BBVA Research

Peru. Situation of the mining sector

February 2019

Creando Oportunidades

Key messages

- **The highlight in the Peruvian mining sector is the beginning of a new investment cycle**, particularly in copper mines. Investment is mainly concentrated in three projects: **Quellaveco** (with a total investment of more than USD 5 billion), **Mina Justa** (USD 1.6 billion), and the **expansion of Toromocho** (USD 1.3 billion).

- The beginning of this new cycle of mining investment takes place **in a context** where **metal prices cover production costs** and where **financing costs are still relatively low.**

- **Mining investment** increased last year to close to USD 5 billion (+26%) and **will continue to increase this year, surpassing USD 6 billion**. This **higher expenditure**, which is equivalent to seven tenths of a percentage point of GDP according to our estimates, will **give important support to the growth of activity in 2019.**

- The **new cycle of mining investment will have a positive impact on the production of different branches of industry and services**. In the past, the production of construction materials, transport materials, and basic chemicals, among others, have moved closely with mining investment.

- **On the production side**, **metal extraction stagnated in 2018** due to temporary supply problems in copper mines (exploitation of low ore grade areas, a geotechnical problem in a large mine) and depletion of some gold units.

- We estimate that **in 2019 mining production will rebound** (expansion of just over 4%) due to the **normalization of copper extraction** and the **operating income of the Toquepala** (copper) and **Marcona** (iron) **expansions**.

Key messages

- **Later on, as a result of the current investment boom, mining production will continue to increase**. In the particular case of **copper**, production will increase **from a current level of MT 2.4 million to more than MT 3 million in 2024.**

- As in the case of investment, the **increase in mining production will have a positive impact on other branches of production**, especially **manufacturing and services.**

- In addition to the projects that are currently under construction, there are **other projects in the pipeline**, i.e., that **are completing the required studies**. The **amount of joint investment in these projects** amounts to **more than USD 10 billion**. There is also another group of projects in the pipeline that have been postponed mainly due to social conflicts.

- With respect to the **competitiveness of the Peruvian mining sector**, it **stands out** for its **geological potential** and **relatively low production costs**. Where there is **room for improvement** is **in the policies that favor investment in the sector**, in particular labor regulation, socio-economic agreements with the communities where the projects are located, and in the safety of these.

- The **Government has been working on policies** to **reduce procedures and simplify processes** in the sector, **improve** the **rules** that regulate the activity, **promote** a **more favorable social environment for investment**, and make **interventions according to the reality of each project**. Peruvian mining competitiveness will be greater as these policies materialize.

Key messages

- Finally, **on the side of metal prices**, these **fell in 2018**, including copper, **in an environment of greater uncertainty about global growth**. This increased uncertainty reflected the escalation of trade tensions, particularly between the US and China; more pronounced signs of global growth moderation; and, in that context, the continuation of monetary tightening in the US.

- **However, so far in 2019, the price outlook has improved**: the US Federal Reserve has adopted a more cautious monetary tightening tone and there are signs of progress in US-China trade negotiations.

- The **elements that in the short term will affect the price of copper in our base scenario** are the **moderation of China's growth** (which demands around 50% of copper production worldwide), the **proximity of the end of monetary tightening in the U.S.**, **concerns about the slowdown in global growth that will dissipate** (especially in the second half of the year), **trade tensions that will no longer escalate**, **supply problems in some large mines**, and **inventories that are currently at relatively low levels**. In the **balance of these elements**, we anticipate that the **average annual copper price will be between USD 2.80 and USD 2.85 per pound in 2019** (USD 2.96 per pound in 2018). With these prices, the Peruvian mines currently under construction are profitable.

- **Later on**, the price of copper will find **support in the growing demand of industries such as that of electric vehicles.**

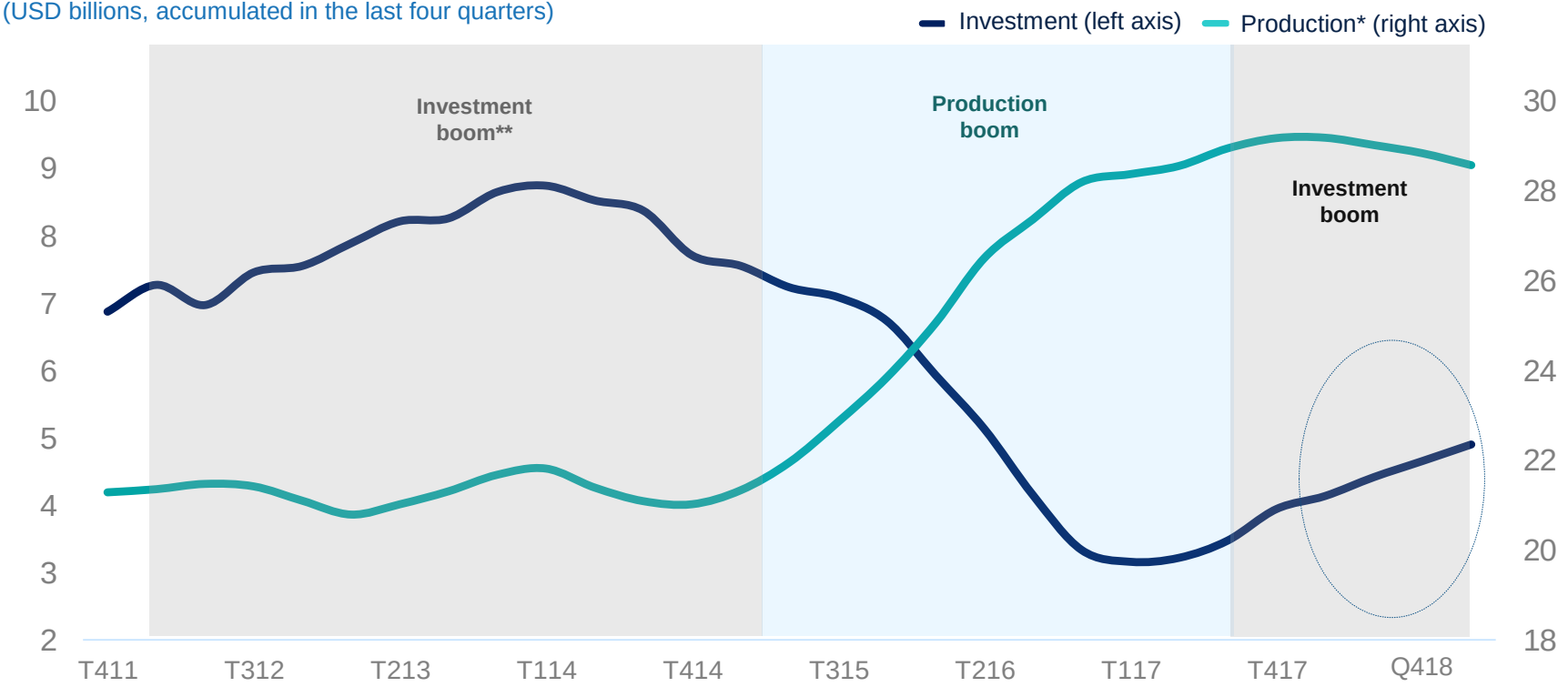
01

Recent developments and prospects

The highlight in the Peruvian mining sector is the beginning of a new investment cycle, particularly in copper mines...

Cycle of metallic mining activity: investment and production

(USD billions, accumulated in the last four quarters)



* Production valued at the average metal price between 3Q 2011 and 4Q 2018

** Las Bambas (USD 10 billion), Cerro Verde expansion (USD 4.6 billion), Toromocho (USD 3.5 billion), Constancia (USD 1.8 billion), and Toquepala expansion (USD 1.2 billion).

Source: MINEM, BCRP, and BBVA Research

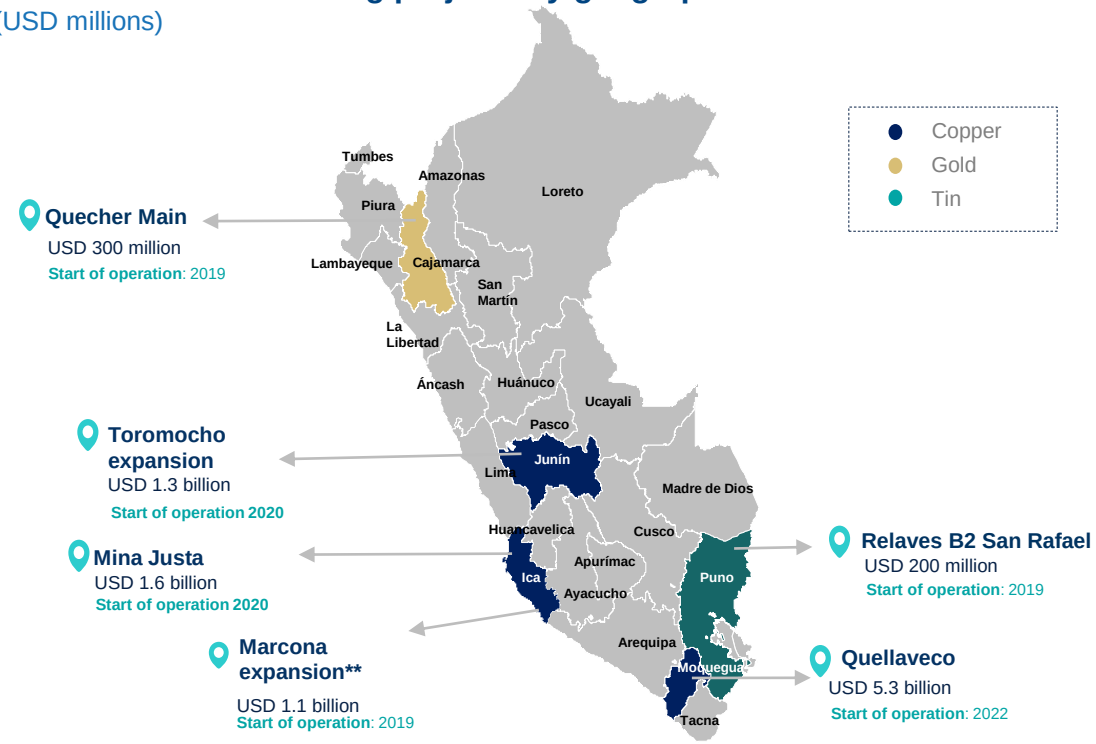
... investment that is concentrated mainly in the central and southern areas of the country...

