the Appeals Court of the municipality where the midpoint of the area of interest is located, so the application can be sent to the Court of First Instance. From that moment, a sequence of procedures begins that ends with the registration of the ruling establishing the concession.

An exploration concession lasts for two years, from the issuance of the ruling declaring it constituted. However, before the expiration of that period, the concessionaire may request a one-time extension for another period of up to two years, counted from the end of the first period and provided that it abandons at least half of the total area granted.

Exploitation concession

• Exploitation concessions last indefinitely.

• The holder of an exploitation concession is the owner of all mineral substances extracted and that are subject to a concession on the date the concession is legally constituted.

• The concessions involve an annual advanced payment to the Treasury for a license.



• The use of the water necessary to explore, exploit or treat mineral substances will be subject to the provisions of the Water Code and other applicable laws.

• The law does not discriminate between foreign and national investors.

Regarding non-concessional resources, their exploration and/or exploitation can be carried out directly by the State or its companies or through special concessions or special operating contracts.

In the case of lithium, its exploitation and sale is supervised by the Chilean Nuclear Energy Commission. For its part, Corfo, a state entity, has maintained ownership of the mining properties of the Salar de Atacama since the 1970s, before lithium was declared non-concessionable, so the new provisions do not affect its rights over them. In its capacity as owner of the properties, Corfo has lease agreements with the two companies that exploit lithium in the Salar, SQM and Albemarle.

Specific tax on mining (mining royalty)

In 2010, a specific tax on mining activity came into force, known as the mining royalty, and which is included in article 64 of the Income Tax Law. This is a tax that, depending on the company's production level, is applied on the taxable operating profit of mining producers. For companies that register sales of between 12,000t and 50,000t a year of copper, the tax rate varies depending on the annual sales volume of each company and is calculated as a percentage (between 0.5% and 4.5%) of taxable operating income. For companies with sales of more than 50,000t of copper, the tax has a progressive and ascending rate that is calculated based on mining operating income and ranges from 5% to 34.5%. The scalability of the tax is defined in article 64 of the Income Tax Law.

*Changes to the specific tax on mining has been proposed by the Chile government in consultation with the mining industry and their proposal is currently being discussd and voted on in Congress. The new Royalty framework will be published as soon as the propsed specific tax on mining becomes law.



Environmental legislation

In 2010 a <u>new institutional framework</u> was created for environmental issues comprising the Ministry of the Environment (in charge of defining policy and regulation), the Environmental Evaluation Service (SEA, in charge of management) and the Superintendency of the Environment (in charge of oversight).

The <u>SEA</u> plays a key role in environmental issues: it manages the environmental impact evaluation system and coordinates the State agencies involved in the process.

Any project likely to cause an environmental impact must submit an environmental impact declaration (DIA) to obtain a permit. In the event that the project has a significant impact on renewable natural resources (including soil, air and water), the landscape or the health of the population, among other factors, an environmental impact study (EIA) must be presented.

The law also establishes that the Regional Environmental Directorates may decree the implementation of <u>citizen participation</u> processes if the project generates environmental impacts on the communities close to the project. It also allows any person, natural or legal, to access project information and make observations on the EIA before the competent authority. The regulation on citizen participation includes the Indigenous Consultation, for which the provisions of article 6 of the International Labour Organization (ILO) Convention 169 apply.

In line with the environmental regulations established by the Chilean government, the <u>Mining Operations Closure Law</u> was enacted in 2012. This law, in addition to specifying the aspects involved in closing a mine, introduces audits after the closing of the site, establishes the obligation of a guarantee to ensure the closure plan – the amount of which will be determined proportionally to the estimated cost of the implementation of the plan – and creates a post-closure fund with resources from the mining company, in addition to establishing stricter penalties for non-compliance with the regulations.

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Special incentives

While Chile does not usually offer subsidies or financial incentives, there are some special benefits that can be taken advantage of by investors in the mining sector.

VAT exemption on the importation of capital goods – The Importation of capital goods for investment projects of more than US\$5 million are exempt from payments of duties and value added tax (VAT) of 19%. These benefits, which must be processed by the Finance Ministry, apply to goods, spare parts, accessories, pieces and other parts. The goods must have a useful life of at least three years.

