

NEWS

7th
Edition

CONSEJO MINERO 2023



CHILE IS A LEADER IN THE PRODUCTION OF COPPER AND LITHIUM, ESSENTIAL MINERALS TO FIGHT CLIMATE CHANGE.

Technologies that use clean energy, such as electric vehicles, solar panels, and wind turbines, require a high demand for minerals and metals produced by our country.

WOMEN IN MINING: PARTICIPATION INCREASES TO 15.2% AND DOUBLES IN THE LAST 10 YEARS.

The industry has seen a positive evolution in the hiring of women: 1 out of every 3 people hired in 2022 by mining companies were women. The sector's commitment is to continue increasing the numbers of female participation in mining.





Consejo Minero is the trade association that brings together the large scale mining companies operating in Chile. Its mission is to promote the competitive and sustainable development of Chilean mining, contributing to the well-being of the country.

We invite you to discover the contributions of mining to people and their territories. **Did you know that minerals such as copper, silver, molybdenum, and gold are part of our daily lives?**

Be amazed by interesting facts about mining in Chile on the following pages!



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Consejo Minero de Chile A G



Currency:
Chilean Peso.



Capital:
Santiago.





Density:

26.39 P/km²

Population:

19,960,889 people.

GDP Per Capita:

US \$29,351 (PPP).

Surface area:

2,006,096 km² (american, antartic and insular territory).

Source: INE and Banco Central.

Large-scale mining
takes place in
7 regions.



TARAPACÁ

ANTOFAGASTA

ATACAMA

COQUIMBO

VALPARAÍSO

METROPOLITANA

O'HIGGINS

In 1870 Chile
positions
itself as the
#1 exporter
of copper in
the world.

Source: Biblioteca Nacional de Chile.

Source: Biblioteca Nacional de Chile.

Participation of
large companies in
the Chilean mining
production:

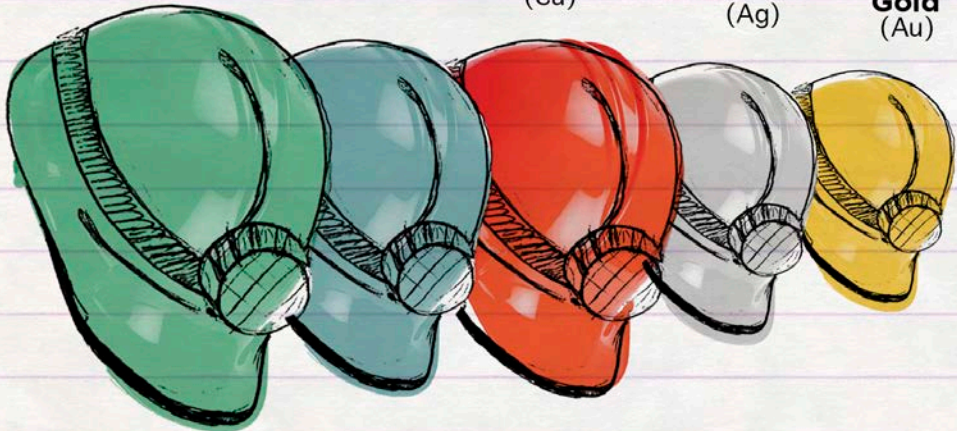
99%
Molybdenum
(Mo)

92%
Iron
(Fe)

94%
Copper
(Cu)

88%
Silver
(Ag)

64%
Gold
(Au)



Source: Cochilco and Sernageomin.

CHILE IS LEADER

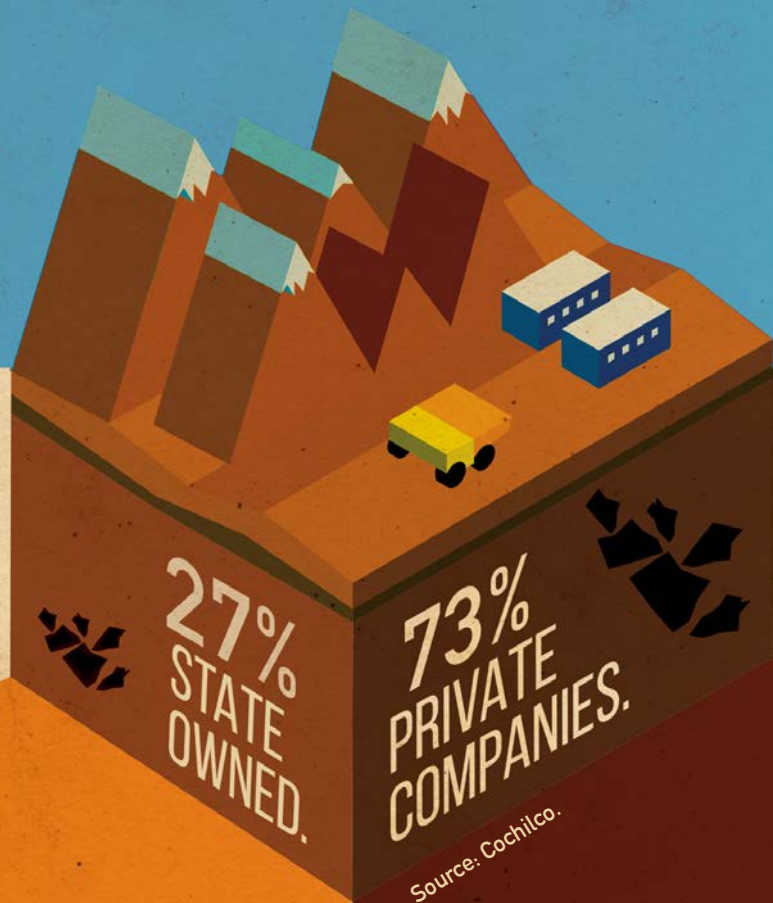


SHARE GLOBAL PRODUCTION

Source: Cochilco, Sernageomin and United States Geological Survey.