USD **9.8** billion

84% Copper

Investment in new mining projects by geographical area*

(USD millions)

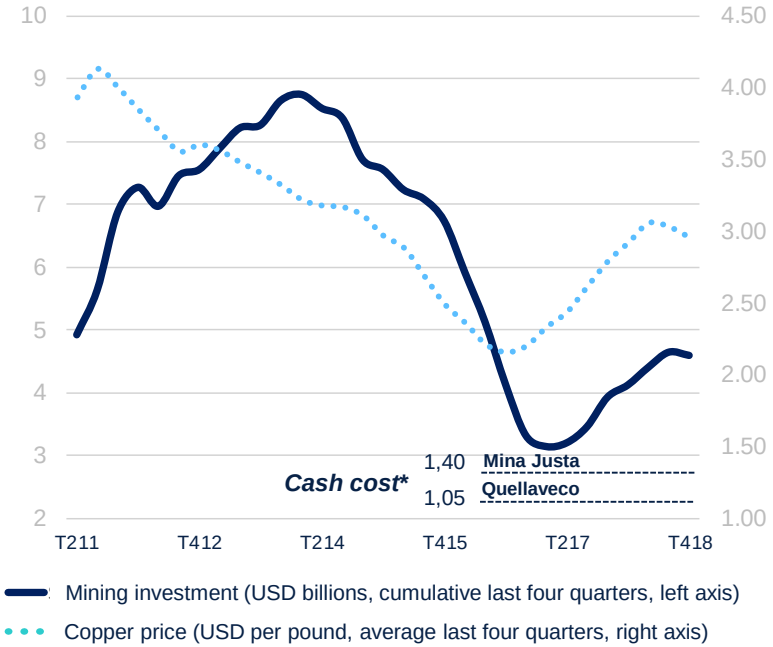


*For more details, see appendix 1.
**Iron

Source: MINEM, BCRP, and BBVA Research

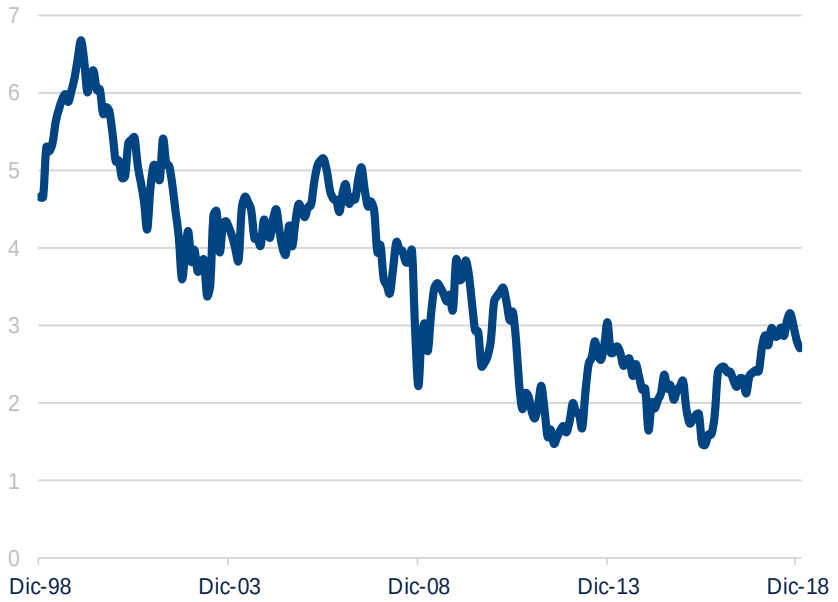
...and which relies on (i) metal prices covering production costs and (ii) still relatively low financing costs.

Mining investment and copper price



10-Year U.S. Treasury Bond Yield

(%)

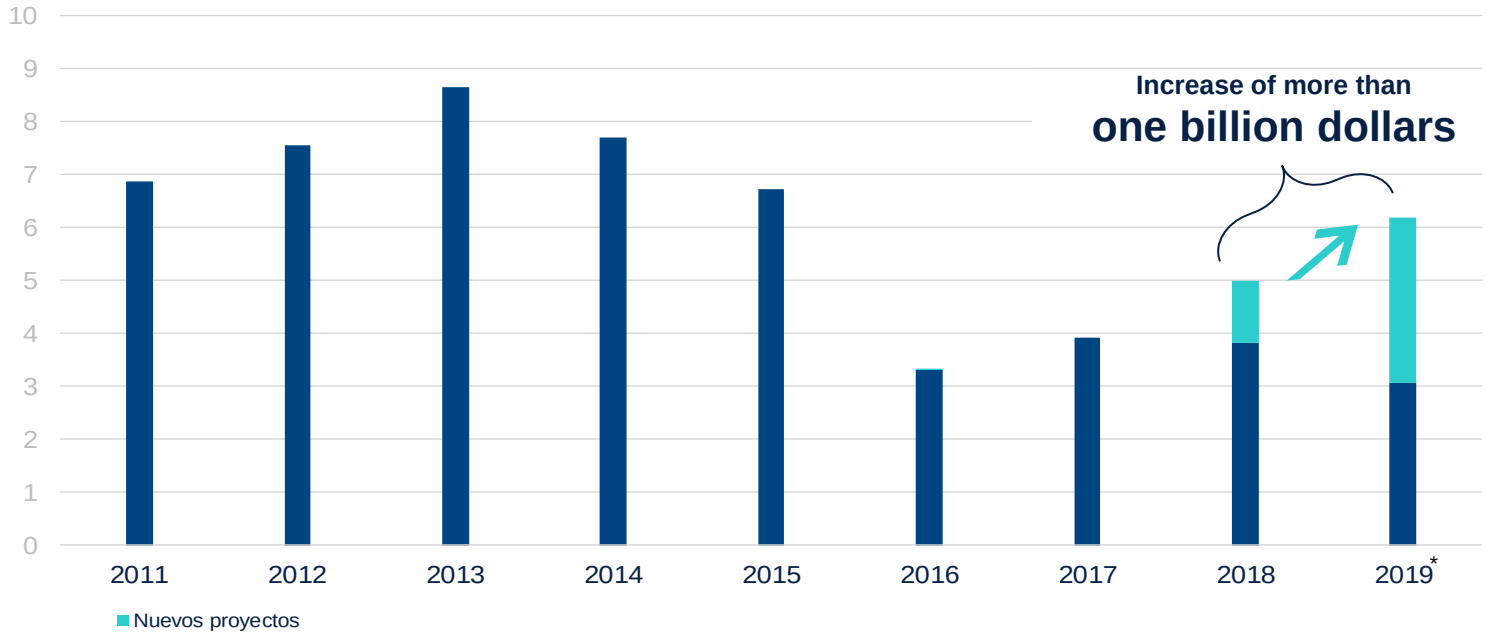


**Cash cost* includes extraction cost, crushing, concentration, administrative costs, energy, fuel and freight. It does not consider financial expenses.*

Source: MINEM, Bloomberg, press releases and BBVA Research

In this context, mining investment increased to around USD 5 billion last year and will continue to increase in 2019...

Mining investment
(USD billions)

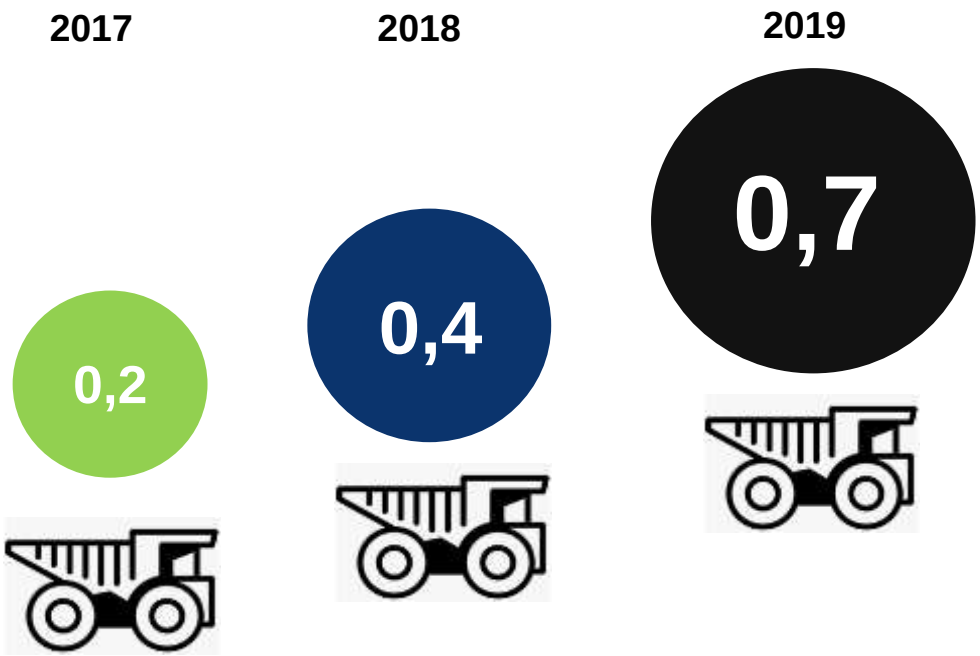


*Projection

Source: MINEM and BBVA Research

The additional mining investment spending that we estimate for 2019 will give important support to the Peruvian GDP growth.

