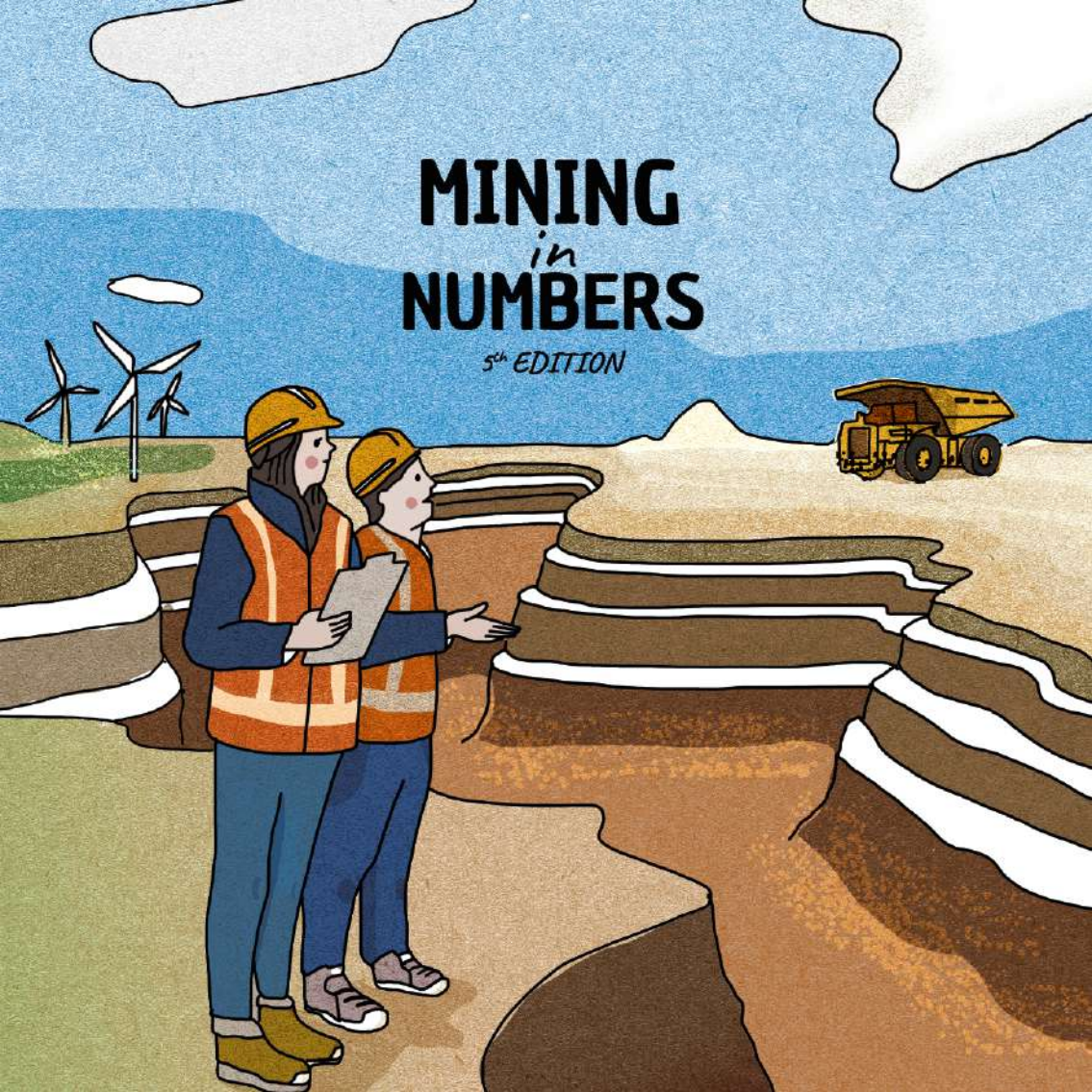


MINING *in* NUMBERS

5th EDITION





Consejo Minero is the trade association that brings together the large scale mining companies operating in Chile. Its main objective is promoting the competitive and sustainable development of chilean mining.

We present **Mining in Numbers**, a book that shows the main figures of the mining industry in Chile in a different, simple and entertaining way.

Find updated figures and learn more about mining in Chile on our website: **www.consejominero.cl**



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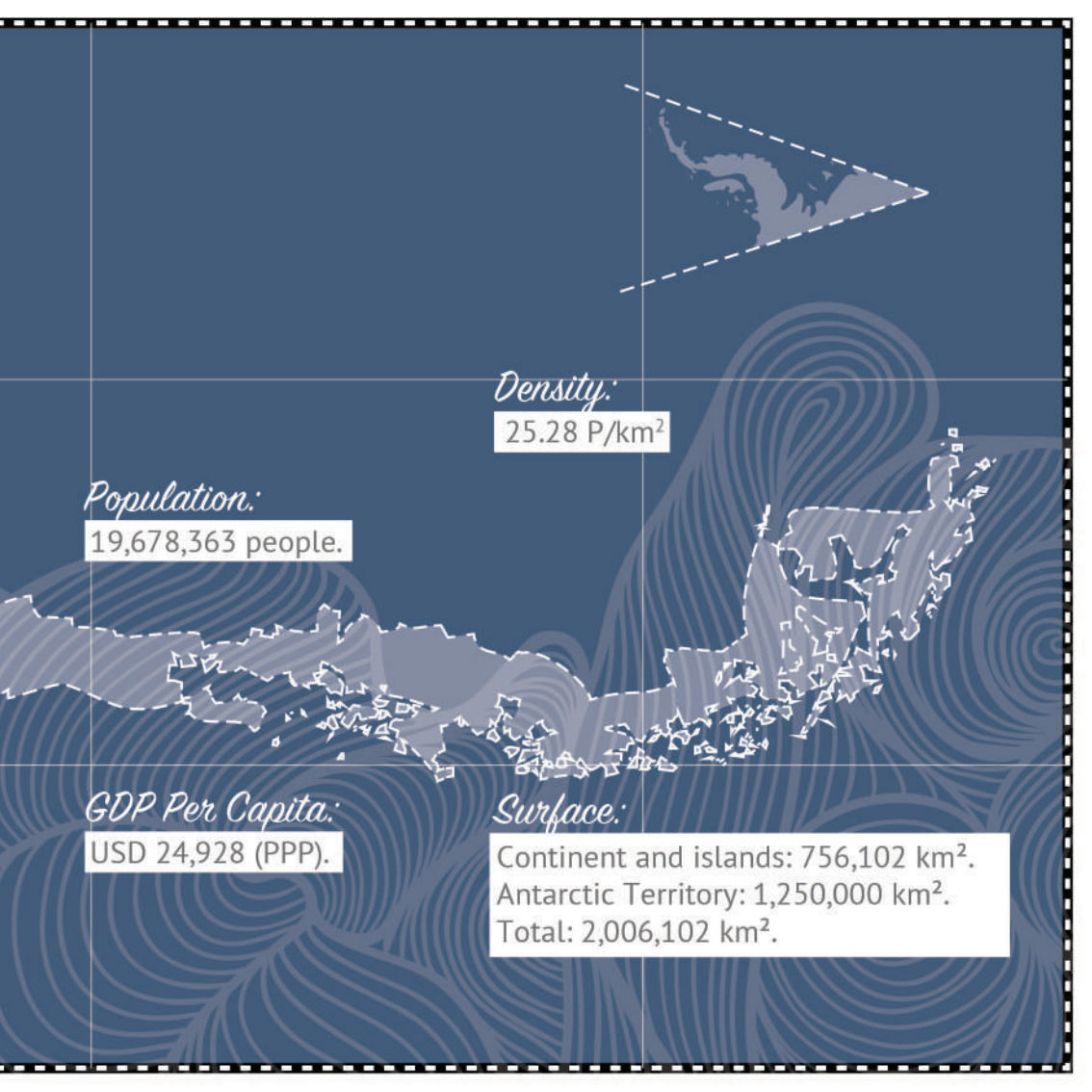


Currency:
Chilean Peso.



Capital:
Santiago.





Density:

25.28 P/km²

Population:

19,678,363 people.

GDP Per Capita:

USD 24,928 (PPP).

Surface:

Continent and islands: 756,102 km².
Antarctic Territory: 1,250,000 km².
Total: 2,006,102 km².

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.

Participation of
large companies in
the Chilean mining
production:

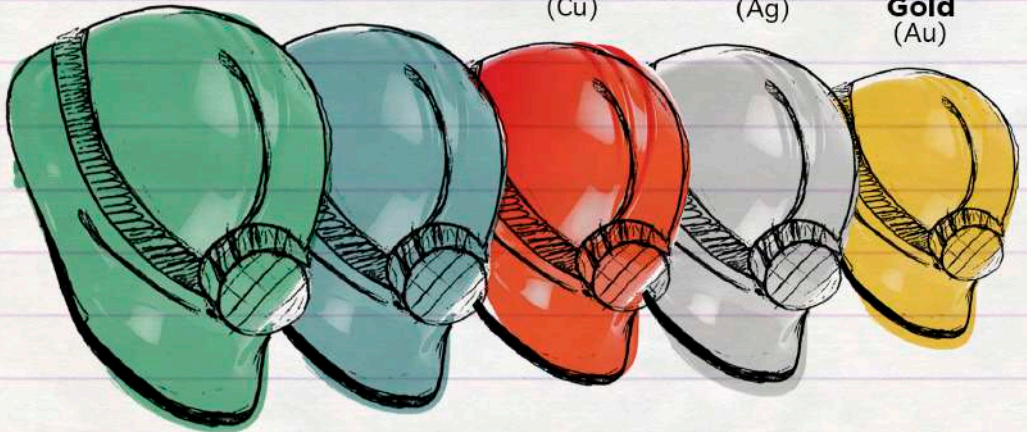
99%
Molybdenum
(Mo)

99%
Iron
(Fe)

95%
Copper
(Cu)

95%
Silver
(Ag)

85%
Gold
(Au)



CHILE IS A LEADER



SHARE OF GLOBAL PRODUCTION



COPPER PRODUCTION IN CHILE:



Copper extracted per ton of
rock processed:

10 KG
COPPER

7 KG
COPPER





METAL PRODUCTION 2020:

5.7 million metric tons copper.

38.5
metric tons of
GOLD.