<u>Research and development law</u> – The law seeks to encourage investment in Research and Development (R&D) through tax benefits. In 2012, a series of amendments were made to the law, which will be in force until December 31, 2025 for any sector, including mining. It establishes a 35% tax credit (with a cap of 15,000 UTM per taxpayer, equivalent to approximately US\$1 million) against First Category (corporate income) tax on the amount invested in R&D, while 65% can be considered as an expense to generate income. The law includes both internal R&D expenses and those incurred in external contracting. It considers both capital and ongoing expenses and includes intellectual property expenses. Projects must be certified by Corfo. The incentive is complementary to other public financing support.

Duty free zones - Chile has three duty free zones, two of which are important to the mining sector: the Iquique Duty Free Zone (Zofri), located in the capital of the Tarapacá region, and the Tocopilla Duty Free Zone (Zofrat), which is focused especially on mining.

Zofri, apart from its original facilities dedicated primarily to commercial logistics, includes the Alto Hospicio business park. Alto Hospicio, on the outskirts of the city of lquique is conveniently located from the point of view of connecting routes with the main mining operations in the region, and Chacalluta, in the Arica and Parinacota region and a few



kilometers from the border with Peru. Corfo, its main shareholder, has identified opportunities in the duty free zone for the manufacturing and maintenance of machinery and spare parts for mining, as well as for other mining services.

Zofrat is an industrial duty free zone located in the port of Tocopilla, in the north of Antofagasta, created for the production of inputs, parts and pieces for mining. The tax benefits for Zofrat were recently extended through 2035.

07. Relevant Information & Business Opportunities in Mining

Equipment for open pit and underground mining

The main purchases of mining equipment correspond to high tonnage extraction trucks, low profile loading equipment for underground mining (LHD), drilling equipment and loading shovels. Below is some of the equipment where the main opportunities for international suppliers can be found:

High tonnage haulage trucks – The Chilean market for high tonnage trucks (over 200t in capacity) is dominated by two manufacturers, Caterpillar and Komatsu. Cochilco estimated in 2017 that in the 2017-2026 period, large-scale mining in Chile would require about 530 units while medium-scale mining would need 130 units.

It should be noted that currently Codelco's Gaby mine operates with a 100% automated truck fleet, with 18 units. Codelco began testing autonomous trucks in 2006 and started implementation at Gaby in 2008.



The growth of the truck fleet brings with it greater demand for services and spare parts.

Drilling equipment - According to a study by Cochilco, this market is strongly correlated to the price of copper. Different models of drilling equipment are used in open pit operations, underground operations and exploration work. Equipment for exploration is the most sensitive to copper prices. Between 2005 and 2018, Chile imported 1,154 units for a Cost, Insurance and Freight (CIF) value of US\$977 million (these figures do not include imports of used equipment). Half of these units (577) correspond to drilling equipment in open pit operations. Based on 2018 figures, the main supplier in Chile is Epiroc (ex-Atlas Copco), with 60% of the market, followed by Sandvick with 17%, and Caterpillar with 16%. Boart Longyear and P&H have 5% and 2% of the market, respectively.

LHD equipment – Chile's fleet of low-profile loading equipment (LHD) is estimated at around 280 units. This type of equipment is used in underground mining, which, except for Codelco's Andina and El Teniente mines, is concentrated in medium-sized mining. Approximately 75% of the LHD equipment that operates in Chile corresponds to units with 7-cubic yard shovels, or medium to small equipment. The LHD equipment that will be used in the Chuquicamata underground operation must also be considered, as it is estimated that some 36 units will be used once the mine is fully ramped up. There is a clear trend towards semi-automation and teleoperation of this type of equipment, including in medium-sized mines such as the one that the company Cemin operates in Catemu, Valparaíso region.

Shovels – According to Cochilco data, between 2005 and 2018 a total of 132 loading shovels were imported, worth US\$1.618 billion. The imported equipment corresponds to Caterpillar, P&H and Komatsu. As in the case of high-tonnage trucks, according to Cochilco in recent years imports have been registered by mining service companies for lease.