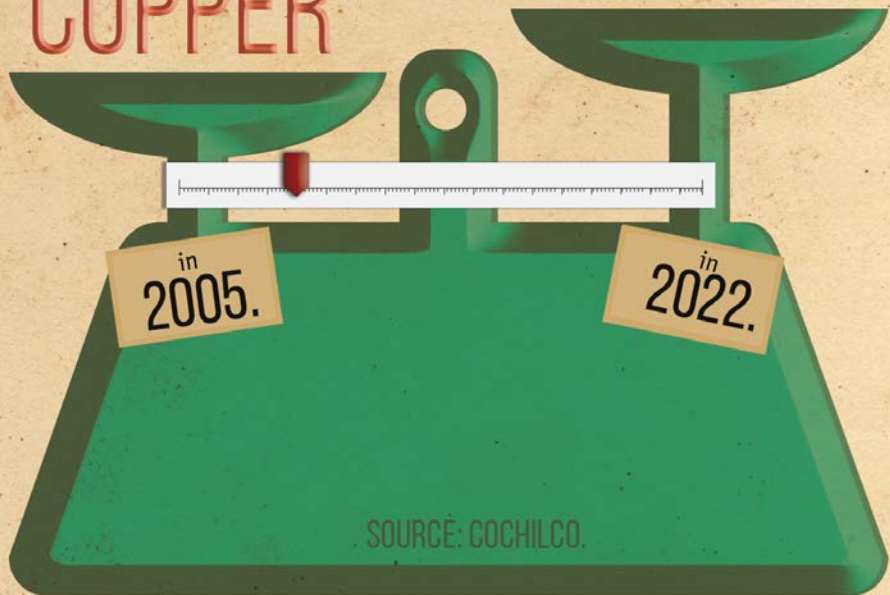
COPPER PRODUCTION IN CHILE:



Copper extracted per ton of
rock processed:

10 KG
COPPER

6 KG
COPPER





METAL PRODUCTION IN CHILE 2022:

5.3 million metric tons copper.

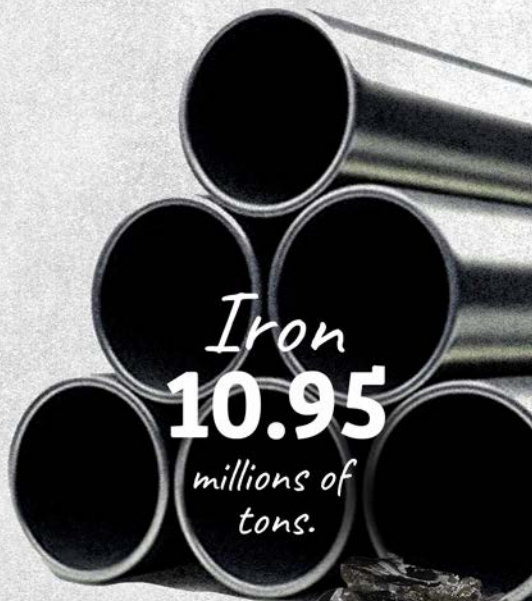
Source: Cochilco.



Gold
30
tons.



Silver
1,160
tons.



Iron
10.95
millions of
tons.



Molybdenum
45,627
tons.

DID YOU KNOW THAT CHILE'S LARGE-SCALE MINING CONTRIBUTES TO 11 OF THE SUSTAINABLE DEVELOPMENT GOALS (AGENDA 2030, UN)?
HERE WE SHOW YOU WHICH ONES:

SDG 17 (*Partnerships to achieve the goals*): through collaborative work between multiple actors, for example, *Compromiso Minero* network.

SDG 12 (*Responsible Production and Consumption*): through the integration of increasingly environmentally responsible practices in each of the mining production processes.

SDG 13 (*Climate Action*): through the production of essential minerals to fight climate change.

SDG 10 (*Reduction of Inequalities*): through the generation of economic activity in regions throughout the country.

SDG 9 (*Industry, Innovation, and Infrastructure*): through the development and addition of innovative solutions for the future of the mining industry and the country.





SDG 1 (No Poverty) and **SDG 8** (Decent Work and Economic Growth): through job creation in mining, which nationally accounts for 10% of the total employment.

SDG 4 (Quality Education): through CCM-Eleva, a pioneer partnership in contributing on the quality of technical and vocational education improvement, from a productive industry.

SDG 5 (Gender Equality): through various initiatives and best practices to advance towards a more diverse mining industry with equal opportunities.

SDG 6 (Clean Water and Sanitation): through the use of both desalinated and non-desalinated seawater.

SDG 7 (Affordable and Clean Energy): through the increased use of renewable generation projects into the electricity grid.

Mining represents 12% of Chile's GDP. But adding the economic activity it generates in other sectors, the industry's contribution to GDP is over

20%

Source: Banco Central de Chile and Cochilco.



It contributes

52%

of the GDP of the Region of Antofagasta.

Source: Banco Central de Chile.



MINING CONTRIBUTES
1 OUT OF 10 PESOS
COLLECTED BY THE STATE.

SOURCE: COCHILCO AND DIPRES.

The average tax burden for mining in Chile, with the increase of the royalty in 2023, became 44.7%, which is higher than other leading mining countries.



Source: Deloitte.

80% OF MINING INDUSTRY
REVENUE GOES TO:



SOURCE: CONSEJO MINERO.



6%

of the world's metal
exploration is carried
out in Chile.

Source: Cochilco.

Chile is within the countries that invest the most in exploration for surface area of territory:

Ecuador:
US\$ 1,094/Km².

Chile:
US\$ 1,083/Km².

Peru:
US\$ 414/Km².

Mexico:
US\$ 322/Km².

Australia:
US\$ 299/Km².

Canada:
US\$ 268/Km².



China

is the biggest consumer of:

55%



30%



Source: Cochilco and World Gold Council.

Mining generates
95%
of exports

from the

Iquique

Region
of
Tarapacá.

Source: INE.

90% OF THE COUNTRY'S
MINING EXPORTS ARE COPPER.

SOURCE: BANCO CENTRAL DE CHILE.





a big challenge

IF ALL MINING PROJECTS IN THE
PIPELINE ARE IMPLEMENTED, THE
ANNUAL PRODUCTION OF COPPER
IN CHILE COULD INCREASE
FROM 5.3 MILLION METRIC
TONS IN 2022 TO MORE THAN 8
MILLION METRIC TONS AS OF 2030.

SOURCE: COCHILCO.

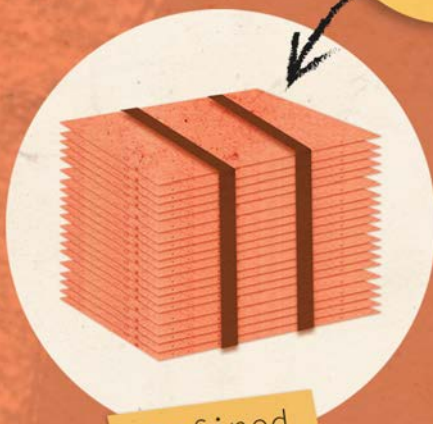
In the country
1 out of 7 pesos
is invested in
mining.



Source: Banco Central de Chile and Cochilco.

Chile exports
copper in two
ways

47%



Refined

mostly cathodes,
which have a purity
of 99.99% copper.

53%



Concentrate

has a purity of
30% copper.

Source: Cochilco.

Mining products represent

56%

of exports.

Source: Banco Central de Chile.



29

*ports operate in Chile shipping
and unloading mining products.*

Source: Cámara Minera y Portuaria de Chile.