9.5
MILLION
tons of
Iron.

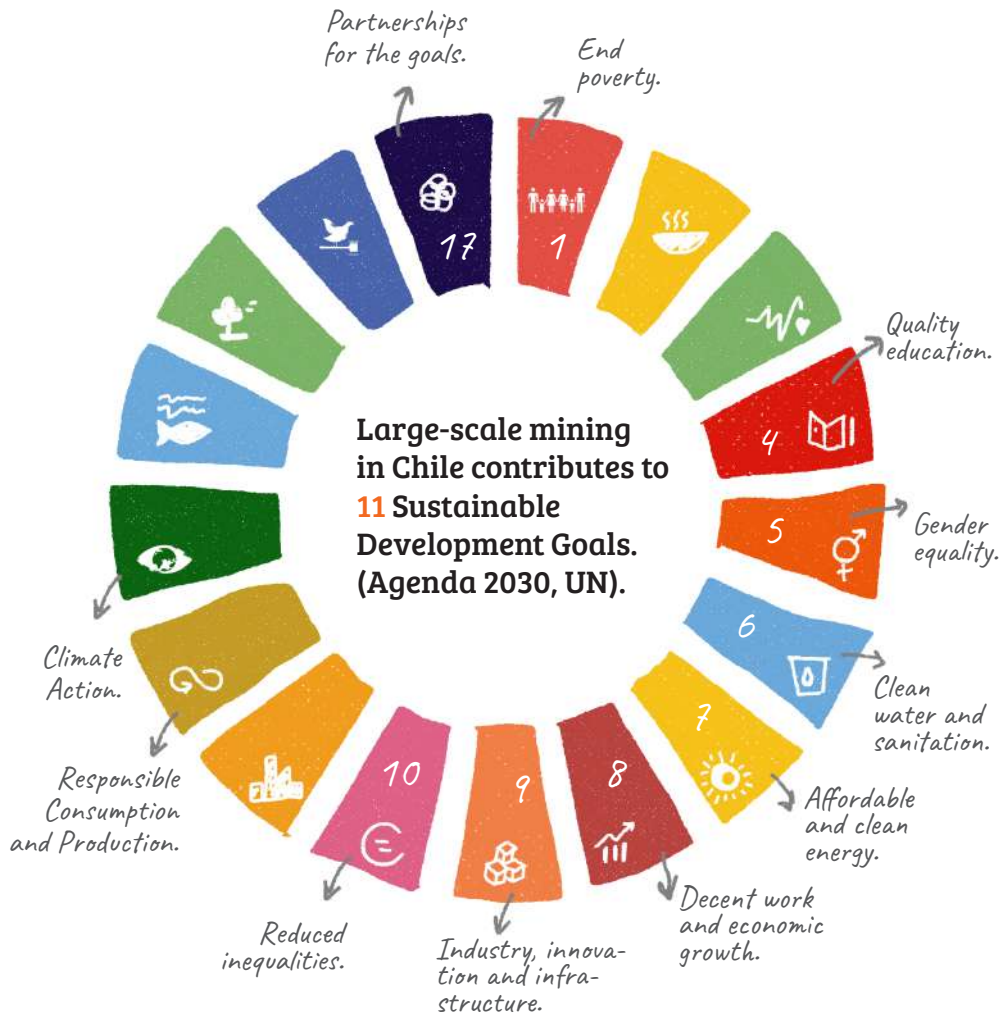


59,381
metric tons of
Molybdenum.

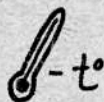
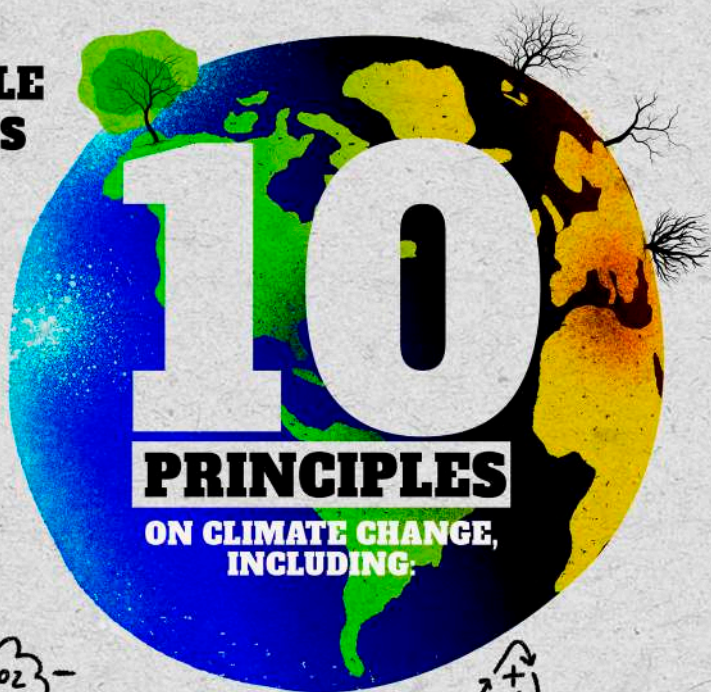


1,309
metric tons of
Silver.

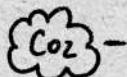




LARGE-SCALE MINING HAS



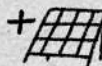
Support global commitments that avoid global temperature increases above the levels recommended by science.



Disseminate the contribution of mining to the reduction of emissions, by producing metals that allow to generate, transmit and store electricity more efficiently.



Promote the use of renewable resources and other low-emission technologies for electricity generation.



Mining accounts for

10

%

**of Chile's
GDP.**



It contributes

52%

of the GDP of the Region of Antofagasta.



MINING CONTRIBUTES
1 OUT OF 15 PESOS
COLLECTED BY THE STATE.

90%

OF MINING INDUSTRY REVENUE GOES TO:





6%

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

Chile is the country that invests the most in mining exploration by land area:

Chile:
USD 762/Km².

Perú:
USD 474/Km².

México:
USD 310/Km².

Australia:
USD 172/Km².

Canadá:
USD 144/Km².



China

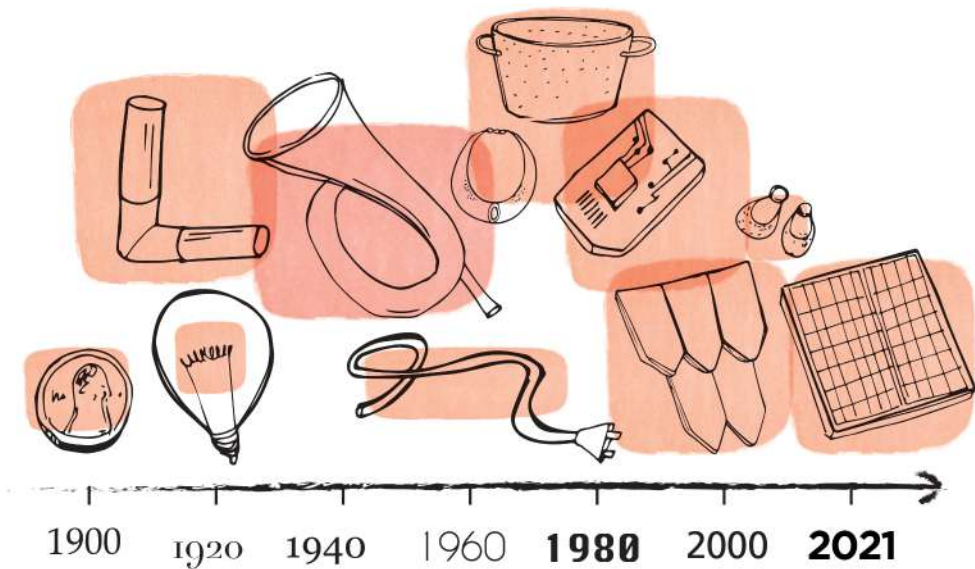
is the biggest consumer of:

54%



29%





2/3 OF THE 550 MILLION METRIC TONS OF COPPER PRODUCED
SINCE 1900 ARE STILL IN PRODUCTIVE USE.