Increase in mining investment
(equivalent in percentage points of GDP)



* Figure for 2019 is projected

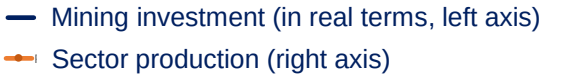
Source: MINEM, BCRP, and BBVA Research

In the past, fluctuations in mining investment spending have had an impact on production in different economic activities.

There is an interesting correlation between mining investment expenditure and industries such as that of construction materials, chemicals or transport materials.

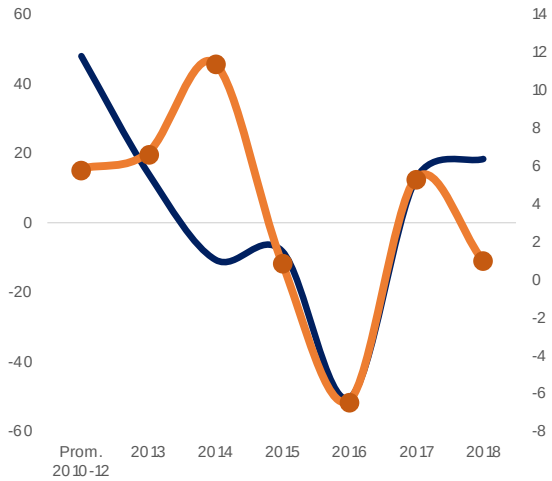
Mining investment and production in selected economic activities*

(YoY % chge.)



Production of transport materials

Production of basic chemicals



Production of materials for construction

* A causality analysis confirms the positive relationship between mining investment and production in the sectors shown in the graphs.

Source: MINEM, INEI, and BBVA Research

In this new cycle of mining investment, these economic activities will once again be favored.

Mining investment in...

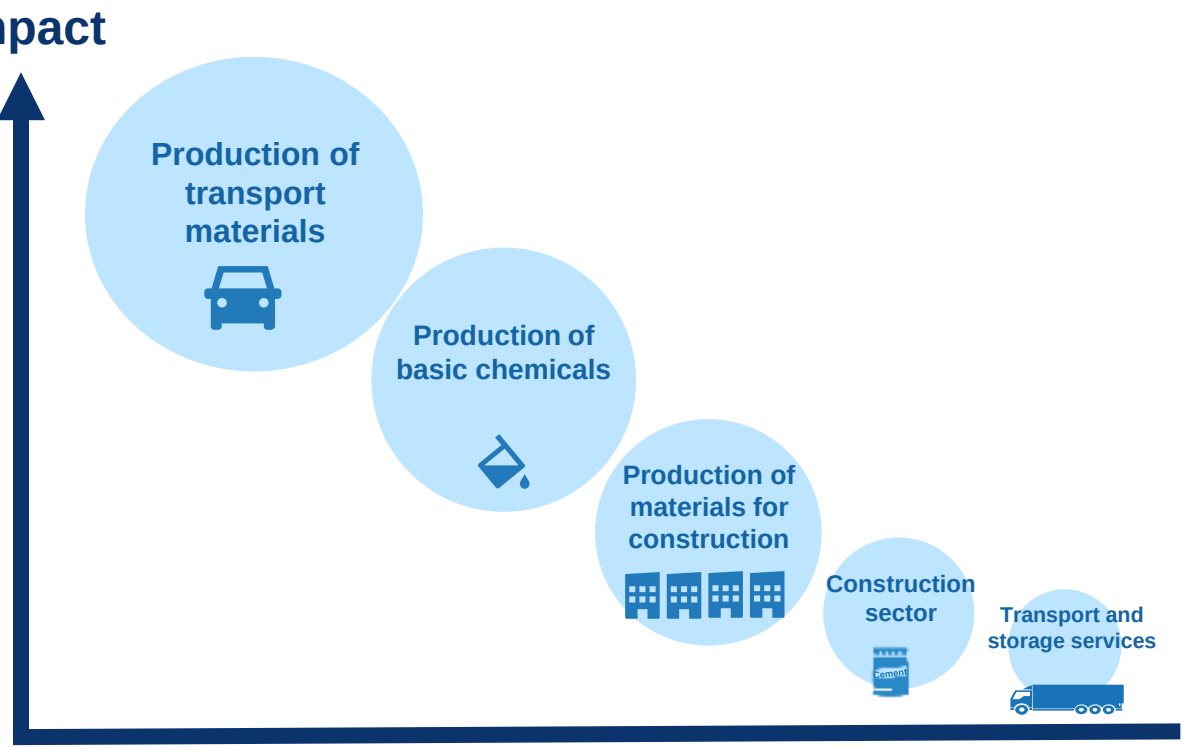
Exploration

+

Infrastructure

+

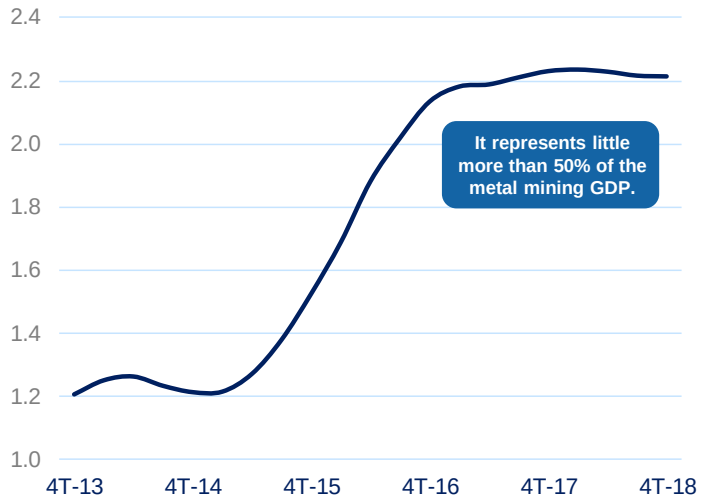
Equipment



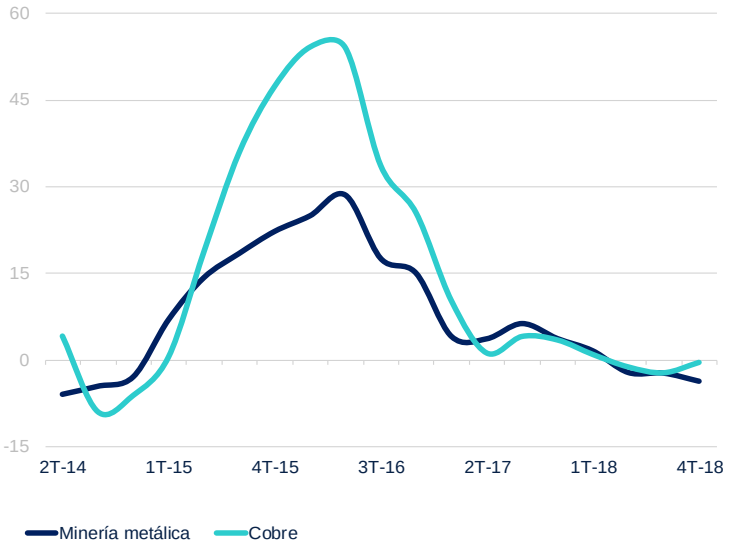
Source: BBVA Research

On the production side, metal extraction stagnated in 2018.

Copper production
(MT millions, accumulated in the last four quarters)



Metal and copper mining production
(YoY % chge.)



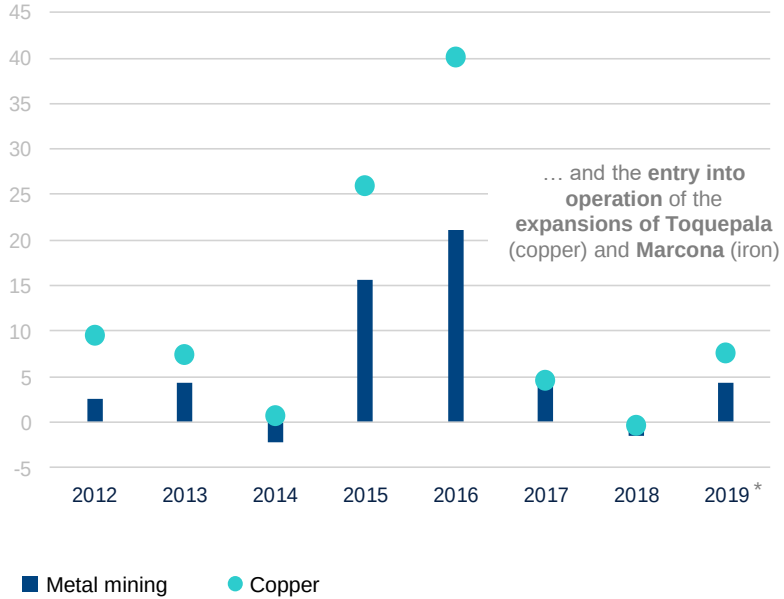
- The **boom in metal mining** production **dissipated in 2017** when the new copper mines reached full operational capacity*.
- In **2018** there were **temporary supply problems in copper mines** (exploitation of areas with low ore grade, a geotechnical problem in a large mine) and depletion of some gold mines.