OTR tires – Imports of large off-the-road tires (rims of 49, 51, 57 and 63 inches) totaled US\$3.215 billion CIF between 2005 and 2018, underscoring their importance as an input: it is almost equivalent to the value of imports



of high tonnage trucks registered in the same period. Starting in 2014, there has been a significant decrease in the share of smaller tires and growth in the share of larger tires (63 inches and, to a lesser extent, 57 inches). Michelin and Bridgestone are the main players in this market, with more than 95% of sales between them.

Due to the recycling law that came into force recently, mining tires that have reached the end of their useful life will have to begin to be "valued" (that is, they must be recycled or find a new use) at an increasing rate from 2021. The industry is looking for ways to comply with this requirement, which opens up interesting opportunities for innovative ventures.

Automation and remote control

The Chilean mining sector is embarked on a clear process of automation and remote control of operations. In addition to the aforementioned Gaby open pit mine, with its entire fleet of trucks operating autonomously, the El Teniente underground mine has part of its LHD equipment and reduction hammers, as well as other services and systems, remotely controlled from outside the mine, a concept that is also being applied in the Chuquicamata underground operation. Even medium-sized mining companies are incorporating remote-controlled or autonomous equipment. Likewise, there is a strong trend towards automation and remote operation of grinding, crushing and mineral concentration complexes.

In this sense, <u>a study</u> by the undersecretariat of telecommunications prepared in 2017 projects explosive growth in the bandwidth that the mining sector will require in the coming years, due to the growth of autonomous, remote-controlled and data processing operations with the incorporation of IoT (internet of things) technology. According to this study, the demand for bandwidth in the mining sector will rise from 44 Mbps estimated at the time of the study, to a range of between 8,035 Mbps to 11,897 Mbps by the end of this decade.

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Mineral extraction and processing optimization

The aging of deposits in Chile – in general, the richest deposits have already been found and are in operation – translates into lower grades and ore that is more complex to treat. This is forcing the industry to seek improvements in the efficiency of the extraction and processing (concentration) of ore.

The focus of research into innovative alternatives is on several key aspects of the process, starting with the pre-classification and preconcentration stages of minerals to improve energy efficiency, as well as water consumption and management of materials – especially the consumption of steel in protective coatings and milling equipment – to improve productivity, with the objective of reducing the environmental impact by facilitating waste management. One challenge is to improve the flotation process for fine and coarse materials, where low levels of efficiency are observed.

Given that new mining projects in Chile involve flotation processes, interesting opportunities arise for the development of systems and products that help to improve the efficiency of this key stage of mining production.

Logistics services

Logistics have been gaining importance in mining due to the pressure to reduce costs and increase the efficiency of operations, and to reduce the environmental impact and improve the safety of processes. As in other complex industries, in large mining companies there is a tendency to centralize the logistics management of incoming flows (inputs, spare parts, pieces, machinery, etc.) and an important emphasis on the continuity of the logistics chain of commercial products.

Along with adapting to new logistics models, the mining industry has been incorporating technology and new solutions, such as the use of RFID technology for inventory and location of materials, traceability systems, the use of rotainers for the transport of concentrates to port, and special containers for the transport of concentrates on ships. The growth in the production of concentrates will require continuing with the expansion and modernization of port infrastructure for the sector.



Engineering services

Mining represents almost half of the demand for engineering services in Chile. The sector showed a recovery from 2017 but stagnated at the end of 2019. According to the Index of Economic Activity of the Engineering Industry (Icon), prepared by the Association of Engineering Consulting Companies (AIC), at the end of 2019 growth projections for the mining sector were 2.3% for 2020, 8% for 2021 and 9.8% for 2022. Chilean exports of engineering consultancy services reached US\$108 million in 2019, up 14% on 2018, according to a study by AIC and the Santiago Chamber of Commerce. Of these services, 94% corresponded to mining and 91% were for Peru.