Mining generates

97%
of exports

from the

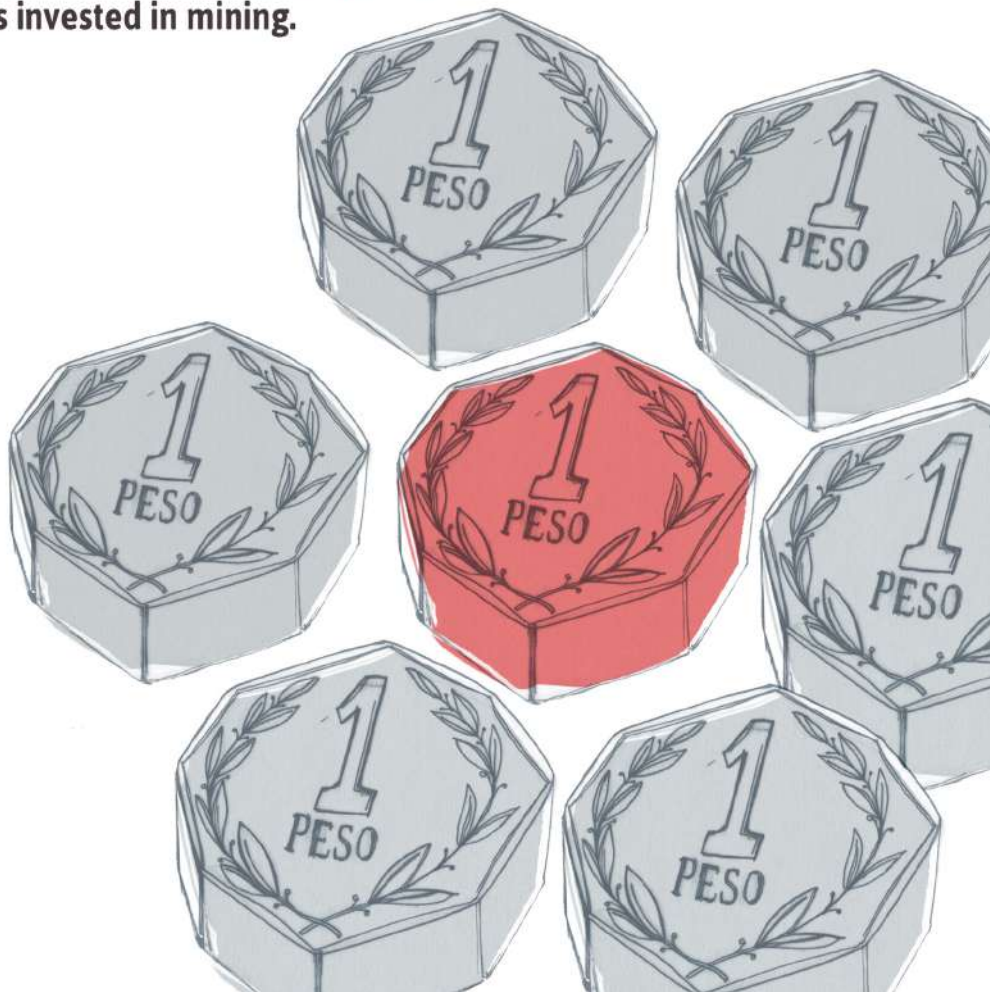
Iquique

*Region
of
Tarapacá.*

*COPPER ACCOUNTS FOR MORE THAN
90% OF THE COUNTRY'S MINING
EXPORTS.*



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



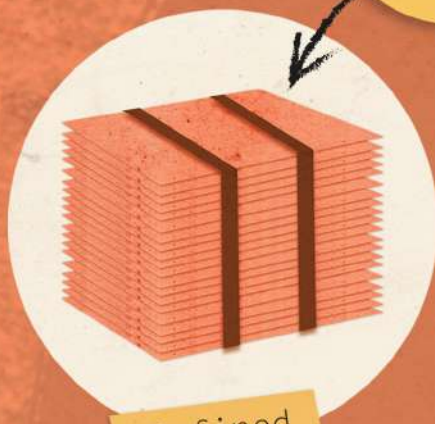


a big challenge

IF ALL MINING PROJECTS IN THE
PIPELINE ARE IMPLEMENTED, THE
ANNUAL PRODUCTION OF COPPER
IN CHILE COULD INCREASE FROM
5.7 MILLION METRIC TONS IN 2020
TO MORE THAN 8 MILLION METRIC
TONS AS OF 2026.

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.

Mining products represent over

54%

of exports.



29

ports handle and
unload mining
products.



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



Chile, Year 2005

Chilean Law

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

To this day, more than USD 9,000 million has
already been raised.



Uses of **copper** worldwide

28%

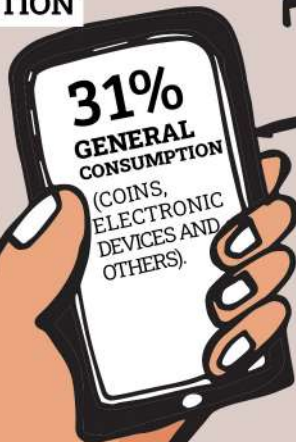
CONSTRUCTION



31%

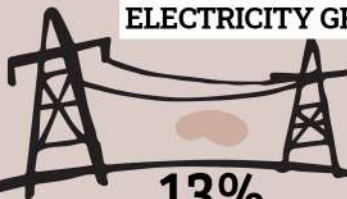
GENERAL
CONSUMPTION

(COINS,
ELECTRONIC
DEVICES AND
OTHERS).



24%

ELECTRICITY GRID



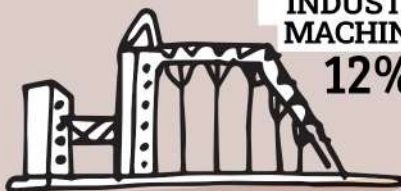
13%

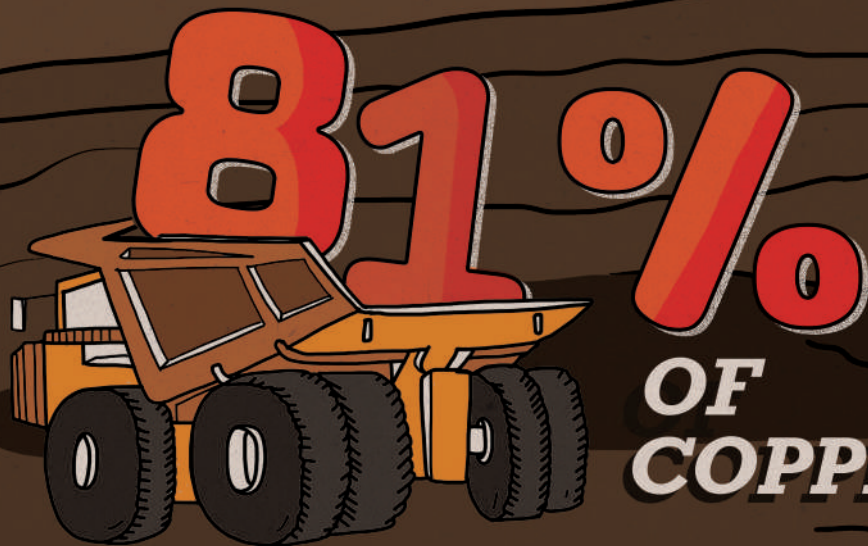
TRANSPORTATION



INDUSTRIAL
MACHINERY

12%





IS EXTRACTED FROM OPEN PIT MINES.

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



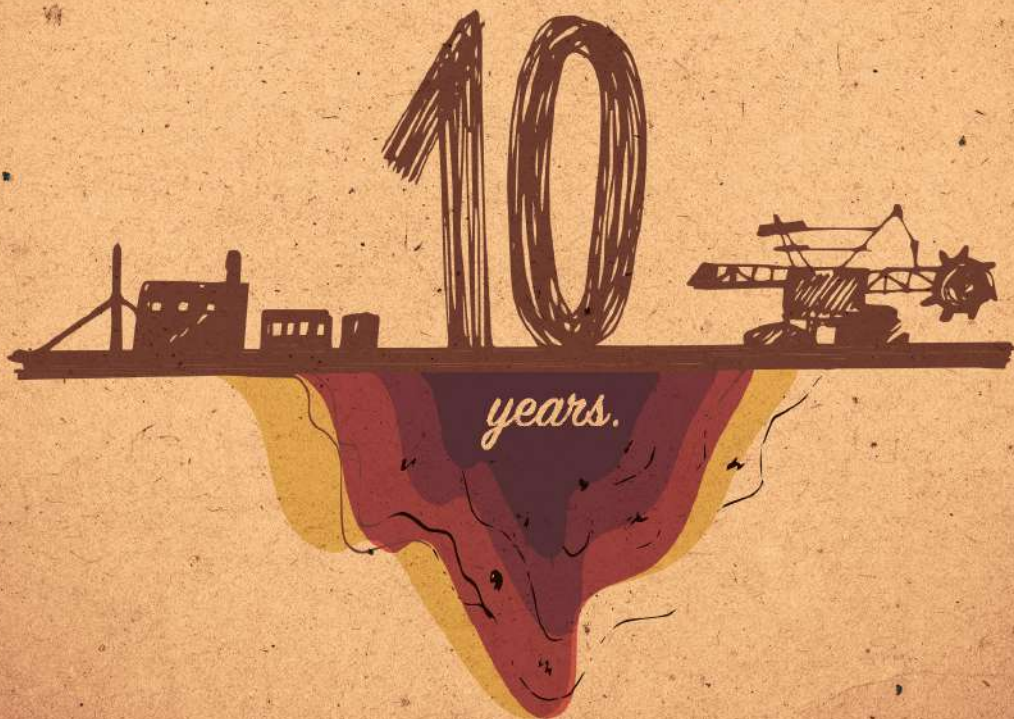
"Gold"

ITS CHEMICAL
SYMBOL
IS



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

The development of a new mining project
can easily take:





THE MINISTRO HALES PROJECT HAD TO PROCESS

645 PERMITS

FOR ITS START UP.

A large-scale

COPPER

MINE PROJECT

HAS AN *average*

lifespan of 20 years and produces

100,000 metric tons annually.



6 of the 10

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



THERE ARE

COPPER
SMELTERS.


Salaries in the mining sector are
70% higher than the country
average.





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 9%
OF CHILE'S
EMPLOYMENT.

A stylized image of the Statue of Liberty, where the statue's form is filled with a black halftone dot pattern. The background is a textured, mottled blue-grey. The statue's torch is raised high, and its face is visible in profile.

Did you know that the Statue
of Liberty is covered with

28,117
kg of copper?



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

1 TO 2

DOLLARS
PER POUND
OF COPPER.



HELMET
WITH
LANTERN



SAFETY
SHOES



SAFETY
GLOVES



SAFETY
GLASSES



RESPIRATOR



HEARING
PROTECTION
DEVICE



SELF
RESCUER



REFLECTIVE
JACKET

Underground
mining requires
**8 elements of
personal
protection:**



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

1.0% v/s 2.2%

(country average).

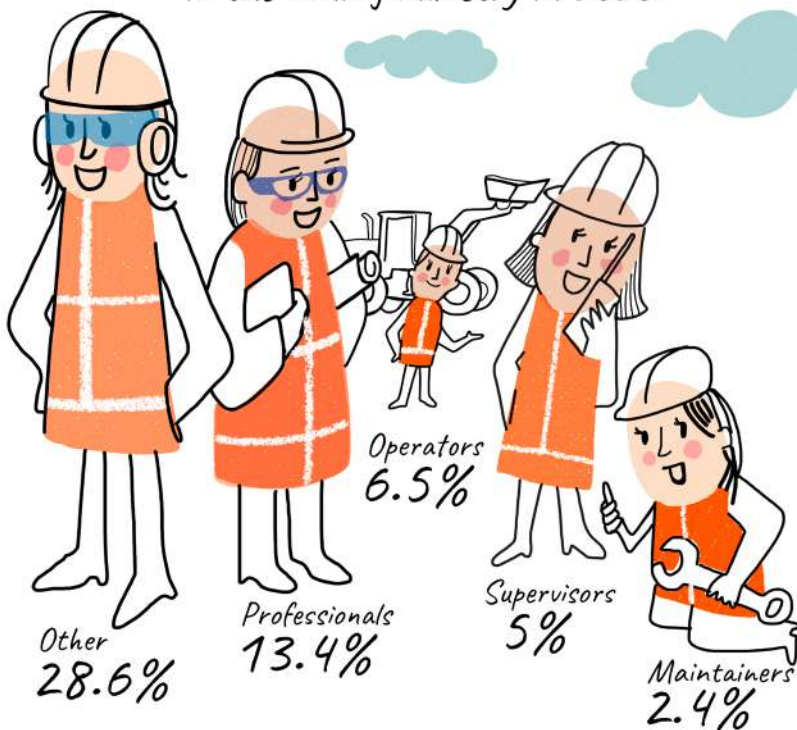
Women's participation
has grown steadily.
Today it reaches

11.8%

Source: Chilean Large-scale Mining
Workforce Report (2021-2030), Mining
Skills Council (CCM).