*For more details, see appendix 3.

Source: MINEM, BCRP, and BBVA Research

We estimate that in 2019 mining production will expand again due to the normalization of copper extraction...

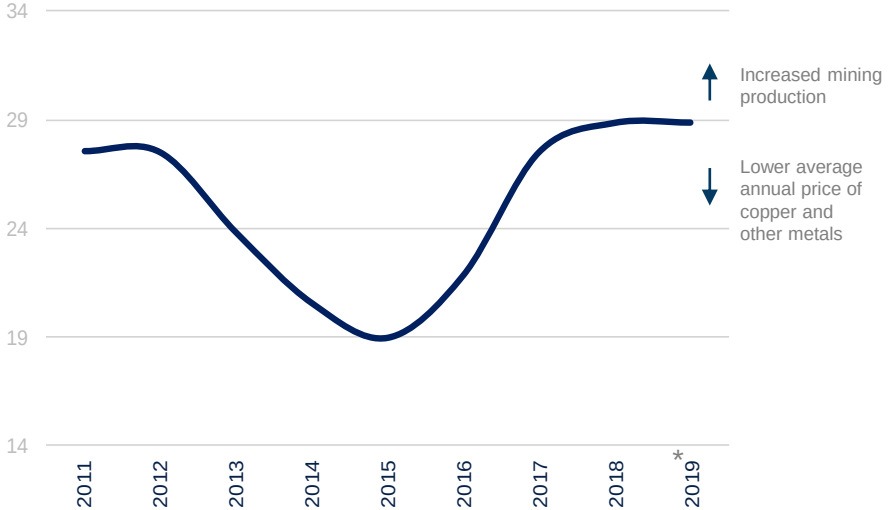
Metal and copper mining production
(YoY % chge.)



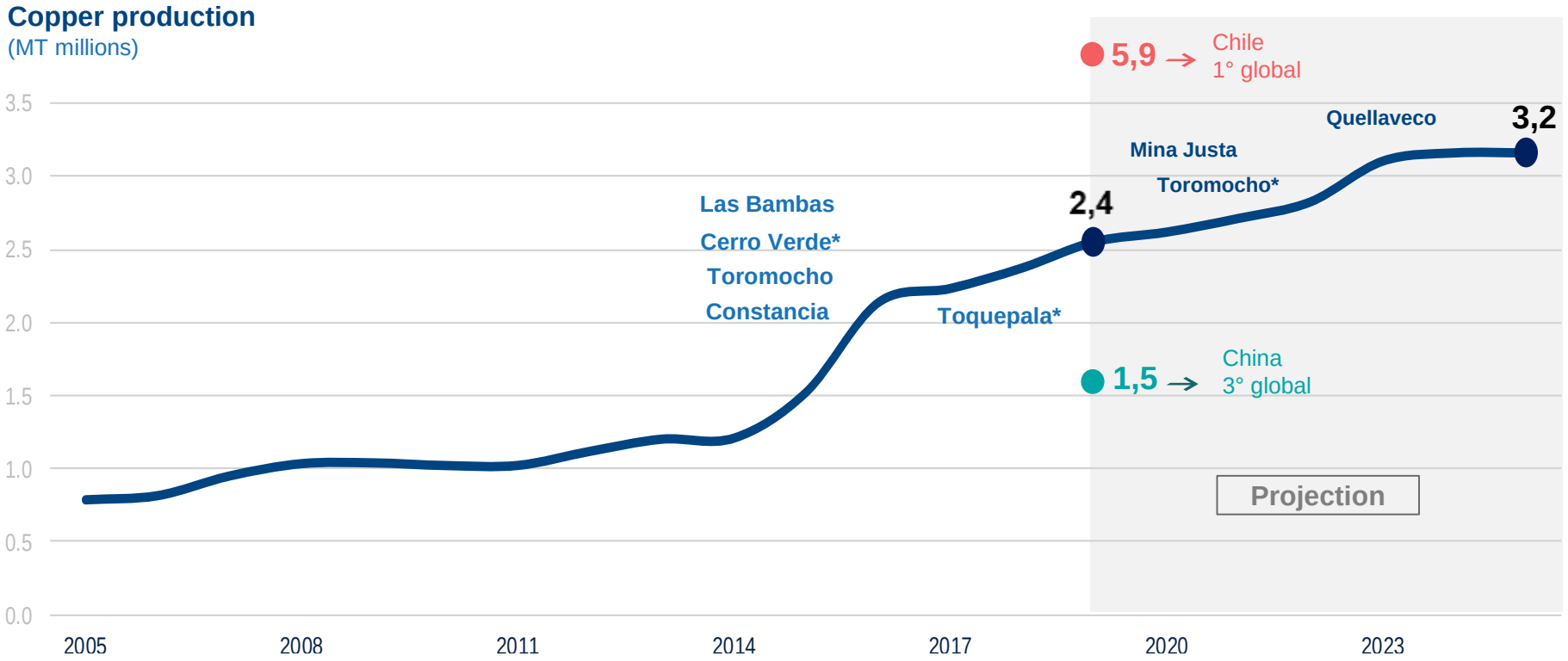
* Projection

Source: BCRP and BBVA Research

Mining exports
(USD billions)



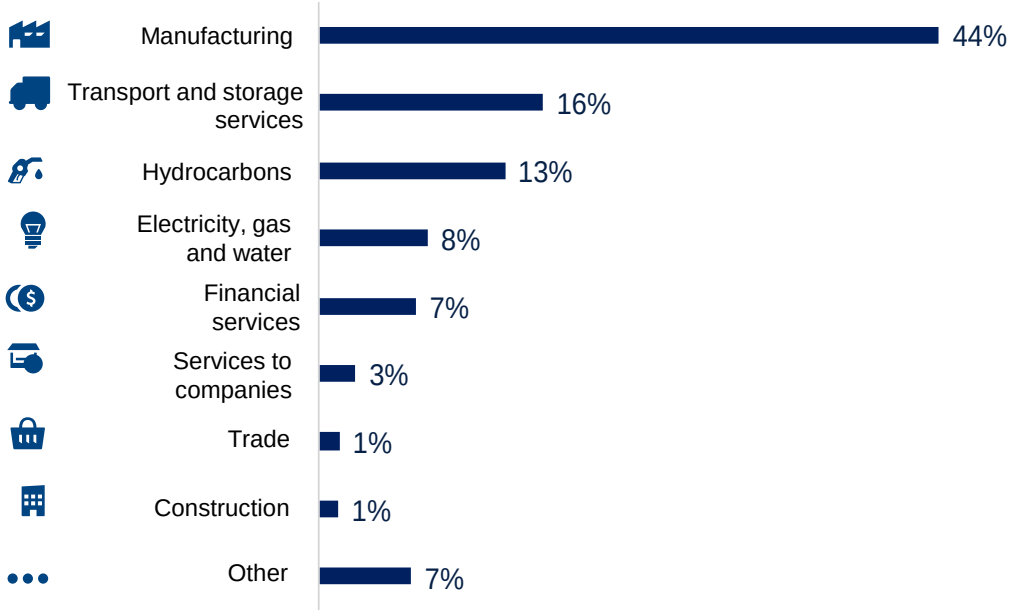
Later on, as a result of the current investment boom, mining production -and copper in particular- will continue to increase.



* Expansion of the mine. For the production of Chile and China, the Cochilco estimate for 2018 is considered.
Source: MINEM, BCRP, COCHILCO, and BBVA Research

And as in the case of investment, the increase in mining production will have a positive impact on other branches of production.

Mining production: demand for goods and services from other productive sectors (% of total mining production demand from other sectors)



Source: 2007 Input-output table, IPE: “El Valor Agregado de la Minería en el Perú” (The Added Value of Mining in Peru), and BBVA Research

The extraction of minerals demands goods and services from other economic sectors, which in turn require goods and services from other productive activities.