The discovery of Chañarcillo in 1832
produced an explosive growth in
silver production.



Source: Biblioteca Nacional de Chile.

Chile, Year 2005

Chilean Lay

Establishes A Specific Tax on Mining Activity,
"Royalty".

To this day, more than USD 11,000
million has already been raised.

Source: Biblioteca del Congreso Nacional de Chile.



Uses of copper worldwide

28%

CONSTRUCTION



31%
OTHERS

(COINS,
ELECTRONIC
DEVICES
AND
OTHERS)

16%

INFRASTRUCTURE



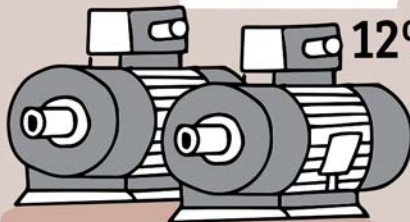
13%

TRANSPORTATION

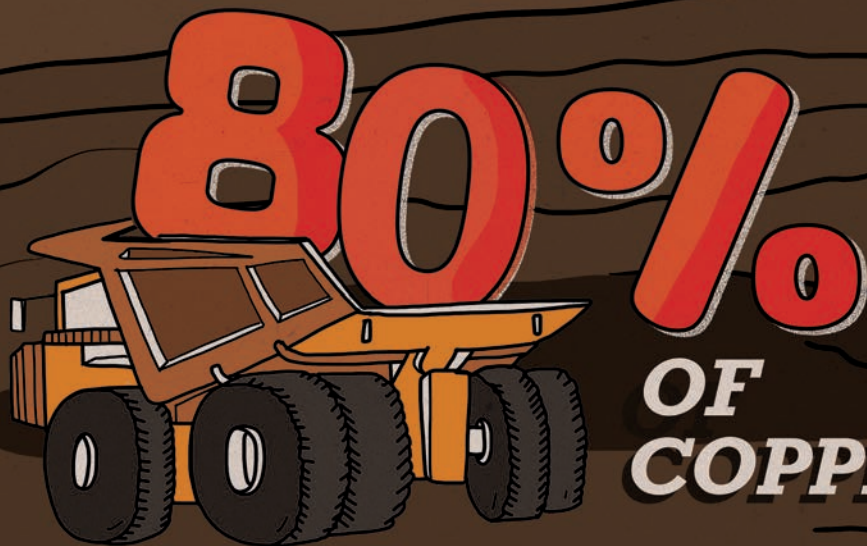


MACHINERY

12%



Source: Wood Mackenzie, IWCC and ICA.



IS EXTRACTED FROM OPEN PIT MINES.

Source: Cochilco.

Chile has 5 sites declared as World Heritage by Unesco.
The mining city of Sewell is one of them (2006).



Source: Museo Histórico Nacional.

"Gold"

ITS CHEMICAL
SYMBOL
IS



THAT COMES FROM "AURUM", A LATIN WORD
THAT MEANS "BRIGHT SUNRISE".

Source: World History Encyclopedia.

The development of a new mining project
can easily take:



Source: Consejo Minero.

The background of the entire image is a dense, overlapping collage of numerous hand-drawn permit documents. Each document is a simple rectangle with a header section containing the word 'PERMISO' and several horizontal lines representing text. The documents are scattered across the frame, creating a sense of a large volume of paperwork.

THE MINISTRO HALES PROJECT HAD TO PROCESS

645 PERMITS

FOR ITS START UP.

SOURCE: CODELCO.

A large-scale

COPPER

MINE PROJECT

HAS AN *average*

lifespan of **25 YEARS** *and produces*

125,000 *metric tons annually.*

Source: CEPAL.



7 of the 20

largest copper mines in the world are in Chile (Escondida, Collahuasi, El Teniente, Chuquibambilla, Los Bronces, Los Pelambres and Radomiro Tomic).

Source: Visual Capitalist.



Source: Cochilco.

THERE ARE

COPPER
SMELTERS.

Salaries in mining are more
than double the country's
average.



Source: Superintendencia de Pensiones.



Did you know that the Statue of
Liberty stands **46 meters tall**
and contains 31 tons of copper?

Source: Statue Statistics, National Park Service.



The mining industry
has seen its production
costs double in the last
15 years.

1 TO 2

DOLLARS
PER POUND
OF COPPER.

Source: Cochilco.

MINING DIRECT
JOBS REPRESENT
**3% OF THE COUNTRY'S
EMPLOYMENT.**



**BUT IT IS
ESTIMATED
THAT FOR EVERY
DIRECT JOB
2,55 INDIRECT
JOBS ARE
GENERATED. AS A
WHOLE, MINING
REPRESENTS 10%
OF CHILE'S EMPLOYMENT.**

Source: INE.



HELMET
WHIT
LANTERN



SAFETY
SHOES



SAFETY
GLASSES



SAFETY
GLOVES

Underground
mining requires
9 elements of
personal
protection:

RESPIRATOR



HEARING
PROTECTION
DEVICE



SELF
RESCUER



REFLECTIVE
JACKET



SAFETY
HARNES



*Mining has the lowest accident rate
per economic sector in the country.*

*1.0% v/s 2.6%
(country average).*

Source: Ministerio del Trabajo, SUSESO.

WOMEN'S PARTICIPATION

IN THE
MINING
INDUSTRY
HAS GROWN
STEADILY.