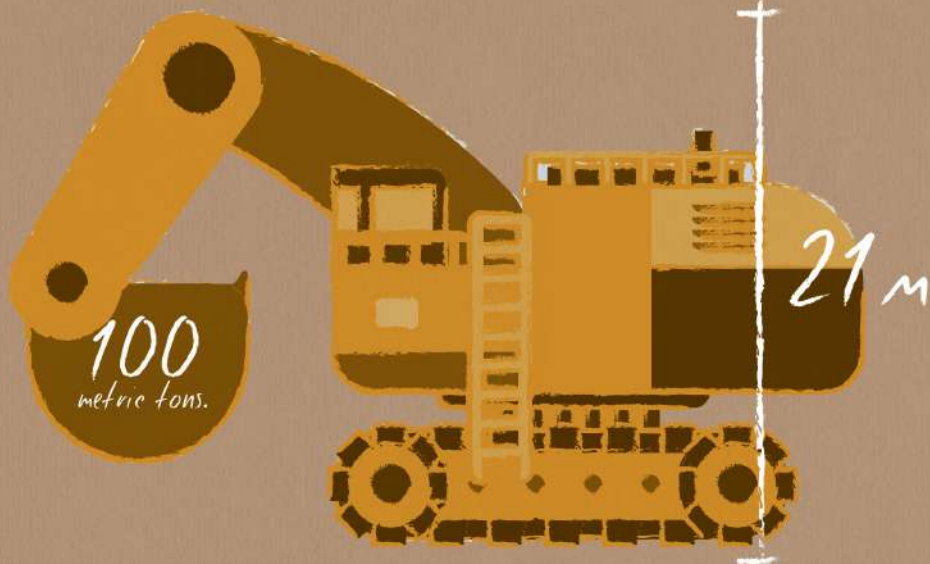
*Female participation
in the mining industry in 2020:*



*Source: Chilean Large-scale Mining Workforce
Report (2021-2030), Mining Skills Council (CCM).*

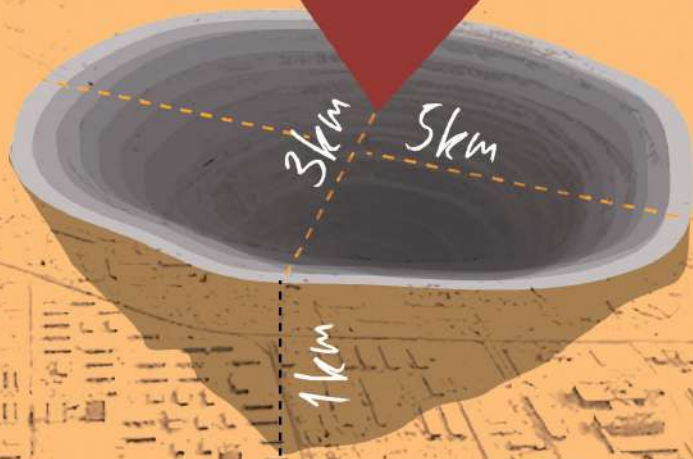
300
metric tons
of cargo





Electromechanical shovel
weighs 1,000 metric tons.

CHUQUICAMATA



IT WAS ONCE THE WORLD LARGEST OPEN PIT MINE.

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.

3,000
KM OF TUNNELS.



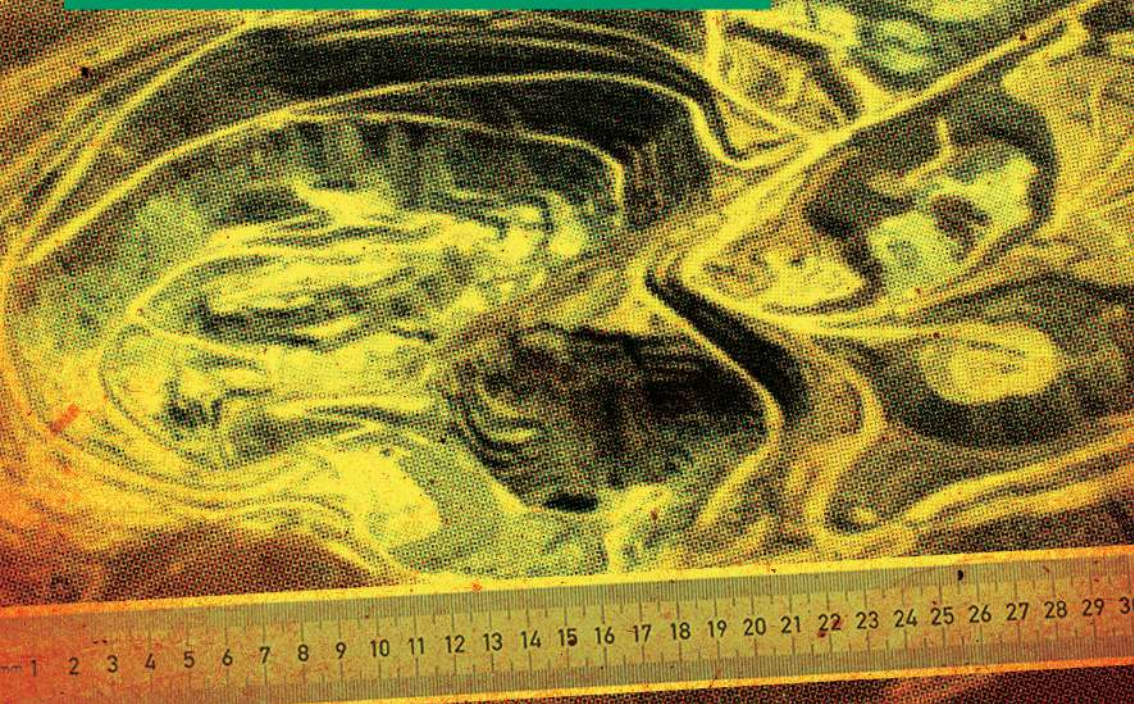


Caserones is the mine located at the highest altitude:
4,600 meters above sea level.

ESCONDIDA MINE IS THE
WORLD'S LARGEST COPPER
PRODUCER IN THE WORLD.

1,100,000

METRIC TONS ANNUALLY.



1/3



of the copper in the world has already been processed.

In

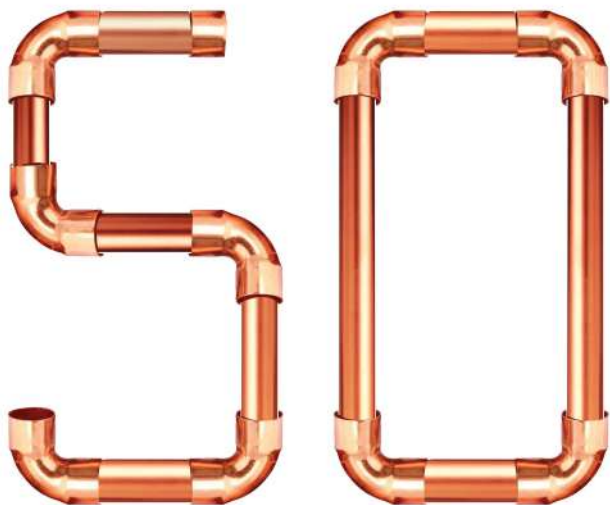
25

years,

we will have to
produce the same
as in the last 100
years due to
increasing
consumption.



*Copper pipes in
buildings can last*



years.

The Ministry of Mining was
founded in 1953.



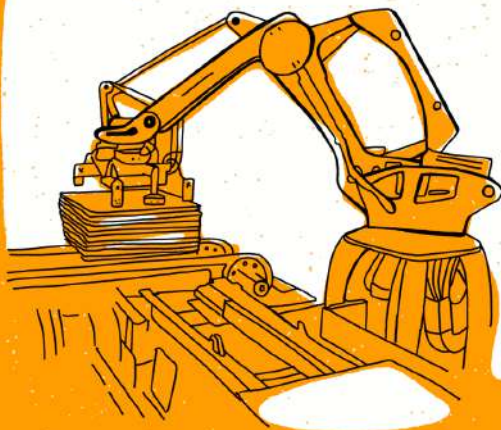


*San Lorenzo, patron saint of mining,
is celebrated on August 10th.*

Automation

Teleoperation

Within the next 7 years, it is expected that 100% of large mining operations will incorporate these technologies, especially in new operations.



Source: Chilean Large-scale Mining Workforce Report (2019-2028), Mining Skills Council (CCM).



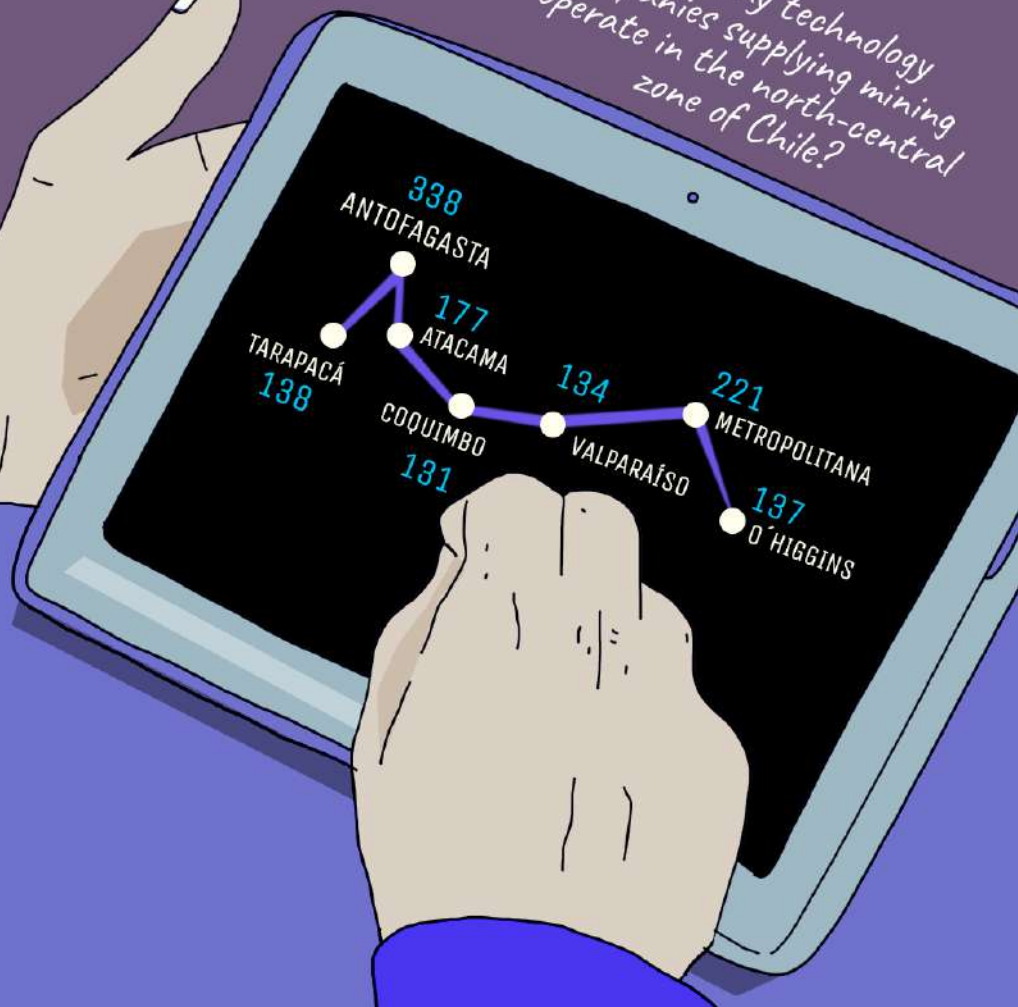
UNION WORKERS:
OVER 70%.