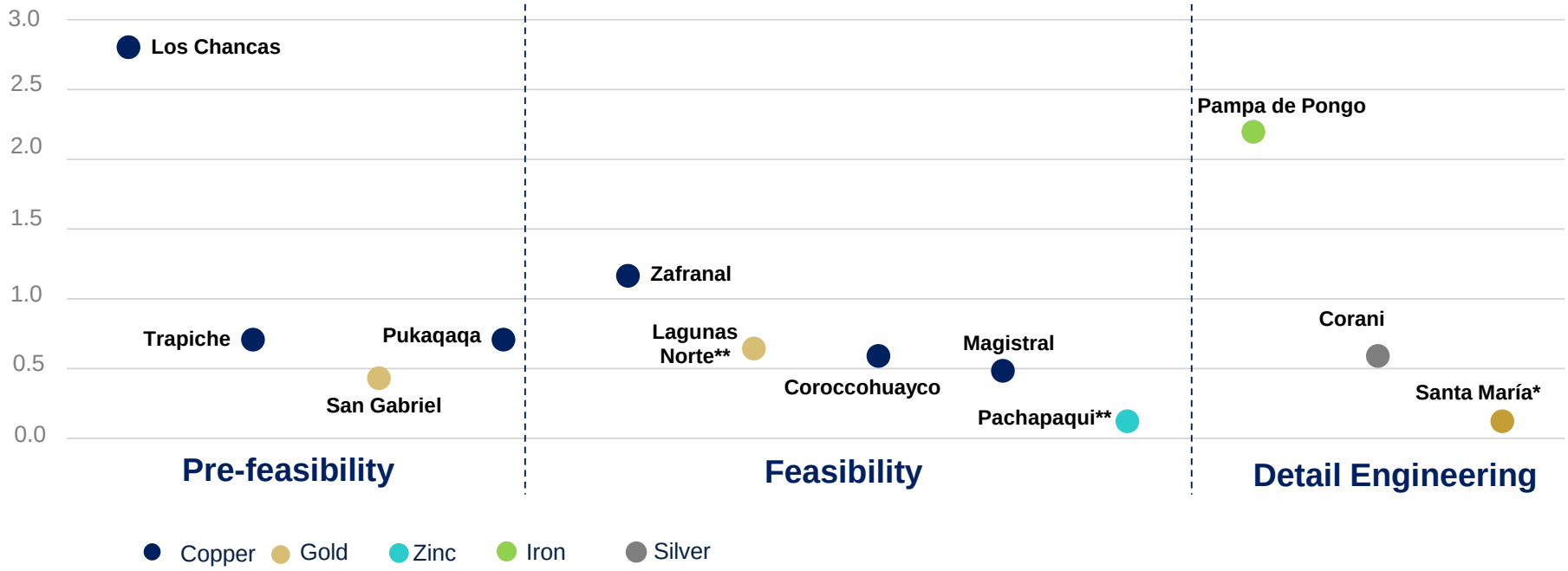
02

Mining projects in the pipeline

Portfolio of mining projects in the study phase

Total investment
USD 10.5 billion

Portfolio of mining projects according to their state of progress*
(USD billions)

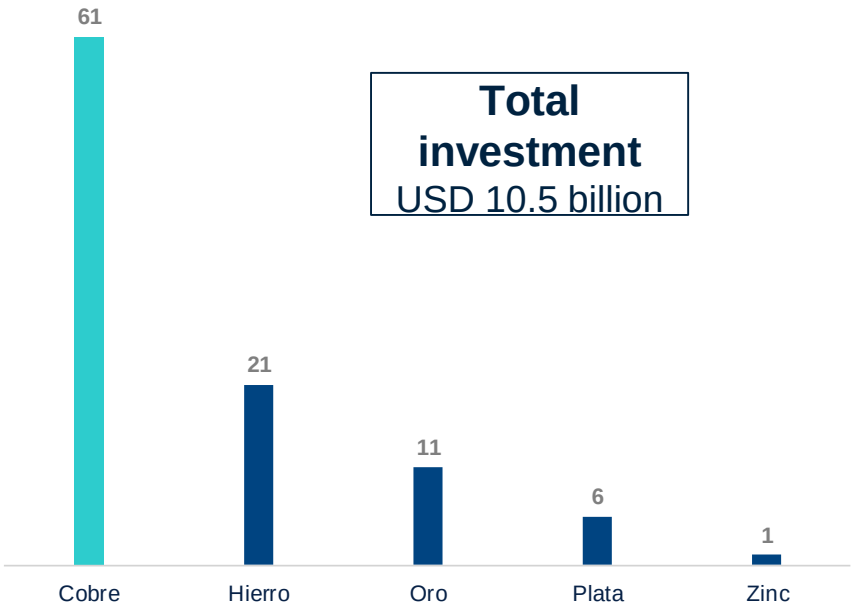


*For more details, see appendix 4.
* Expansion
Source: MINEM and BBVA Research

Of this portfolio, more than half corresponds to copper projects, mostly located in central and southern Peru.

Portfolio of mining projects by metal*

(% of total portfolio)



Total investment
USD 10.5 billion

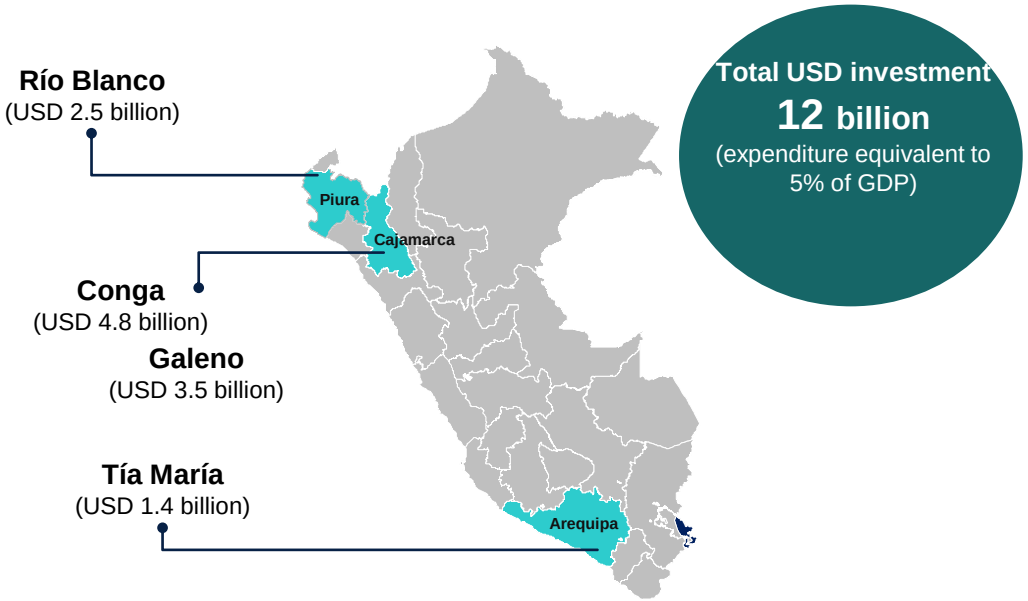
* In the pipeline because they have not yet been concluded with required studies
Source: MINEM and BBVA Research

Portfolio of mining projects by geographical area*

** Expansion

But there is also another portfolio of projects that have been postponed mainly because of social conflicts.

Mining projects that have been postponed mainly because of social conflicts



- Communities adjacent to the project have their activities threatened (agriculture, livestock) by possible contamination. They oppose the projects.
- Political cost of moving projects forward could be significant.

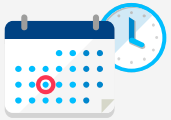
Source: MINEM, press releases, and BBVA Research

03

Competitiveness analysis of the metal mining sector in Peru

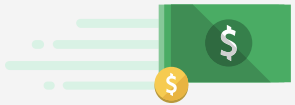
Main factors that determine the competitiveness of the mining sector

Mining Competitiveness Index (MCI)



01

Availability of the resource



02

Policies that encourage investment in the sector

- Regulation
- Tax regime
- Human capital
- Infrastructure
- Safety
- Social conflicts

Production costs

03

Cost

Competitiveness indicator of the mining sector

Competitiveness indicator of the mining sector*

Collects a sample of 15 countries that rank at the top in the global copper, gold, zinc and silver reserves share.

Mining Competitiveness Index (MCI)

01

Mining potential
(availability of the resource)

02

Policy perception

* Prepared by the Fraser Institute. The Mining Competitiveness Index is built on the basis of surveys of executives related to the mining sector. The index corresponds to the percentage of respondents who indicate that it is attractive to invest in mining. The indicator was constructed with a weight of 60% for Mining Potential and 40% for Policy Perception (40% of respondents indicate that their decision to invest is determined by the policies applied in the sector).
Source: Fraser Institute, 2017

Peru has significant mining resources...

Peru has significant mining resources.

01 Peru: position in the global ranking of metal reserves*

*For more details, see appendix 5.

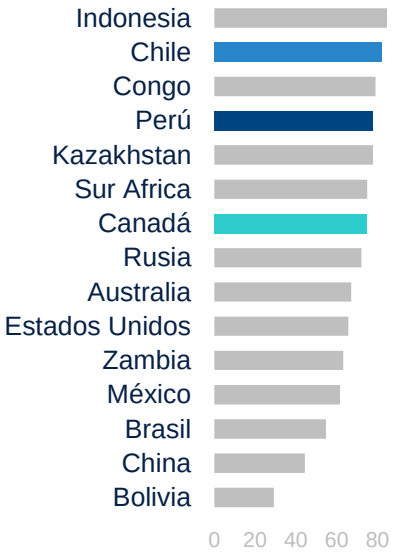
Source: U.S. Geological Survey, 2018

In the indicator that measures the availability of the mining resource (geological potential), Peru dropped two positions in 2017.