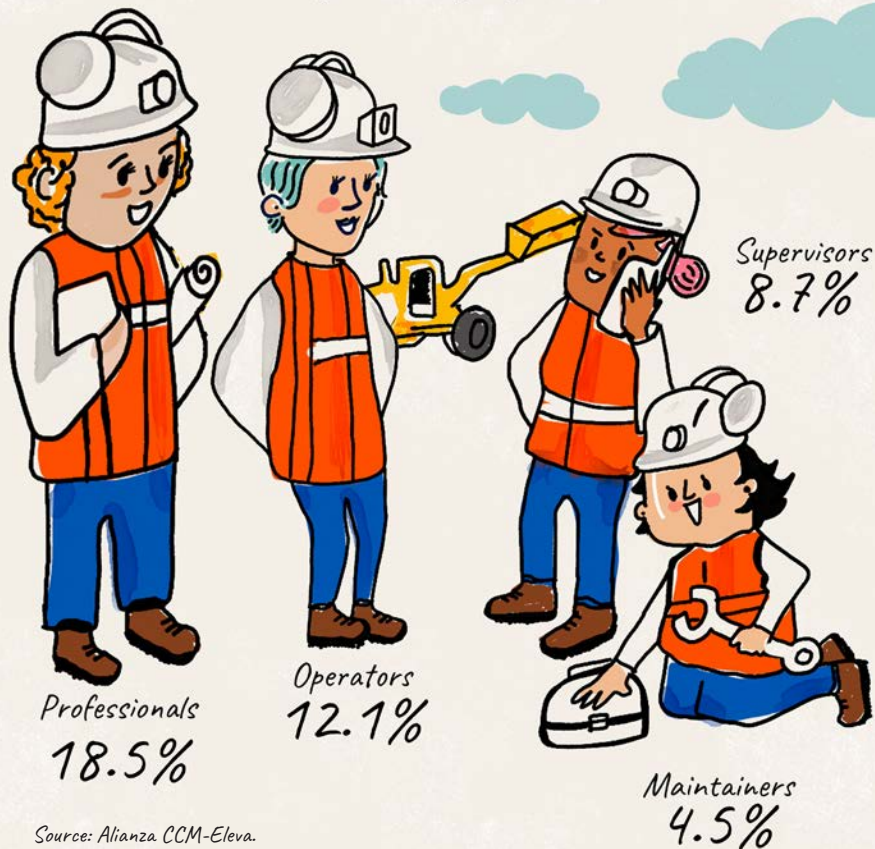
TODAY REPRESENTS

15,2%.

SOURCE: ALIANZA CCM-ELEVA.



Women's participation in the
mining industry by 2022:



Source: Alianza CCM-Eleva.

Women in higher responsability mining roles



**Directors/
Managers**

16.9%



**Deputy Managers/
Superintendents**

12.6%



**Department
Heads**

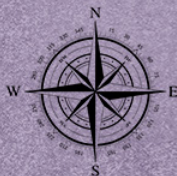
15.7%



Supervisors

9.9%

Source: Alianza CCM-Eleva.



**7 OUT OF EVERY 10
PEOPLE WORKING IN MINING
LIVE IN THE REGION WHERE
THEY WORK.**



Source: Alianza CCM-Eleva.

PACIFIC OCEAN

región de Antofagasta

IN LARGE-SCALE MINING
IN CHILE,



**hours of training are carried
out per year, which is
equivalent to each worker
being trained an average of
24.9 hours per year.**

Source: Alianza CCM-ELEVA.

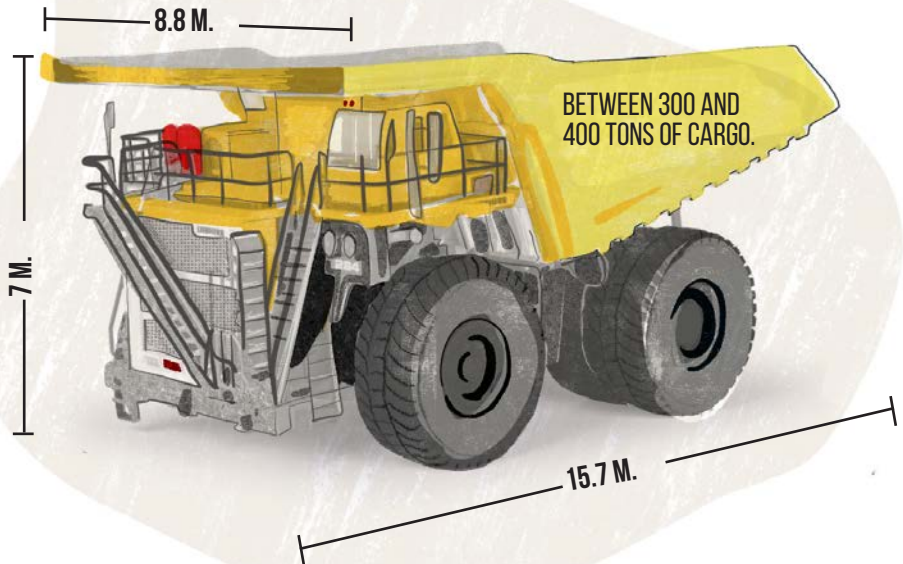
In Chile, by the end of this decade, over 25,000 workers will be needed in various roles in mining:



Source: Alianza CCM-Eleva.

HIGH TONNAGE MINING TRUCK

MODEL: T 284.



SOURCE: LIEBHERR.



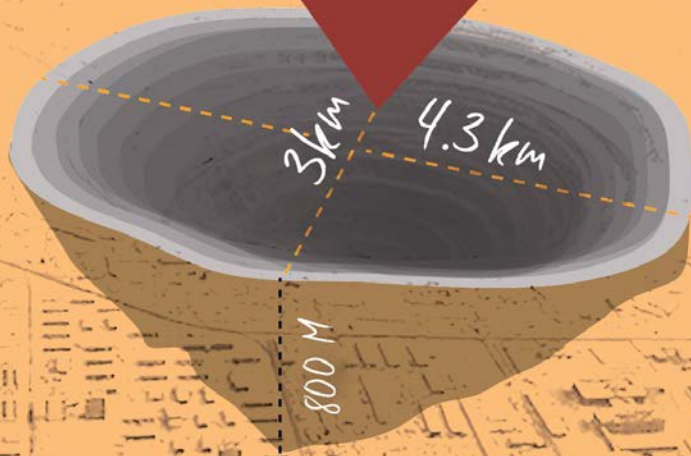
ELECTROMECHANICAL SHOVEL

Source: Codelco.

Load capacity:
115 tons.

Dimensions:
15 meters long
21 meters high.

CHUQUICAMATA



IT WAS ONCE THE WORLD LARGEST OPEN PIT MINE.

SOURCE: CODELCO.

El Teniente is the largest underground mine in the world. Measured in a straight-line, its tunnels are approximately equivalent to the distance between Santiago and Lima.

Lima

Santiago

3,000
KM OF TUNNELS.

SOURCE: CODELCO.



Caserones is the mine located at the highest altitude:
4,600 meters above sea level.

Source: Lumina Copper Chile.

ESCONDIDA IS THE HIGHEST
COPPER-PRODUCING MINE IN
THE WORLD, WITH OVER
1 MILLION
TONS ANNUALLY.

SOURCE: BHP.



The Ministry of Mining was
founded in 1953.

Souce: Ministerio de Minería.

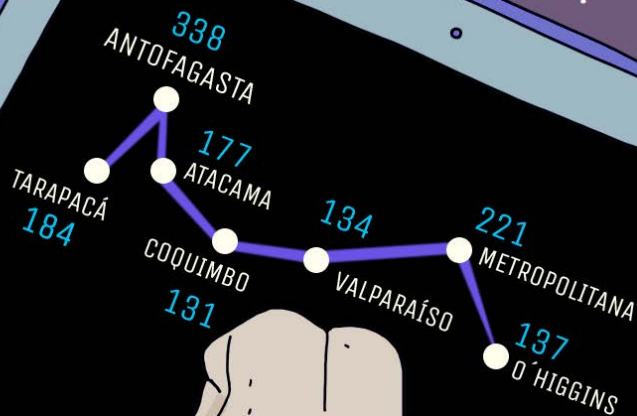




*San Lorenzo, patron saint of mining
is celebrated on August 10th.*

Source: Biblioteca del Congreso Nacional de Chile.