A mining project in Chile would have a tax burden between 39.1% and 44.5%, a similar level to that of benchmark countries.



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





More than

500

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



3,184

CHILEAN COMPANIES

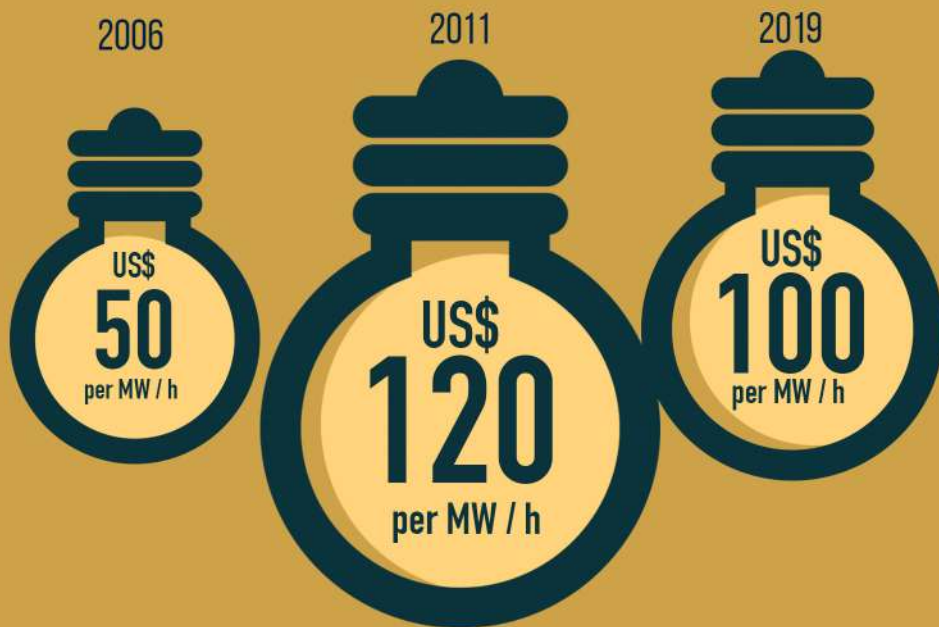
**ARE MINING
SUPPLIERS.**

COPPER IS A
100%
RECYCLABLE
MINERAL .



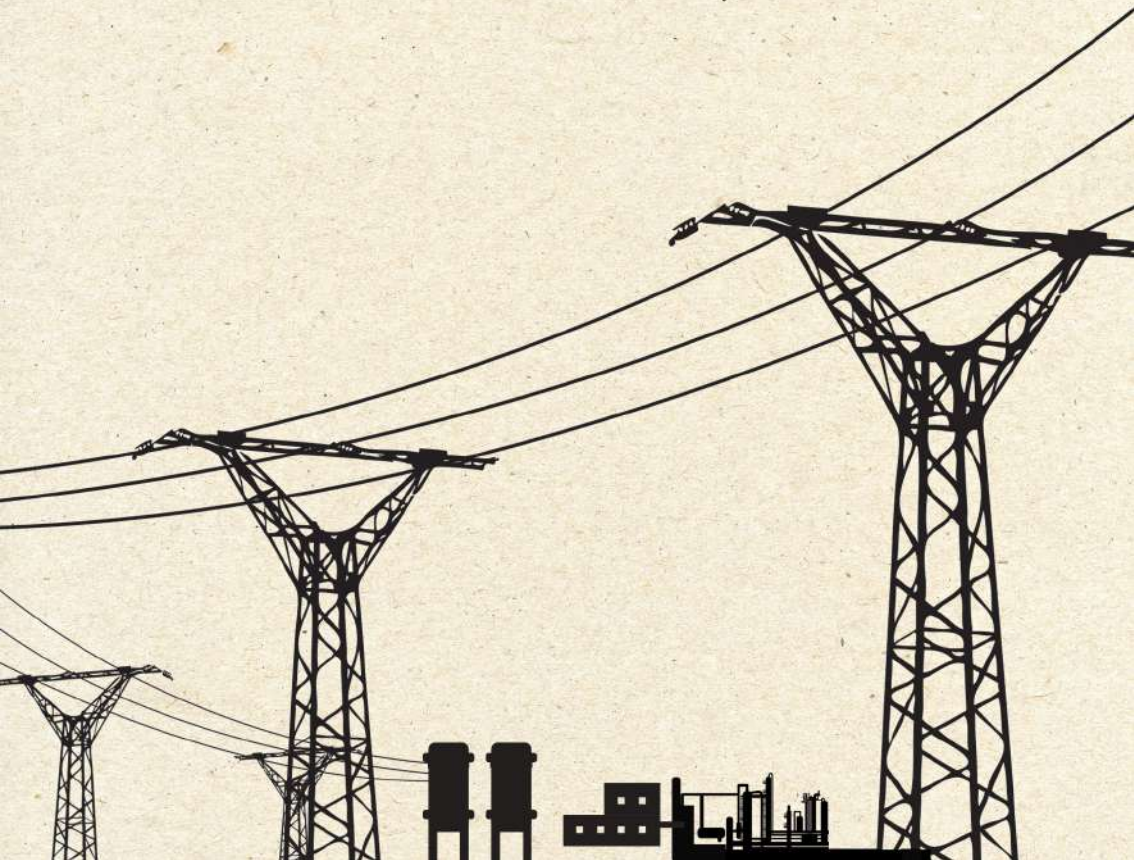
Approximately
9 million
METRIC TONS OF
copper
are recycled
per year

(35% of the global demand for copper is from recycled material).



Electrical energy cost for mining.

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





It is estimated that,
BY 2023

of the mining industry's
electricity supply will come
from clean sources.





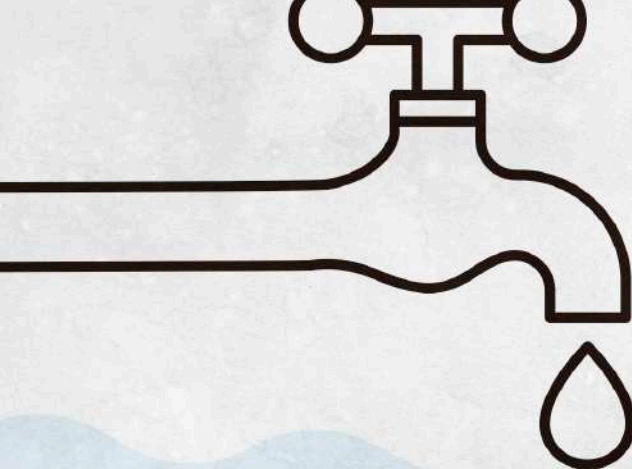
A COPPER
CABLE

CONDUCTS ELECTRICITY

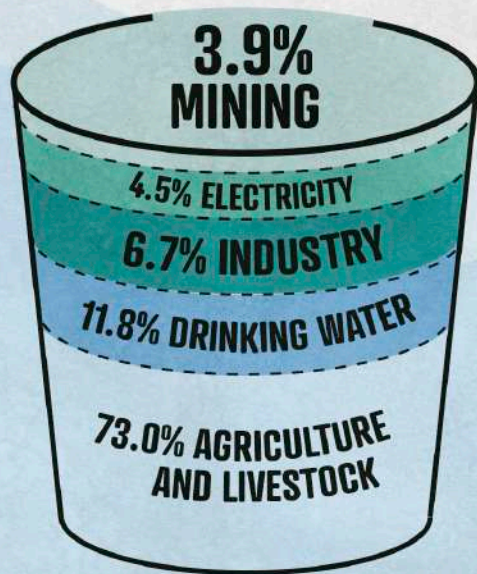
WITH 99.99%
EFFECTIVENESS.