01

Mining Potential Index*

(%)



Ranking position

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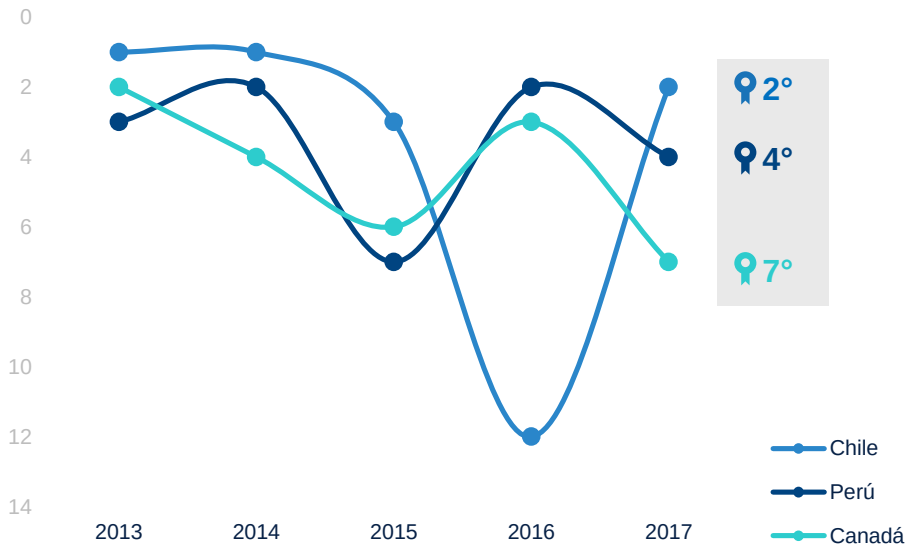
15

Mining Potential Index: ranking position

(position)



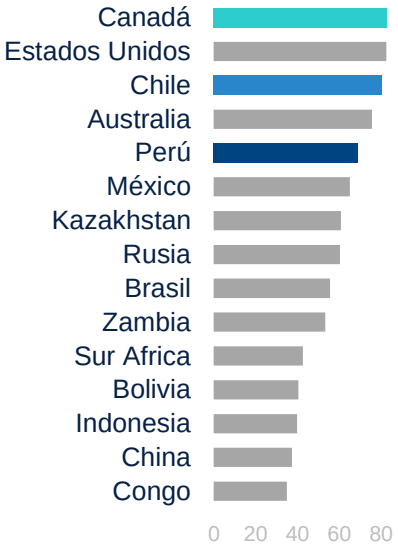
* Corresponds to the percentage of respondents who indicate that it is attractive to invest in mining when considering the country's mineral resources (geological potential).
Source: Fraser (BBVA Research preparation)

But to be competitive in mining it is not enough to have reserves of the resource...

In the indicator that measures how policies implemented in the mining sector are perceived, Peru improved two positions in 2017.

02

Policy Perception Index*
(%)



Ranking position

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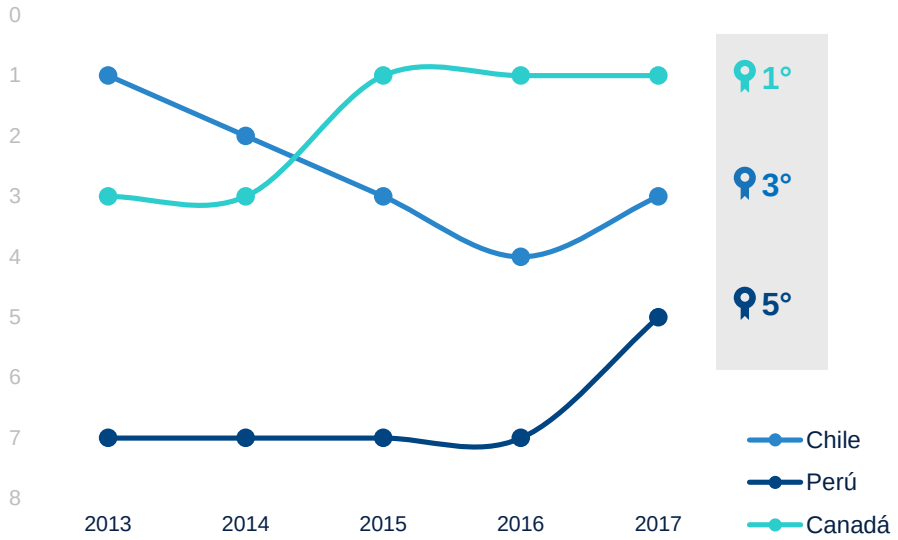
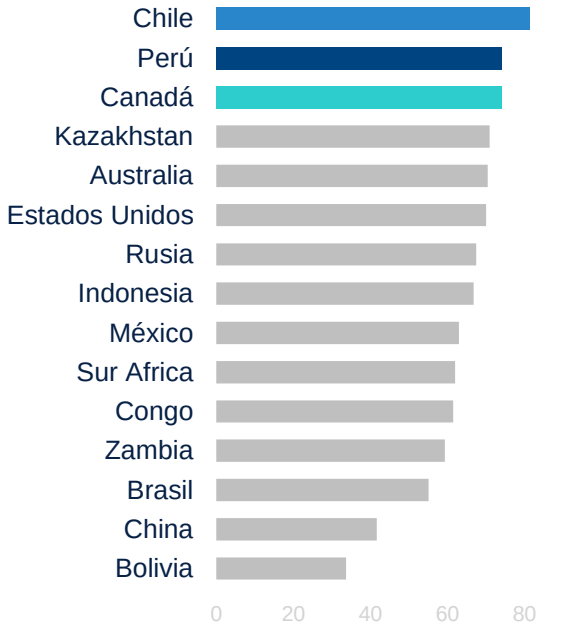
Policy Perception Index: ranking position
(position)



* Corresponds to the percentage of respondents who indicate that it is attractive to invest in mining considering the policies implemented in the country's mining sector.
Source: Fraser (BBVA Research preparation)

In this context, the MCI of Peru maintained its position in the 2017 ranking.

Mining Competitiveness Index (MCI)*
(%)



Ranking position

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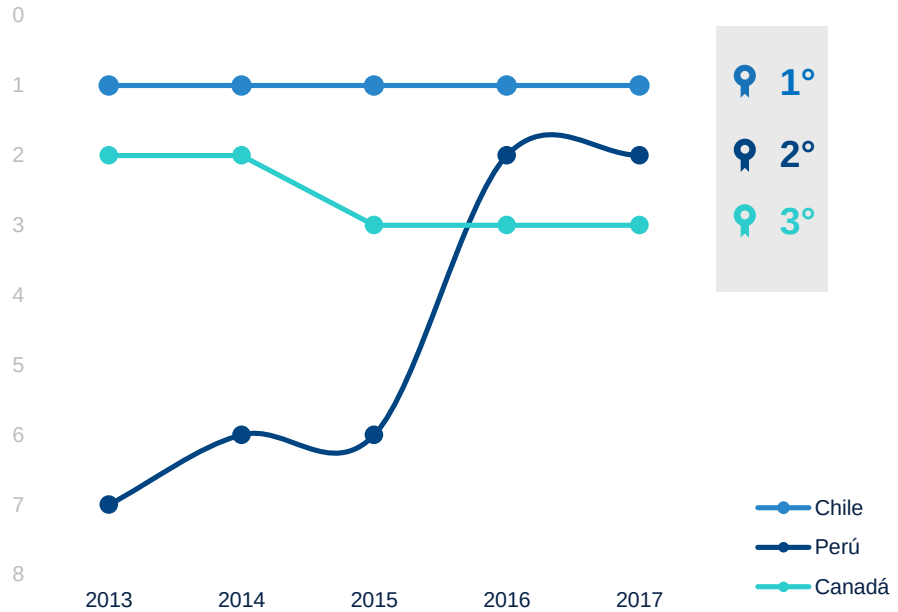
MCI: ranking position
(position)



* Corresponds to the percentage of respondents who indicate that it is attractive to invest in the country's mining sector. The indicator was constructed with a weight of 60% for the Mining Potential and 40% for the Policy Perception.
Source: Fraser (BBVA Research preparation)

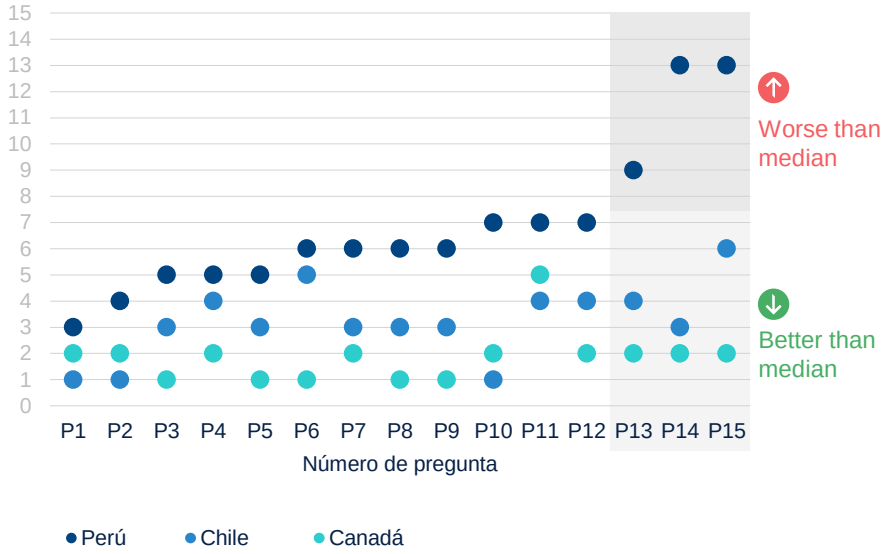
What policies should be improved to make investment in the Peruvian mining sector more attractive?