Water efficiency services

Water is one of the most critical inputs for the mining industry. Limited water resources have led mining companies to make major efforts to improve water efficiency through a higher rate of recovery and reuse, as well as increasing use of seawater, either desalinated or directly. Cochilco's most recent study on water consumption in mining in Chile points to average annual growth of 2.7% between 2019 and 2030, when it is forecast to reach 23.5 cubic meters per second (m3/s). This increase in consumption will be supplied almost entirely with seawater, use of which by the Chilean mining industry is forecast to grow 9.3% per year in the same period.

At the beginning of 2020, there were 23 desalination plants operating in Chile, of which 14 correspond to facilities to supply mining and industrial operations, with production of 5.6 m3/s. Twelve additional plants are being built.

In addition to the water desalination infrastructure, infrastructure to transport water to mining sites and the energy requirements for both the desalination process and for pumping the water to the points of consumption, many of them located more than 3,000 meters above sea level, must be considered.





Water demand forecast for copper mining (2022-2030) (m3/second)

Continental Water Sea Water Total

Energy efficiency services

Mining represents around 30% of Chile's total energy consumption, with electricity accounting for a large part. Cochilco projects that consumption by the mining sector in Chile will grow at an annual rate of 3.1% between 2019 and 2030, for which it will be necessary to install 1.39 GW of new generation capacity. The two main stages of the mining process – in terms of energy consumption – are open pit operations (fuel consumption) and concentrator plants (electricity consumption). In addition to seeking greater energy efficiency for cost reasons, mining companies will be affected by the Update information on Energy Efficiency Law. According to the bill, mining companies must maintain energy management systems, incorporate energy efficiency criteria in project design, and prepare energy efficiency plans with public progress reports.



In recent years there has been important growth in wind and solar power generation capacity in the country, with the mining industry being important customers. In the medium term, opportunities open up for the development and implementation of energy storage systems. On the other hand, Chile also has an ambitious long-term program for hydrogen production as an energy resource in which the mining sector is participating. Currently a consortium made up of three mining companies is developing a prototype of a high tonnage extraction truck that will use a hybrid diesel-hydrogen engine.

| Power Consumption in mining sector and copper production | | | | | | | |
|--|-----------|-----------|-----------|--|--|--|--|
| | 2022-2024 | 2025-2027 | 2028-2030 | | | | |
| Powerconsumption | 475.3 | 464.3 | 465.0 | | | | |
| Minecopperproduction | 354.2 | 348.7 | 422.2 | | | | |

| Power Consumption in mining sector (Forecast in TWh) | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|
| | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| TOTAL | 27 | 28.8 | 30.7 | 30.8 | 32.1 | 33.5 | 32.8 | 33.1 | 33.2 |
| New | 4.1 | 5.2 | 6.5 | 6.7 | 7.7 | 8.4 | 9.0 | 9.7 | 10.1 |
| Expansion | 27 | 28.8 | 30.7 | 30.8 | 32.1 | 33.5 | 32.8 | 33.1 | 33.2 |
| Replacement | 1.0 | 1.4 | 1.8 | 2.0 | 2.8 | 4.1 | 4.1 | 4.4 | 4.5 |
| In operation | 18.7 | 18.4 | 18.2 | 17.7 | 16.9 | 15.7 | 14.8 | 13.4 | 12.4 |

Source: Cochilco



Environmental remediation services

concentrated in the management of dams or deposits in which tailings from the mineral concentration process are deposited. In Chile there are 744 tailings dams, of which 102 are active, 469 are non-active and 173 are abandoned, according to the National Service for Mining and Geology (Sernageomin).

In the case of active dams, the current legislation on the closure of mining sites establishes specific responsibilities and requirements for the closure of dams. In the case of abandoned dams, the plan is to encourage public-private agreements for their transfer and closure. One of them is a program under which new projects can offset their environmental impacts by relocating or closing these dams. On the other hand, the plan will also promote the reprocessing of tailings to recover elements with economic value and/or the reuse of tailings as raw materials in other industries, including possible tax incentives for this.

This opens up new opportunities for companies focused on environmental management and remediation services.