How many technology
companies supplying mining
operate in the north-central
zone of Chile?



Source: Fundación Chile.



More than

500

companies supplying the
mining industry export more
than 500 million dollars
a year.

Source: ProChile.



OVER

3,500

CHILEAN COMPANIES

**ARE MINING
SUPPLIERS.**

SOURCE: SICEP.

Compromiso Minero is a network created in 2021 to work hand in hand with other organizations in order to promote knowledge, dialogue, innovation, gender equality, and sustainable development of the mining industry to increase and expand our contribution to Chile.

More than



Universities



Professional groups



Regional associations



Entrepreneurs



ONG's



Startups



Business associations



Study Centers



Providers

organizations of the entire mining ecosystem are part of Compromiso Minero.

Source: Compromiso Minero.

COMPROMISO MINERO.

Discover the commitments of the mining ecosystem:

SOCIAL PILLAR:

- *Deepen the dialogue with communities near our operations.*
- *Advocate for a larger portion of the taxes paid by mining to remain in mining regions.*
- *Continue promoting the hiring of women in all mining positions, aiming to double their participation by 2030.*

**compromiso
minero**

COMPROMISO MINERO

ENVIRONMENTAL PILLAR:

- By 2030: 90% of the mining sector's electrical supply will come from renewable sources.
- By 2025: To avoid affecting human consumption, 90% of the water used in mining will come from the sea or will be reused.
- Continue working to protect ecosystems and the species that inhabit them.

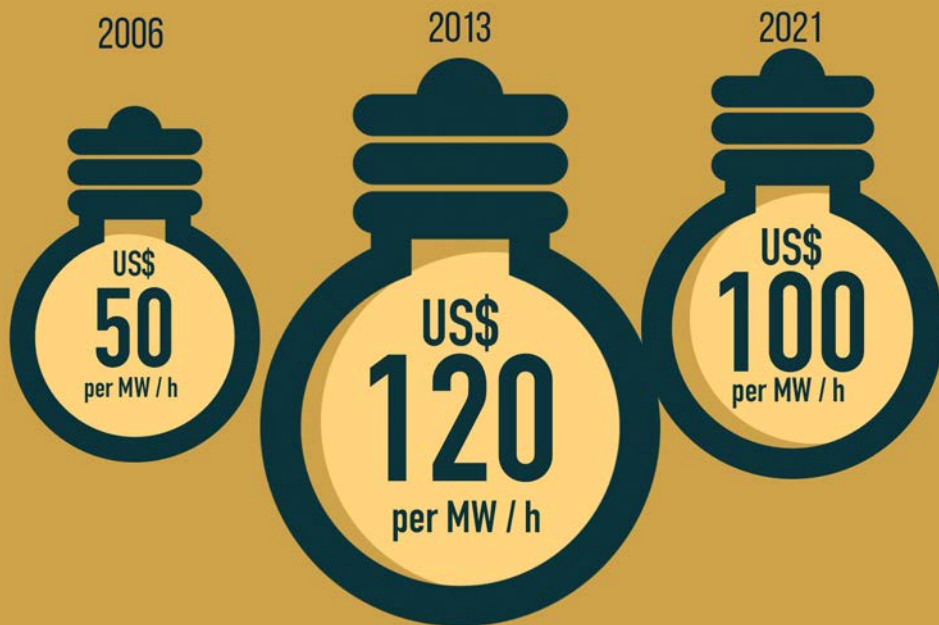
COMPROMISO MINERO

ISO MINERO

ECONOMIC PILLAR:

- By 2030: Produce more copper to generate more clean energy.
- Ensure local suppliers continue to develop alongside the mining industry.
- Continue creating quality jobs and training individuals for the integration of new technologies.

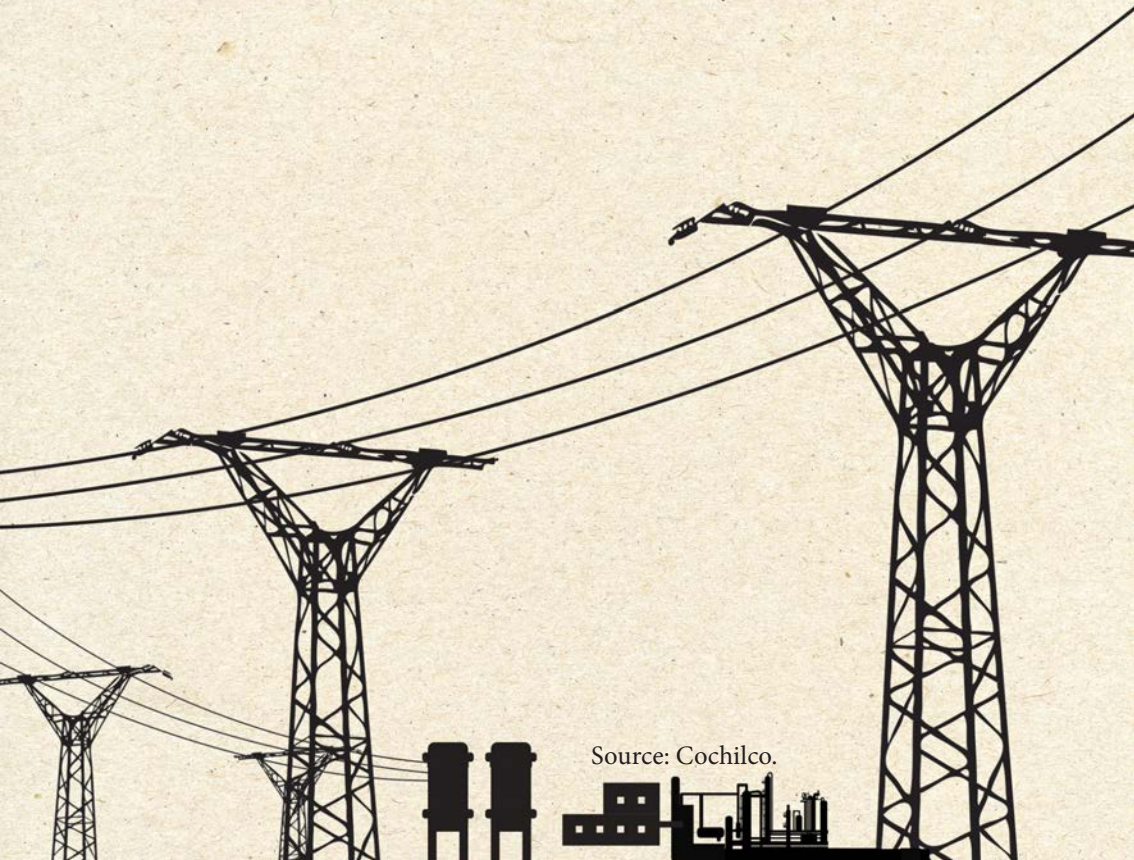
COMPROMISO MINERO



Evolution of electricity costs for the
mining industry.