Policy Perception Index questions*

1. Uncertainty regarding the administration, interpretation or application of existing regulation
2. Tax regime
3. Legal system
4. Commercial barriers
5. Human capital
6. Uncertainty regarding environmental regulation
7. Uncertainty regarding disputed land claims
8. Political stability
9. Quality of geological data
10. Regulatory duplication and inconsistencies
11. Uncertainty about protected areas
12. Infrastructure quality
13. Safety level
14. Socio-economic agreements with communities
15. Labor regulation/employment agreement and workers' unions

Peru's position in the ranking for each aspect evaluated within the Policy Perception Index**

(position out of a total of 15 countries)



* Prepared on the basis of the surveys carried out by the Fraser Institute. Considers the percentage of respondents who answered "Yes, it encourages investment" in each of the aspects evaluated (15 questions).
** Sample of 15 countries that rank at the top in the global copper, gold and zinc reserves share.
Source: Fraser (BBVA Research preparation)

Main factors that determine the competitiveness of the mining sector

Mining Competitiveness Index (MCI)

01

Availability of the resource

02

Policies that encourage investment in the sector

- Regulation
- Tax regime
- Human capital
- Infrastructure
- Safety
- Social conflicts

Production costs

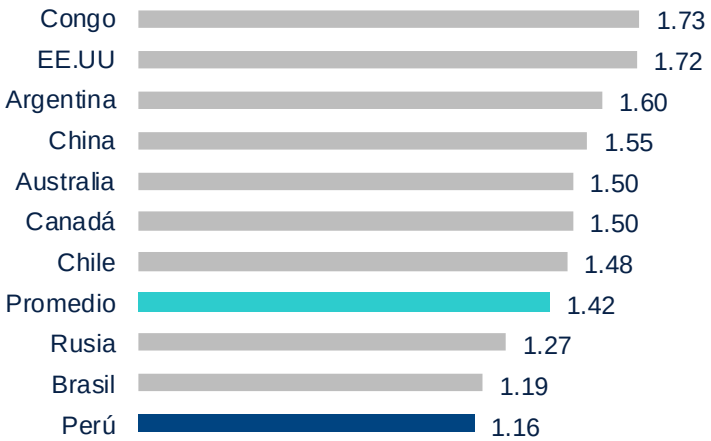
03

Cost

Low costs favor mining investment in Peru, which is important in an environment where prices have fallen.

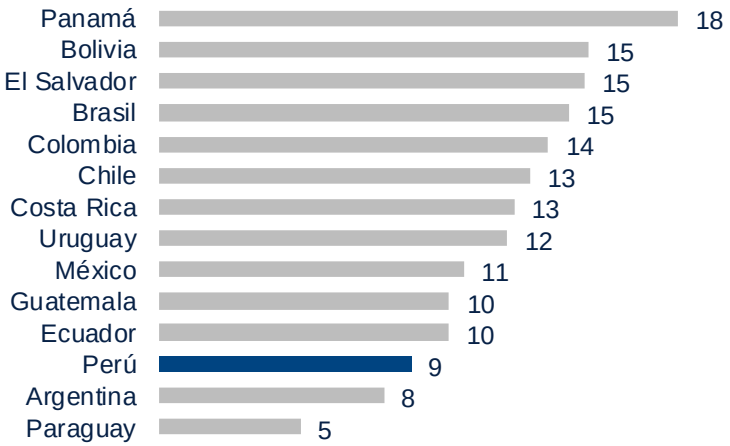
03

Cash cost of the main copper-producing countries* (USD per pound)



* 2015. In the case of Chile, in particular, the data is from the first half of 2018 and is considered a sample of 21 operations, representing 90% of the country's mining production. The *cash cost* includes costs of extraction, crushing, concentration, administrative costs, energy, fuel and freight; it does not include financial costs.
Source: Cochilco, Wood Mackenzie. Preparation: OSINERGMIN

Electricity rates for industrial customers* (cUSD/KWh)



2Q18
Source: OSINERMING

The Government is working to increase the attractiveness of the mining sector.

Objectives of the sector to 2021

01 Ensure continuity of current operations

02 Make viable the projects in the pipeline in joint work with the communities

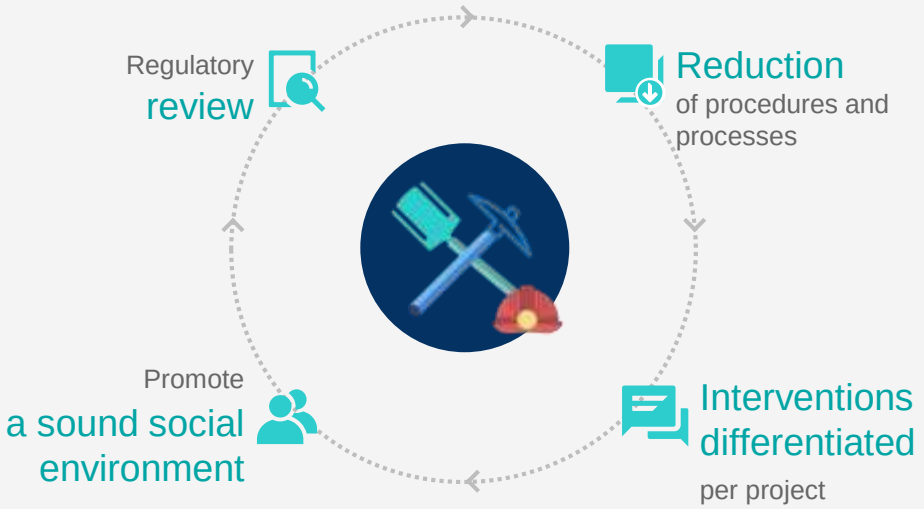
03 Encourage new explorations

04 Promote mining formalization

05 Manage mining environmental liabilities in their entirety

Source: MINEM

What are the strategies to reach them?



What are the strategies to achieve this?

Reduction of procedures and processes

- An accompaniment strategy is being implemented for new projects and current operations through a close multisectoral coordination, with more dynamic processes through the use of the Electronic Government.
- Creation of the Directorate General for Mining Promotion and Sustainability (August 2018). One of its functions is to simplify procedures and make it easier to obtain permits.

Regulatory review

- Regulatory improvements are being promoted and work is underway to update and identify necessary changes in current legislation, with a regulatory impact analysis and a participatory regulatory process.
- Creation of the Center for Convergence and Good Mining and Energy Practices* (August 2018). It is a space for the State, the private sector and civil society to dialogue about the activities of the sector.

Promote a sound social environment

- A new social conflict management system is being developed, promoting the Social Advancement Fund (FAS).
- Creation of mining-energy information committees. They seek to diminish the asymmetry of information between communities, the State, and the private enterprise. The first center located in Moquegua (Quellaveco project) was recently created.

Interventions differentiated by project

- It seeks to develop strategies differentiated in such a way that each of the mining projects in the pipeline is viable taking into account their particularities, their own reality.
- For example, in the case of environmental liabilities, there are new projects that face resistance from the population because older adjacent projects polluted the area. In these types of cases, state intervention seeks to clean up the contaminated area in order to reduce the resistance of the population.

Source: MINEM and press releases

These strategies are added to the current legal framework for the promotion of the mining sector.

Tax stability contracts

- Companies may enter into legal stability agreements with the State in order to maintain the validity of a certain regulatory regime for as long as it is agreed in that agreement.
- The enjoyment of the stability benefit applies under the following conditions: (i) 10 years for a minimum investment of USD 20 million; (ii) 12 years for an investment of USD 100 million (USD 250 million for ongoing operations); and (iii) 15 years for a minimum investment of USD 500 million.

Definitive return of the general sales tax (IGV)

- It is a tax benefit to the holders of the mining activity during the exploration phase.
- To this end, mining concessions must enter into an exploration investment contract with the State.
- Repayment includes all imports or purchases of goods, loans or use of services and construction contracts.
- Mining and hydrocarbon companies will continue to receive this tax benefit until December 31, 2019.

Early recovery of the IGV*

- It's a tax benefit during the pre-productive stage.
- It consists of the return of the IGV that taxed local imports or purchases of new capital goods, intermediate goods, services and construction contracts.
- The scheme is open to natural or legal persons investing in any economic sector.
- They must meet the following requirements: (i) the project must generate third category income; (ii) the investment in the project must be at least USD 5 million; and (iii) the project must require a pre-productive stage of at least 2 years.

* Law 1423.
Source: MINEM

04

Copper price outlook

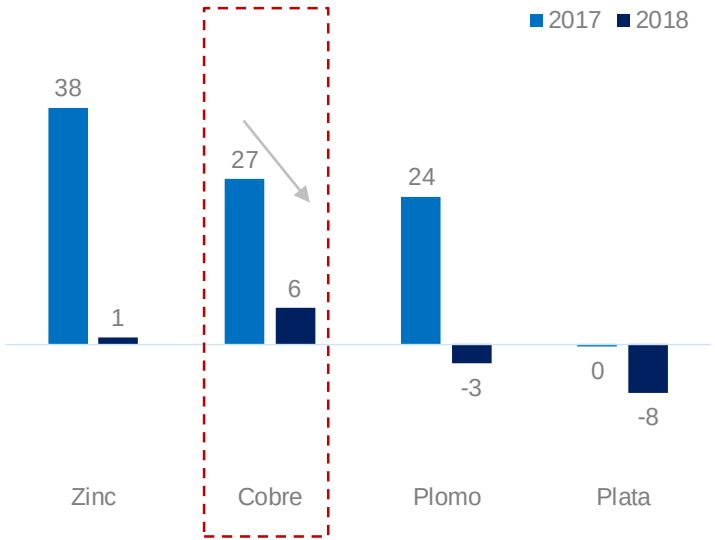
In the second half of 2018 the prices of metals decreased, among them copper, ...

Copper price*

(USD/lb.)