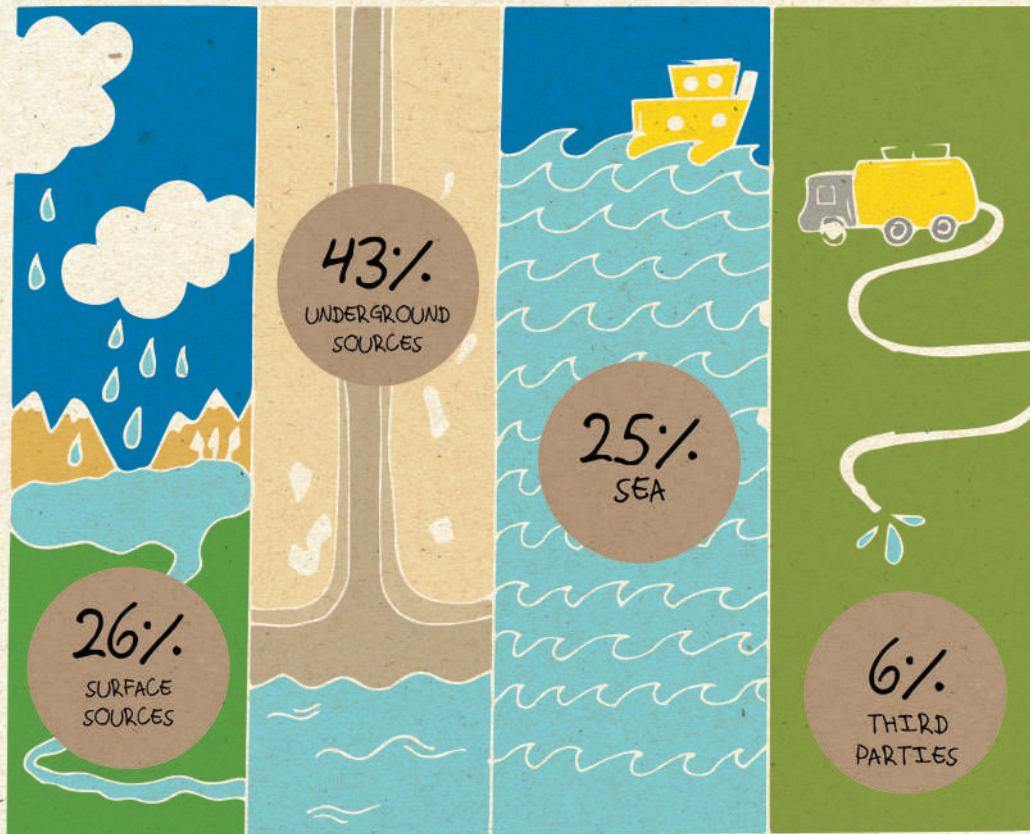
Copper carries up to 8 times more heat
than other materials.

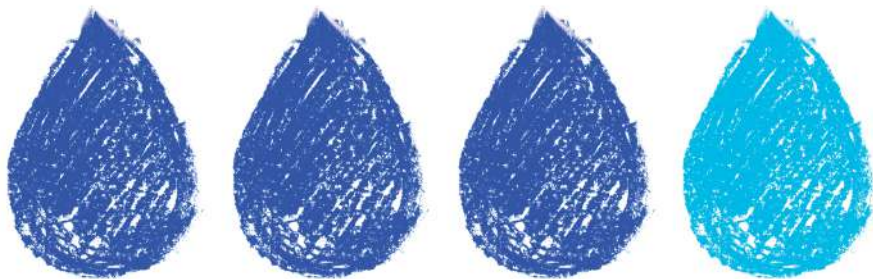


Water consumption
by economic sector



The water supply of mining comes from:



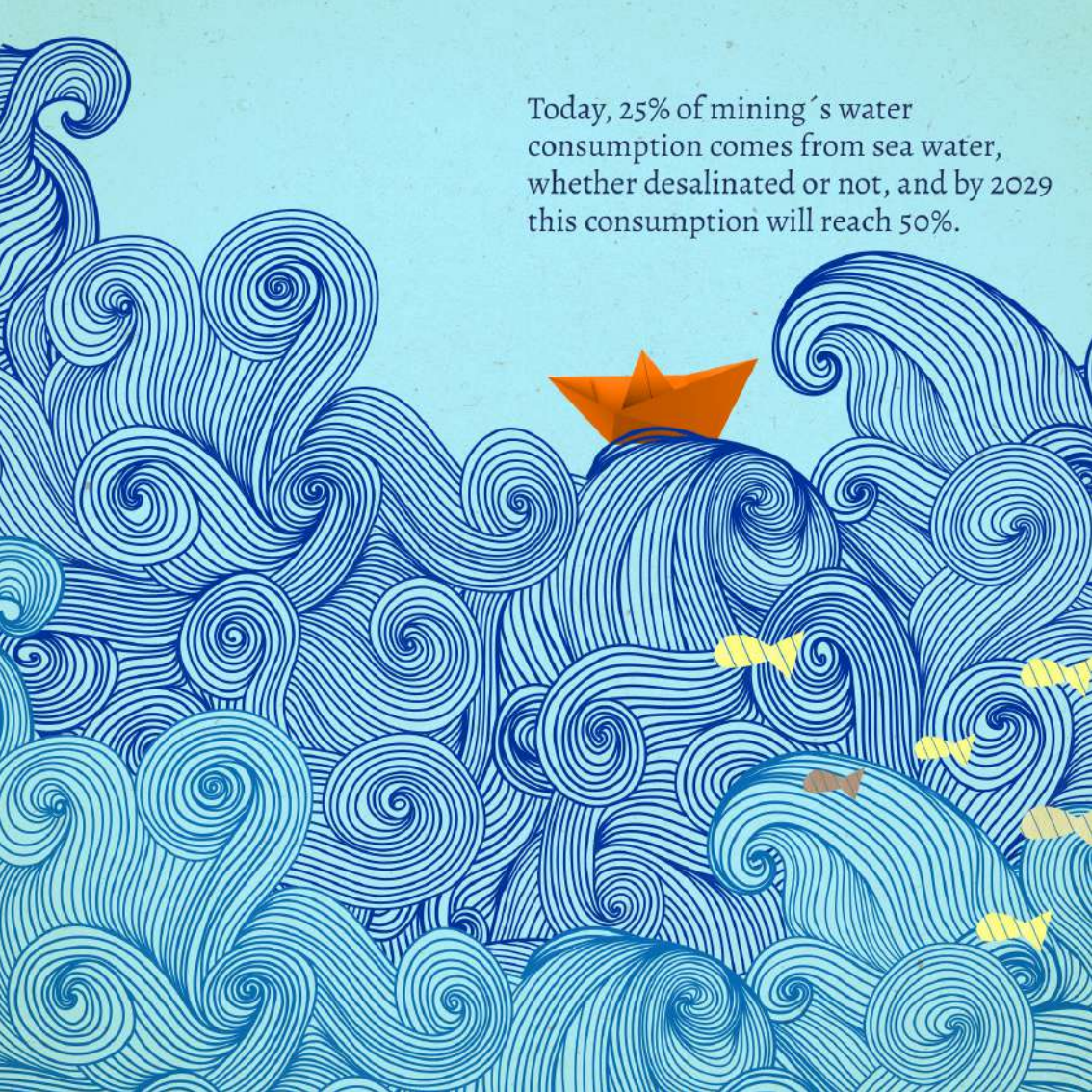


$\frac{1}{4}$
new
water

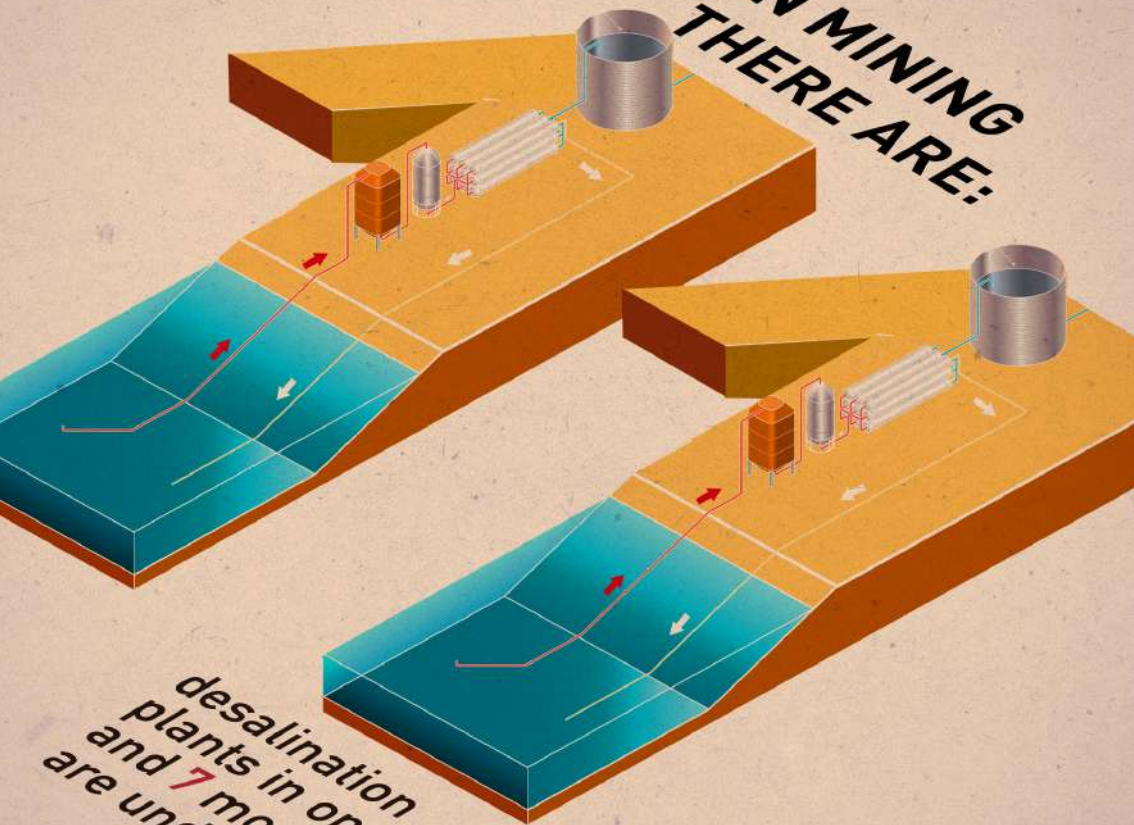
$\frac{3}{4}$

OF THE WATER USED IN
MINING PROCESSES
IS RECIRCULATED WATER.