Source: Wood Mackenzie.

Electricity consumption in mining has been steady
at $\frac{1}{3}$ of the country total.



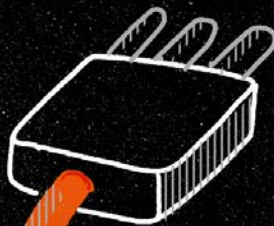
Source: Cochilco.



It is projected that
by 2030,

of the mining sector's
electrical supply will come
from renewable sources.

Source: Política Nacional Minera 2050.



A copper wire has a conductivity*
of 100%.

Source: Copper Alliance.

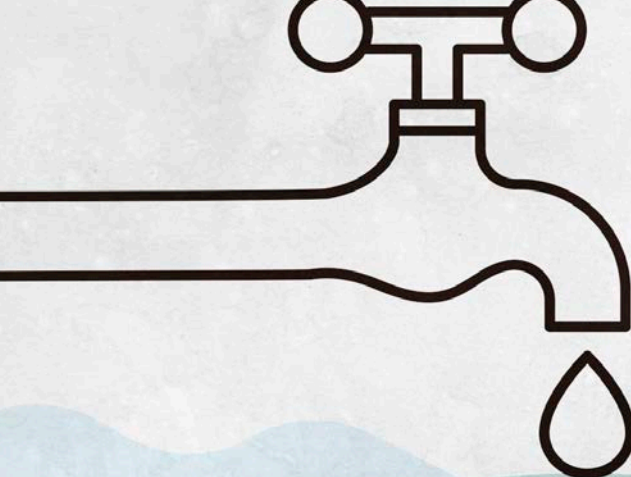
** ability to allow current to pass through.*

To transition copper from a solid to a liquid state, temperatures exceeding $1,000^{\circ}\text{C}$ are required, making it a material highly resistant to fire.

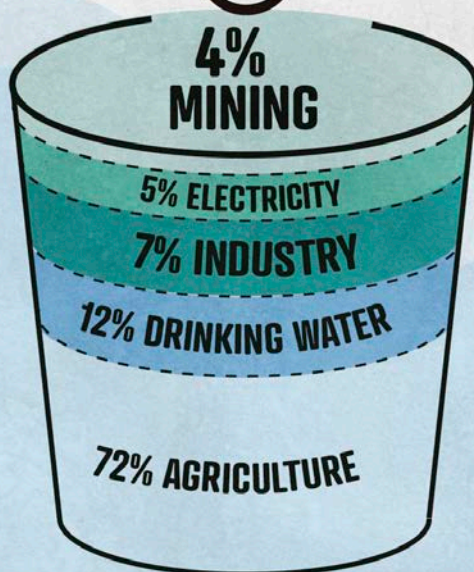


COPPER IS A
100%
RECYCLABLE
MINERAL 

SOURCE: COPPER ALLIANCE.

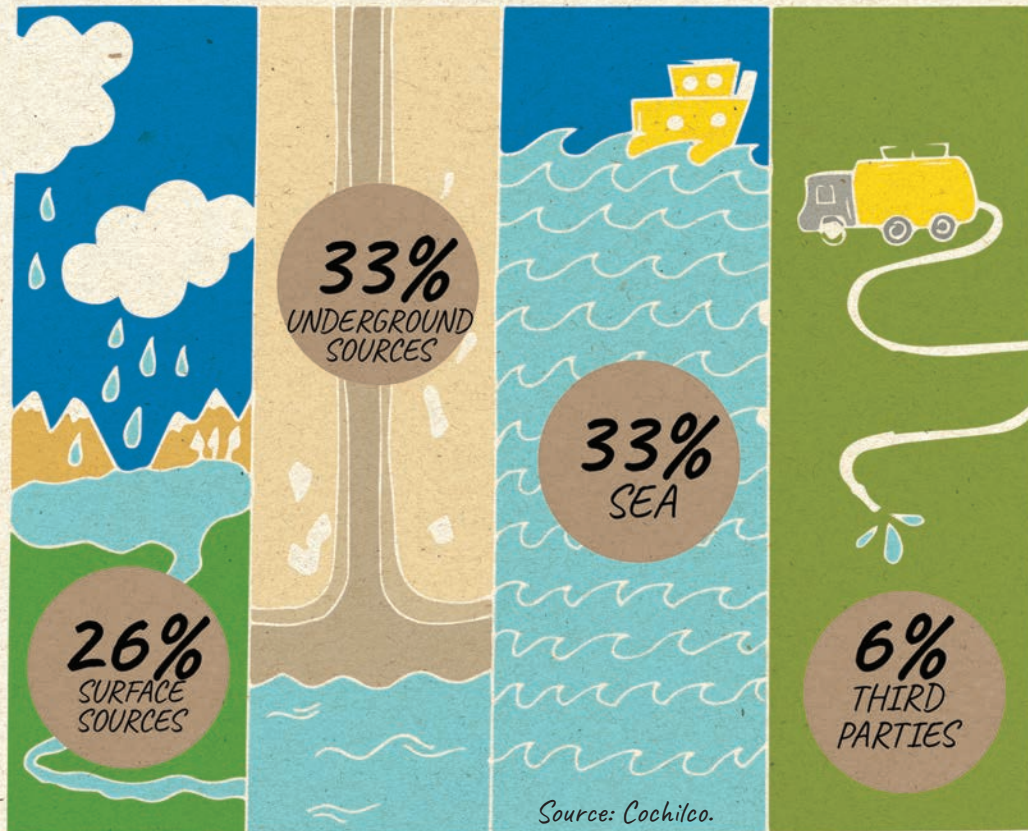


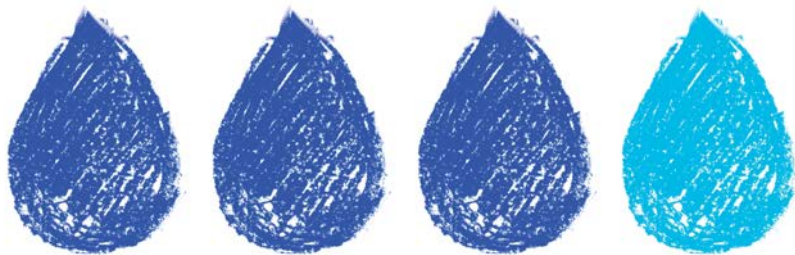
Water consumption
by economic sector



Source: DGA.