Manufacture of parts and spare parts for mining equipment

The market for spare parts, parts and pieces in mining in Chile is estimated at around US\$4 billion a year, according to a study carried out by the IDC consultancy on advanced manufacturing. The bulk of these products sold in Chile are imported and correspond to Original Equipment Manufacturer (OEM) parts, while the supply of local manufacturing is quite fragmented. There are programs that seek to facilitate the integration of local manufacturing in the mining supply chain, such as Antofagasta Clúster Minero.

Given the importance of mining to the Chilean economy, there are a



08. Relevant Mining Associations

significant number of entities that represent companies, professionals and other stakeholders in the sector. Some of the main ones are:

National Mining Society (Sonami) – Founded in 1883, it is the oldest of the mining associations in Chile. It represent small, medium and large mining companies, both metallic and non-metallic. It has 76 member companies.

<u>Consejo Minero</u> – Groups large companies in the mining sector. These are 17 companies that produce 97% of Chile's copper and molybdenum, 94% of silver and 88% of gold.

Institute of Mining Engineers (IIMCH) – Groups mining engineers, metallurgical civil engineers, geologists and professionals related to mining in the country. The Institute has representatives on the boards of Enami, Enap, CIMM, Sernageomin and the Qualifying Commission for Competencies in Resources and Reserves.

<u>College of Geologists of Chile</u> – It was created in 1972 and groups together Chilean geologists.

Association of Mining Industrial Suppliers (Aprimin) – It groups suppliers in the mining sector, including companies supplying equipment, technology, services and infrastructure.

<u>Minnovex</u> - Groups companies offering innovation and exports of products, supplies and services for the mining sector.

Association of Technical and Engineering Suppliers for Mining and Industry (Sutmin) – It groups companies that offer supplies, equipment, spare parts, materials, technical services and engineering.

Industrial Association of Antofagasta (AIA) - This brings together mining



companies and suppliers from the Antofagasta region, the main zone for mining operations in Chile.

Industrial Association of Iquique and Taramugal (AII) - This groups industrial companies in the Tarapacá region.

<u>Corporation for the Development of Atacama Region (Corproa)</u> – represent companies and entrepreneurs from the Atacama region.

Programa Alta Ley - This is a public-private initiative promoted by Corfo.

Public-private partnerships in the mining sector

and the Ministry of Mining to strengthen productivity, competitiveness and innovation in the national mining industry and its suppliers. It is part of Corfo's National Strategic Programs.

<u>Valor Minero</u> – This brings together players in the public and private sectors, and third parties, and aims to develop a roadmap to guide the efforts of the Chilean mining industry to ensure the creation of value for all those involved.



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PROSPECTION



PRE-INVESTMENT





ESTABLISHED COMPANY

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Knowledge & Info

- FDI statistics, business opportunity facts & figures
- Market insights & sectorial highlights
- Legal & tax information
- Detailed reports & studies on installation / sector-specific costs
- Portfolios of public projects & tenders

Promotion & Advice

- Meeting agenda/e-meetings with public & private players
- Investor delegations & B2B meetings
- Investment roadshows, conferences & workshops
- Detailed information on installation/sector-specific costs
- Investment incentives & special programs (i.e., R+D+i, visas, tax deductions/credits)

Guidance & Access

- Dedicated expert-sector managers speaking several languages (i.e., spanish, chinese, english, german, french, afrikaans)
- Sector-specific and legal advice on starting up
- Contact with key players within the business ecosystem & site visits
- Assistance in applying for financial incentives & government programs
- Public-private portfolios & public tenders

• Incorporation into the Regional Support Network for projects outside the Santiago Metropolitan Region

Permanent Support

- Ongoing assistance for landing & expansion/re-investment
- Policy advocacy
- #InvestChileE-Consuting with immediate -free of charge- assistance to resolve your concerns
- Fast-track Visa processing for fast-tracking work permits for human capital
- Management of contacts and difficulties with public sector institutions to speed up your investment (i.e., permits, R&D+i, human capital)
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REPORT



PROJECTION & OPPORTUNITIES







october 2022