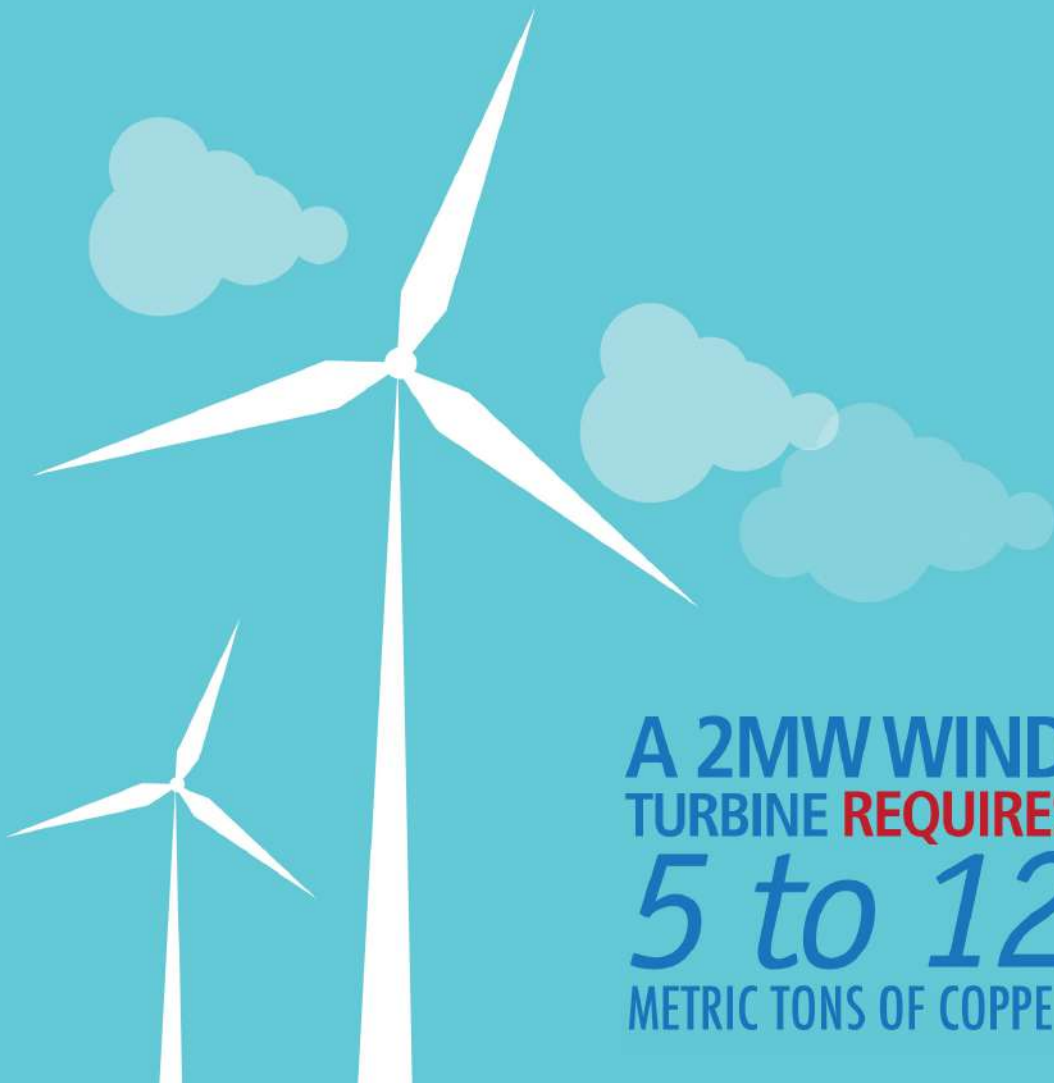
Today, 25% of mining's water consumption comes from sea water, whether desalinated or not, and by 2029 this consumption will reach 50%.



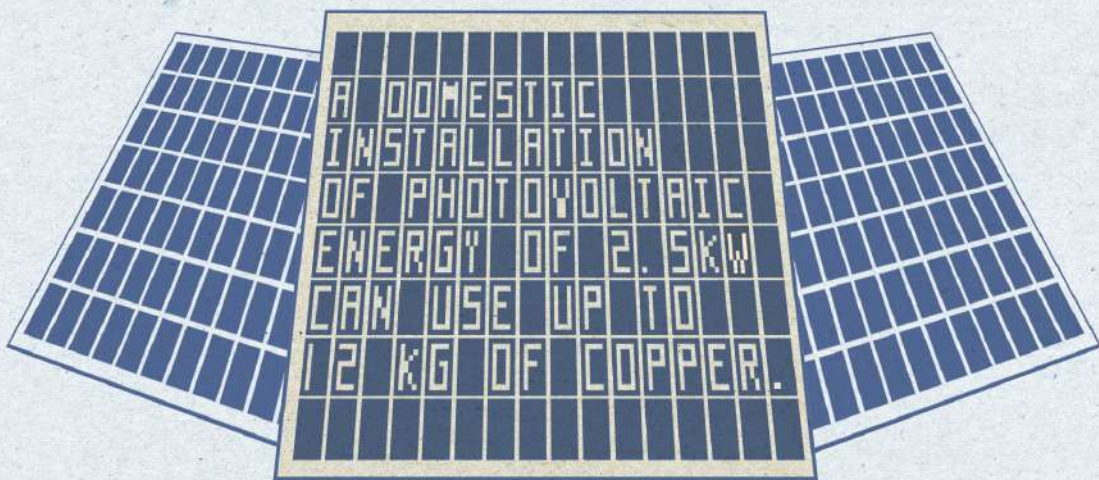
**IN MINING
THERE ARE:**



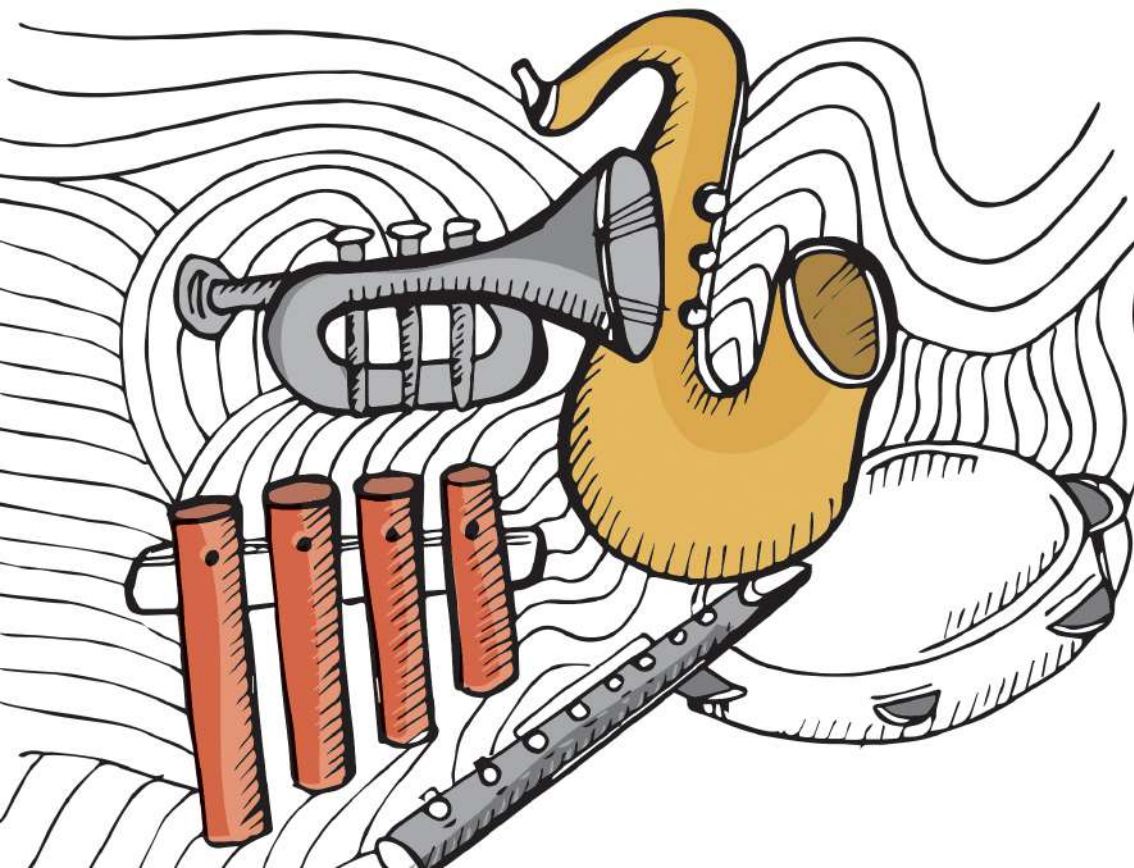
desalination
plants in operation
and 7 more
are under project.



A 2MW WIND
TURBINE **REQUIRES**
5 to 12
METRIC TONS OF COPPER.



Most of the 80 instruments that make up a symphony orchestra use copper, brass and bronze as raw material to be elaborated, offering a great musical resonance.



A modern house has **200 KG**

of
≡

Cu



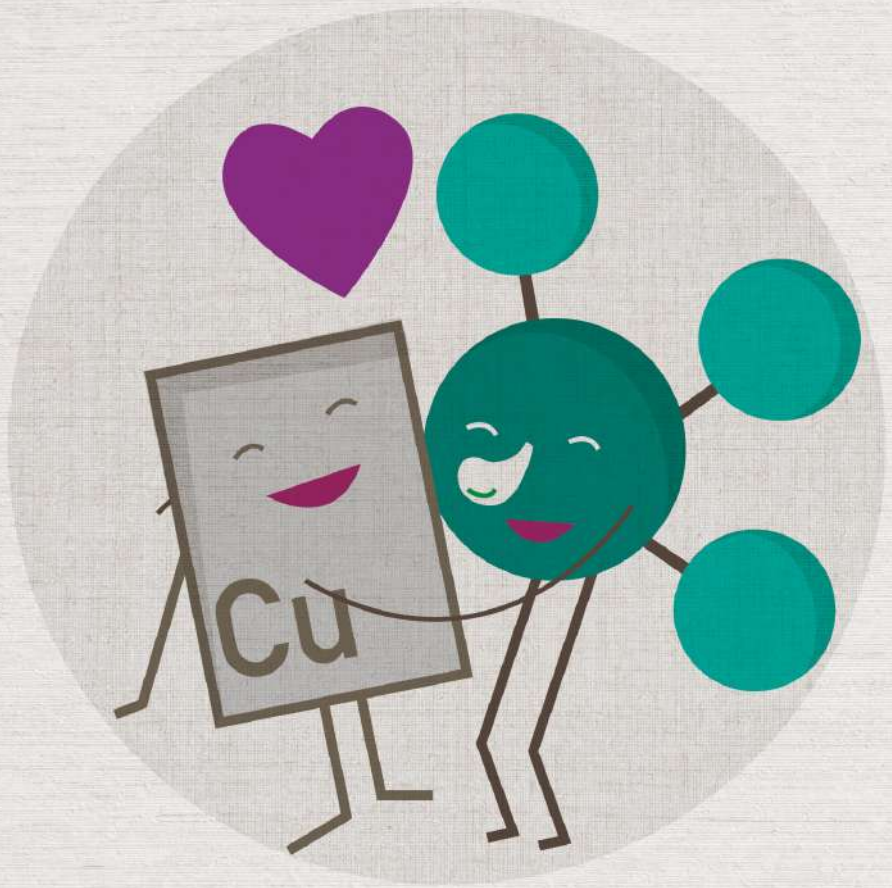
twice as much as 40 years ago. We can find it in our toilets, electrical appliances, telephones, and computers.