The water supply of mining comes from:





$\frac{1}{4}$
new
water

$\frac{3}{4}$

OF THE WATER USED IN
MINING PROCESSES
IS RECIRCULATED WATER.

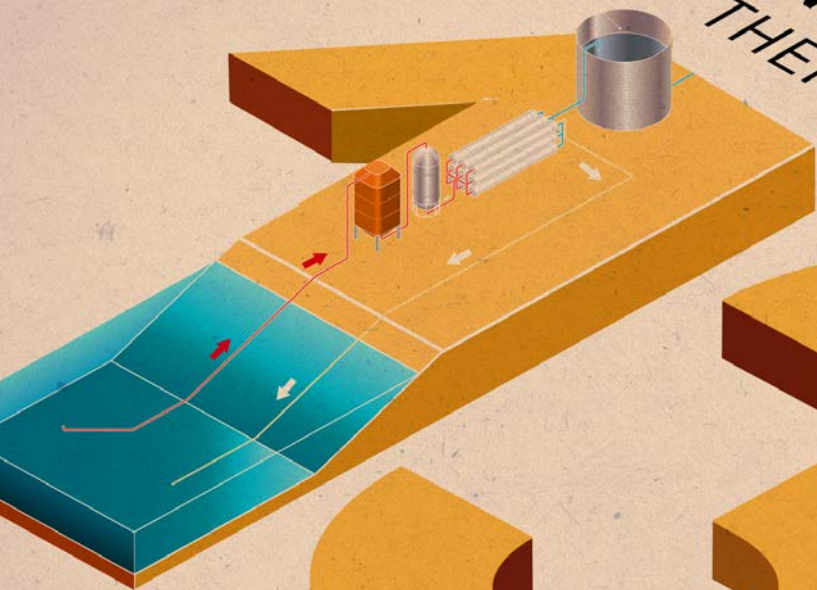
Source: Cochilco.

Today 33% of mining's water consumption comes from sea water, whether desalinated or not, and by 2032 this consumption will reach 70%.

Source: Cochilco.



**IN MINING
THERE ARE:**



desalination
plants in operation
and **7** more
are under project.

Source: Cochilco.



**A 3MW
WIND TURBINE
REQUIRES**

4.7 **TONS OF
OF COPPER**

SOURCE: BANCO MUNDIAL.

**Generating 1MW of energy through
solar panels uses an average of**

**5 tons of
copper.**

Source: The MIT Energy Initiative (MITEI).

A modern house has **200 KG**

of
Cu



twice as much as 40 years ago. We can find it in our toilets, electrical appliances, telephones, and computers.

Source: [Codelco](#).

TO PRODUCE
A MOBILE
PHONE



SOURCE: MINERALS COUNCIL OF AUSTRALIA.

ARE NEEDED.



SQUID

CHOCOLATE

RAISIN



OYSTERS

SOURCE: CODELCO.



PEACH



POTATO



Being antimicrobial, copper
manages to reduce hospital
infections by up to **58%.**



Source: **Antimicrobial Copper 2017.**

In Chile, there are at least 3 hospitals that have incorporated copper into their facilities to reduce infections.



Source: Cochilco.

CONVENTIONAL  **23**
AUTOMOBILE
C H I L E
KG OF COPPER

HYBRID  **40**
AUTOMOBILE
C H I L E
KG OF COPPER

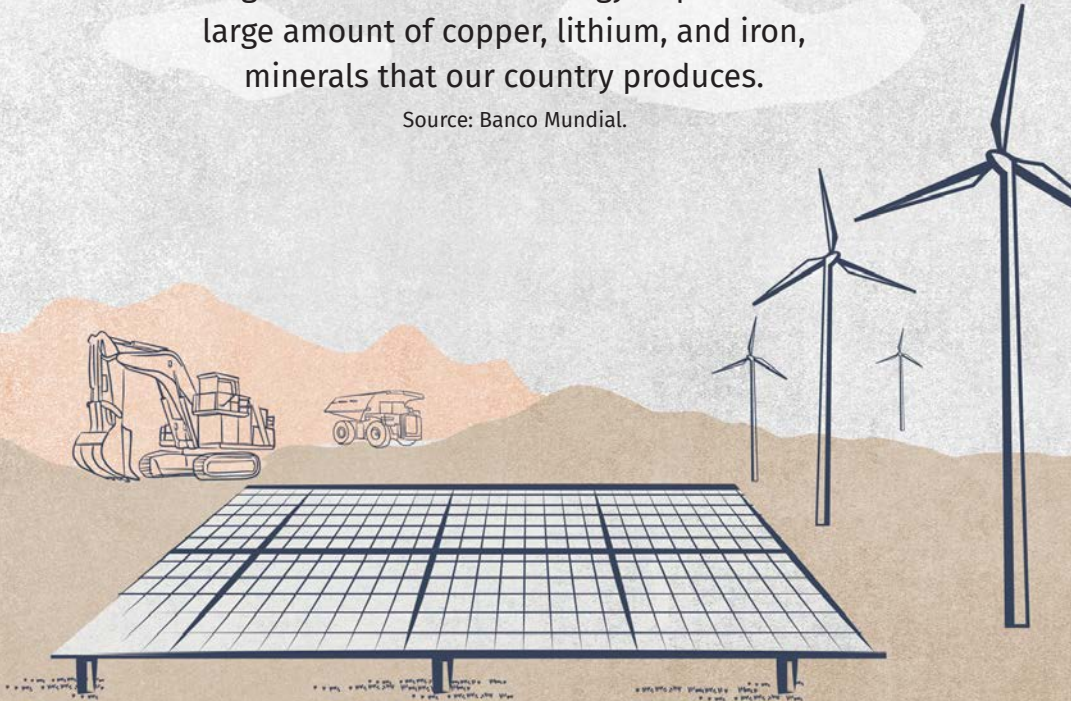
ELECTRIC  **83**
AUTOMOBILE
C H I L E
KG OF COPPER

ELECTRIC  **369**
BUS
C H I L E
KG OF COPPER

SOURCE: INTERNATIONAL COPPER ASSOCIATION (ICA).

Technologies associated with the generation of clean energy require a large amount of copper, lithium, and iron, minerals that our country produces.

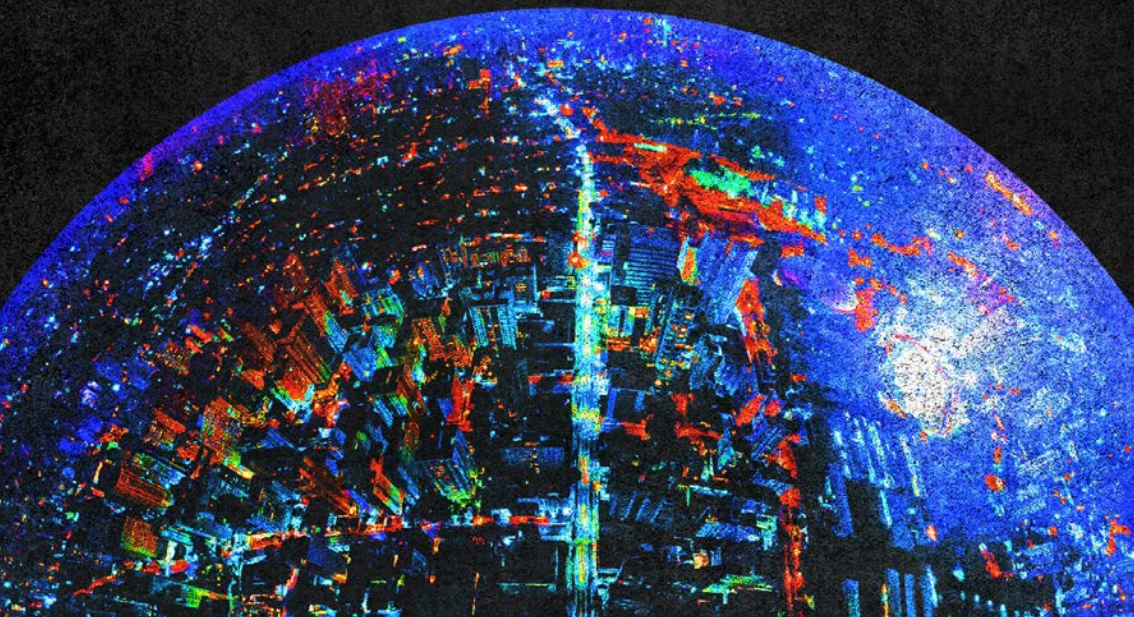
Source: Banco Mundial.





TO MEET THE GLOBAL DEMAND FOR TECHNOLOGIES
ASSOCIATED WITH CLEAN ENERGY, THE SAME AMOUNT OF
COPPER THAT HAS BEEN PRODUCED IN THE LAST 5,000
YEARS WILL BE NEEDED IN THE NEXT 25 YEARS.

SOURCE: BANCO MUNDIAL.



UP
TO

20%

of

GLOBAL
GOLD

PRODUCTION IS USED
IN JEWELRY OR
INVESTMENT.

Source: Consejo Minero.



The Olympic medals for Tokyo 2020
contained 6 grams of gold.

Source: International Olympic Committee.



The figures in this book were obtained from the most recent information available at the time of its edition (March 2023). In cases where we considered that the most recent figure was not representative of the reality of the industry, the average of the last five available periods was used.



20

COMPANIES

Which are part of the following 16 mining groups:



BARRICK

BHP



GLENCORE



lundin mining

RioTinto

Teck

.....

MAP OF LARGE-SCALE MINING IN CHILE

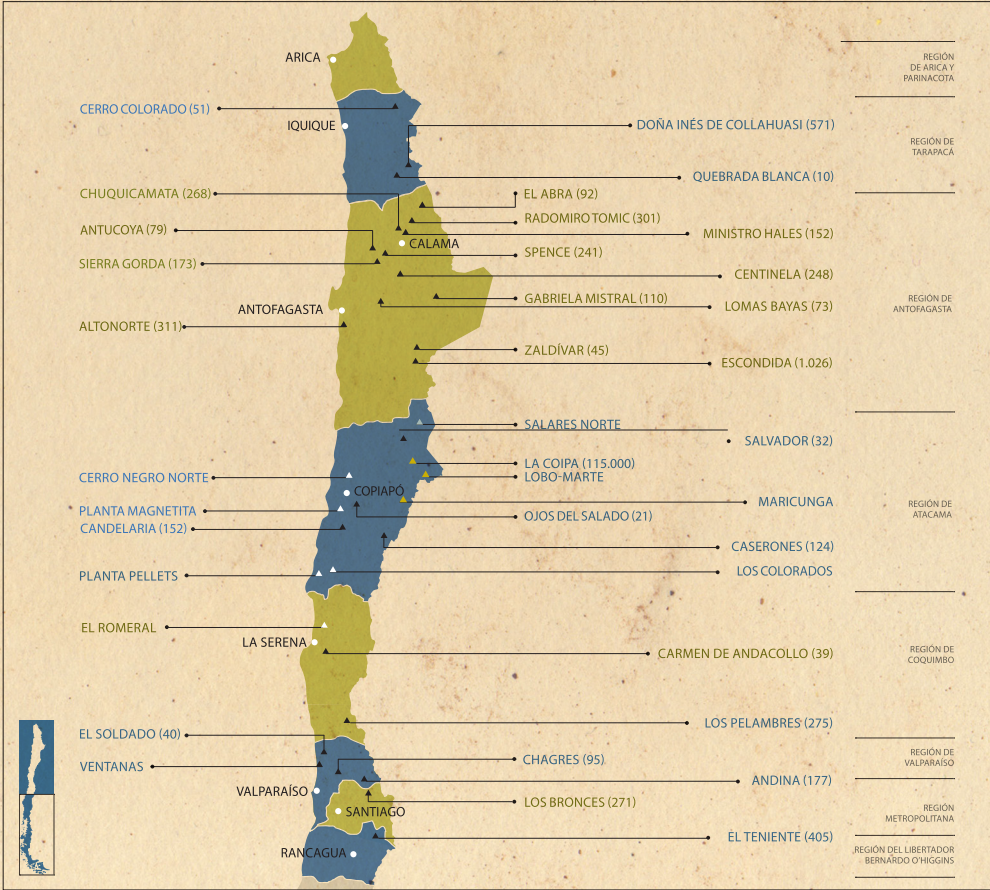
.....



Information to March 2023
Source: Consejo Minero.

PRODUCTION TO COPPER, GOLD AND IRON

▲ KTMF/Copper ▲ OZ/Gold ▲ KTM/IRON ▲ Gold/Silver



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MINING

Accounts for 10% of employment in Chile:
More than 900,000 people work in
mining or in related activities.

**THANKS TO THE
IMPLEMENTATION
OF GREATER INNO-
VATION AND NEW
TECHNOLOGIES,
THE MINING SECTOR IS MAKING ADVANCES
IN WATER AND ENERGY EFFICIENCY.**

Currently, mining consumes only 4% of continental water, recirculates 76% of this resource, and has incorporated technologies that allow it to increasingly use seawater for its processes. On the other hand, 68% of the electric power used by mining comes from renewable sources. Some mining companies have even reached 100%.