Source: Codelco

TO PRODUCE
A MOBILE
PHONE



ARE NEEDED.



There are at least **12** enzymes that need copper to perform their functions in the human body.

According to a study by the New England Journal of Medicine,
**the time that Coronavirus survives on different
surfaces is:**



Stainless steel
and plastic:

2 - 3

days.

Cardboard:

24

hours.

Copper:

4

hours.

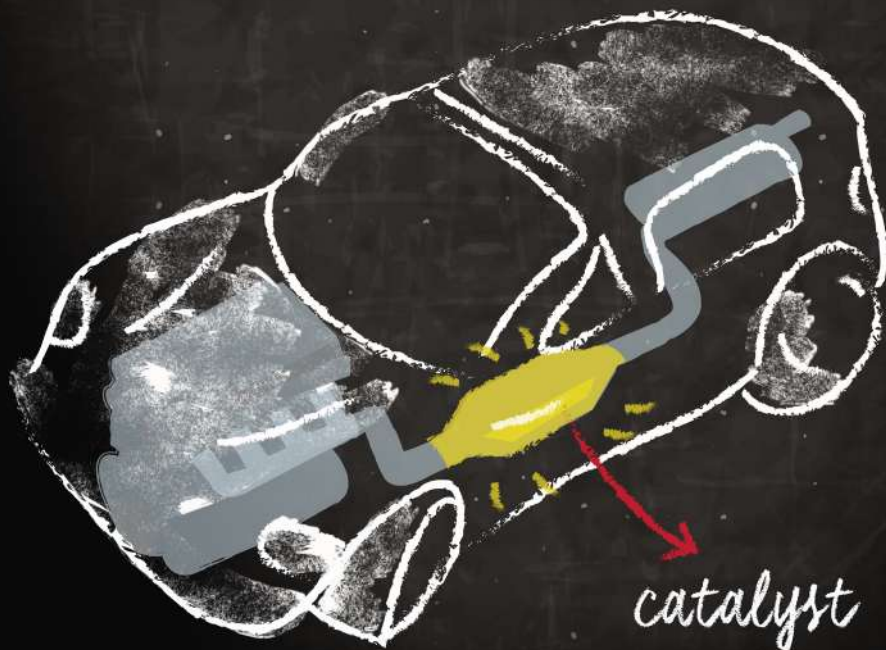
An illustration of a surgical light with five yellow circular lenses mounted on a white arm. A green cone of light projects from the center of the lenses onto a brown surgical table. On the table, within the light's cone, are several surgical instruments: a syringe, a scalpel, a pair of scissors, a pair of forceps, and another pair of scissors. The background is a solid light blue.

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

In Chile **3** hospitals have incorporated copper in their facilities to reduce infections.



The use of gold in catalytic converters helps reduce polluting emissions by 30%.

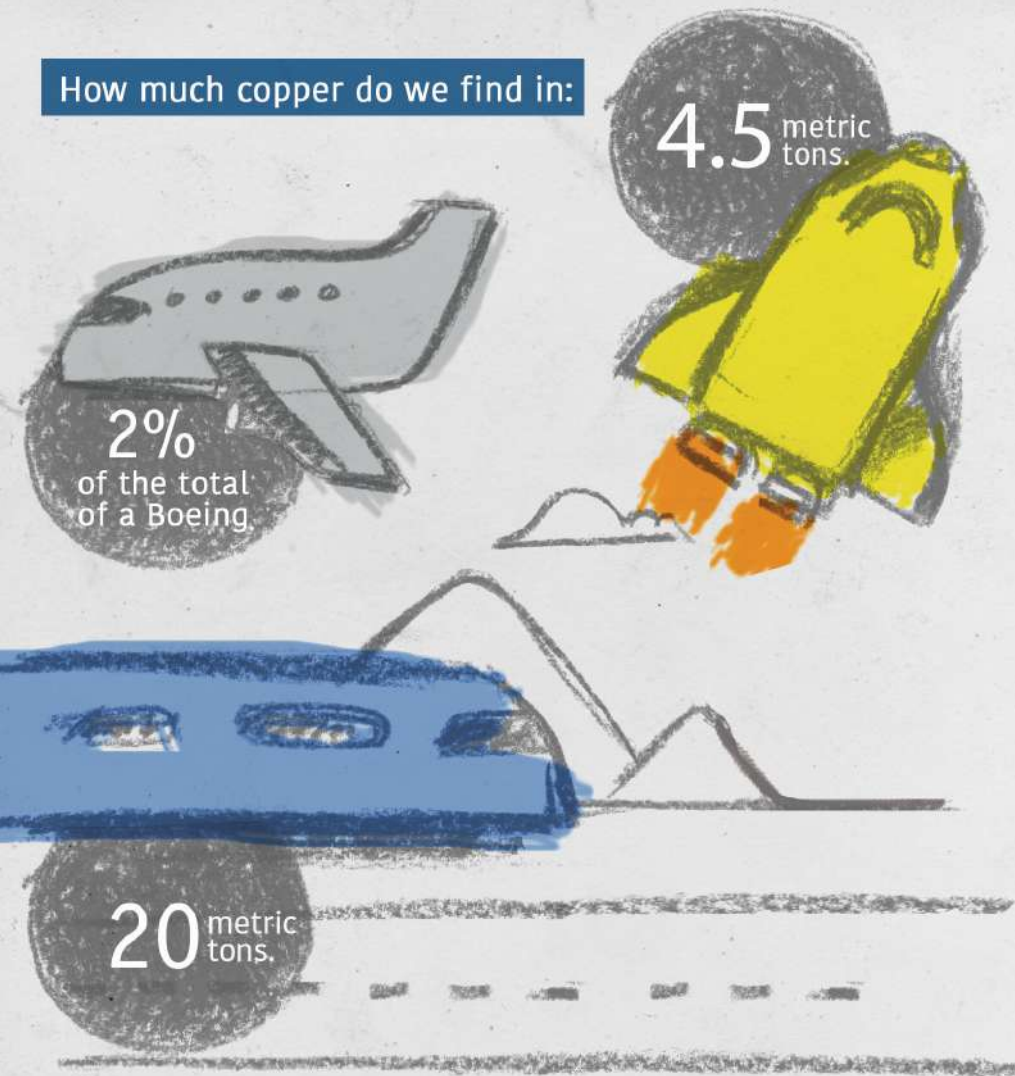


How much copper do we find in:

4.5 metric tons.

2%
of the total
of a Boeing.

20 metric tons.



CONVENTIONAL 
AUTOMOBILE

C H I L E

23

KG OF COPPER

HYBRID
AUTOMOBILE

C H I L E

 40

KG OF COPPER

ELECTRIC
AUTOMOBILE

C H I L E

 83

KG OF COPPER

ELECTRIC 
BUS

C H I L E

369

KG OF COPPER

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
30 hours per year.**



**ABOUT 49%
OF GOLD IS
CONVERTED INTO JEWELLERY.
(THE MOST COMMON USE OF THIS METAL).**



IS CONTAINED IN AN OLYMPIC MEDAL.



The figures in this book were obtained from the most recent information available at the time of its edition (March 2021). 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:



.....

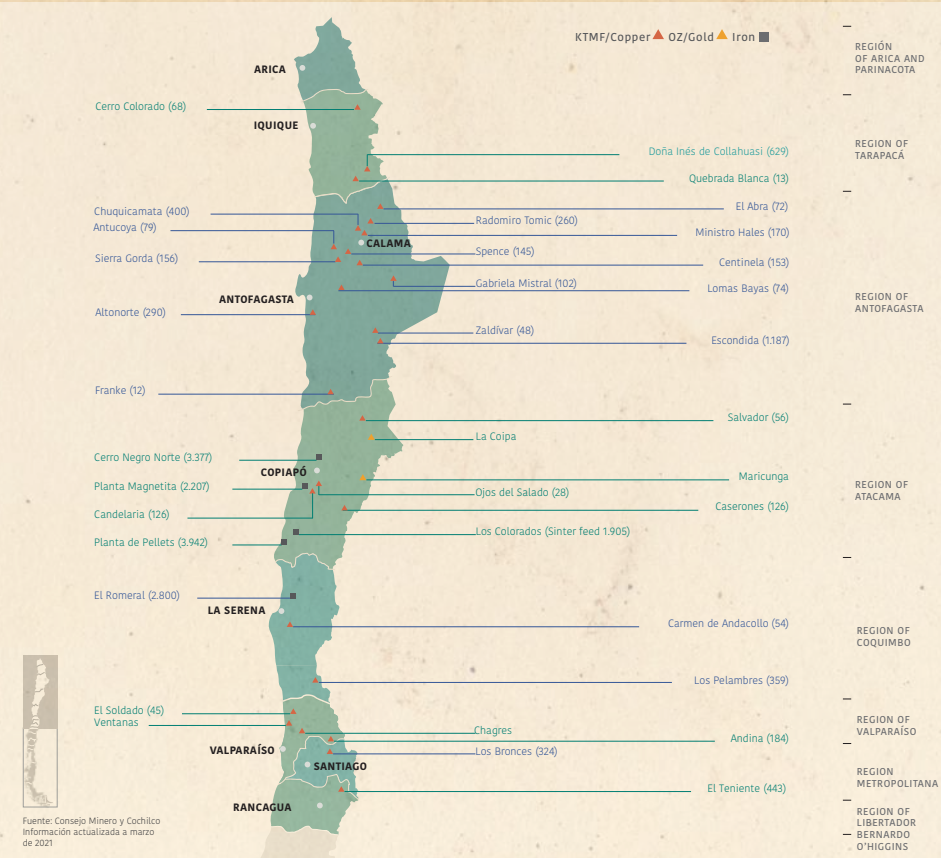
MAP OF LARGE-SCALE MINING IN CHILE

.....



Information to March 2021
Source: Consejo Minero.

LOCATION OF COPPER AND GOLD MINING OPERATIONS



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Edition: Christel Lindhorst &
Josefina Ortiz.

Illustration and design: Cotee Santibáñez
coteesantibanez@gmail.com

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3^{ra} EDITION



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Ministerio de
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Gobierno de Chile



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