Metal prices

(average annual level, % chge. with respect to the previous year)

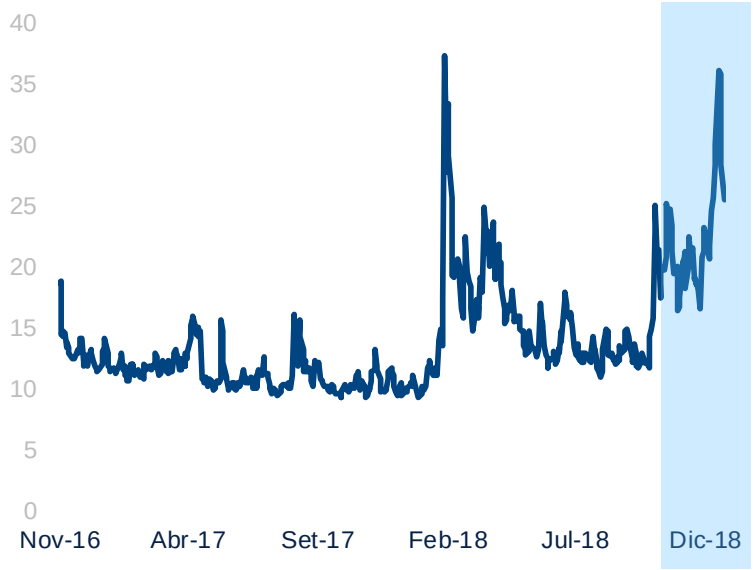


* Data as of December 31

Source: Bloomberg

... due to increased uncertainty about global growth in an environment where...

Perception of risk
(VIX*, in basis points)



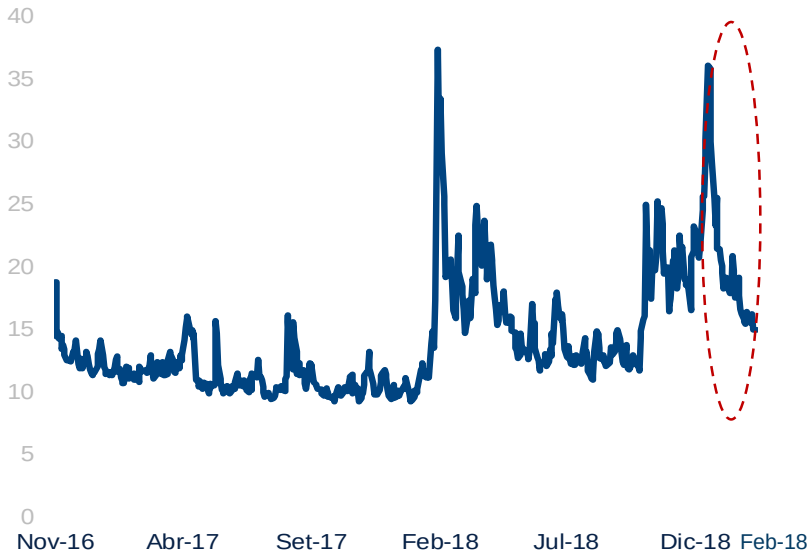
* VIX (Chicago Board Options Exchange Market Volatility Index)

Source: Bloomberg and BBVA Research

- Trade tensions escalate, especially between the US and China.
- Signs of global growth moderation are becoming more pronounced (second half of 2018)
- FED continues to raise its policy rate.

So far in 2019, however, the outlook improved: Fed is more cautious and there are signs of progress in the US-China trade negotiations.

Perception of risk
(VIX*, in basis points)



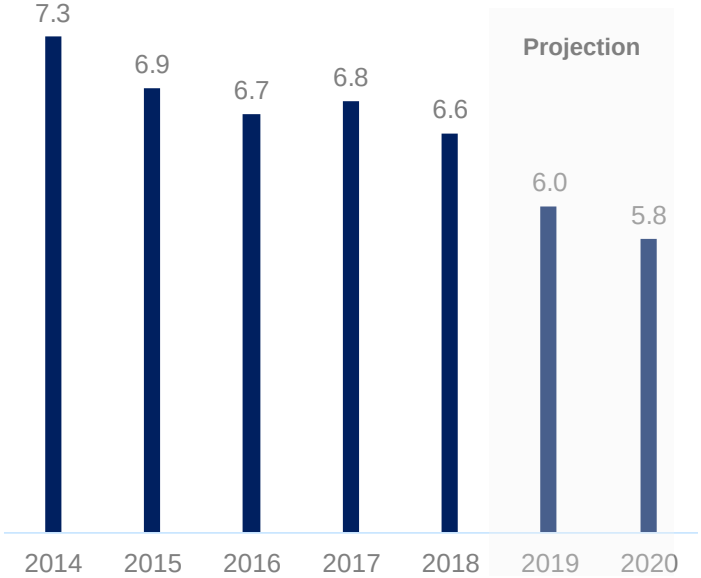
Price of copper
(USD/lb.)

* VIX (Chicago Board Options Exchange Market Volatility Index). Updated to February 13

Source: Bloomberg and BBVA Research

What elements affect our forecasts for the price of copper in the short term? China's growth, but also...

China: GDP
(YoY % chge.)



China demands around 50% of global copper production.

Source: Bloomberg and BBVA Research

FED
It is close to ending the upward cycle of its policy rate.

Concerns about global growth
In our scenario these are moderate, especially in the second half of 2019.

Trade tensions
In our base scenario we do not consider additional increases in tariffs.

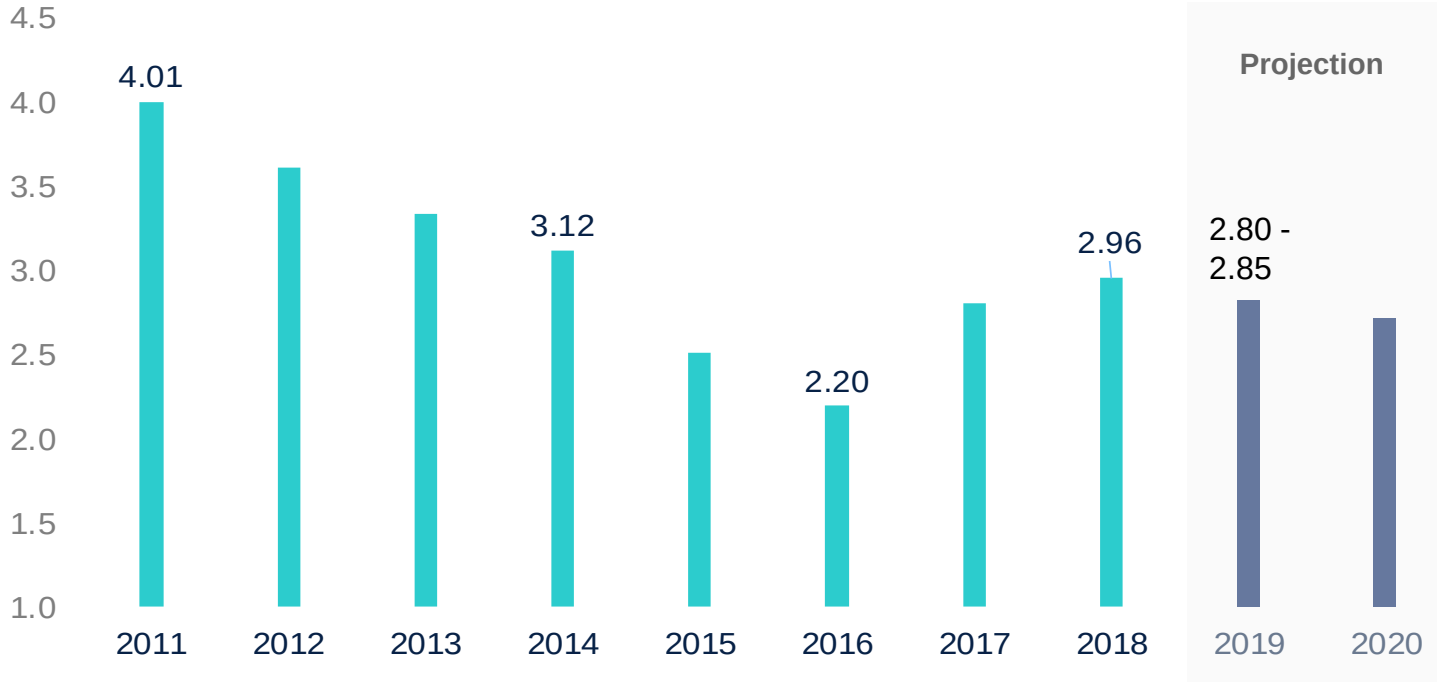
Physical supply/demand balance
Deficit in 2019 and 2020 due to lower production in a large mine located in Asia

Inventories
At relatively low levels

In the balance of these items, we expect some downward correction in the copper price for the short term.

Copper price

(USD/lb., annual average level)



Source: BCRP and BBVA Research

Later on, the price of copper will find support in the increased demand from industries such as that of electric vehicles.

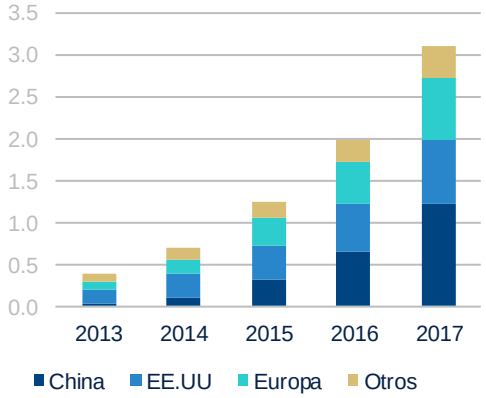
Use of copper by vehicle type

Type of vehicle	Use of copper (kilograms)
Conventional vehicle	23
Hybrid electric vehicle	40-60
Hybrid electric bus	89
Battery-powered electric bus	224-369

Source: International Copper Association and Cochilco

Number of electric vehicles in the world

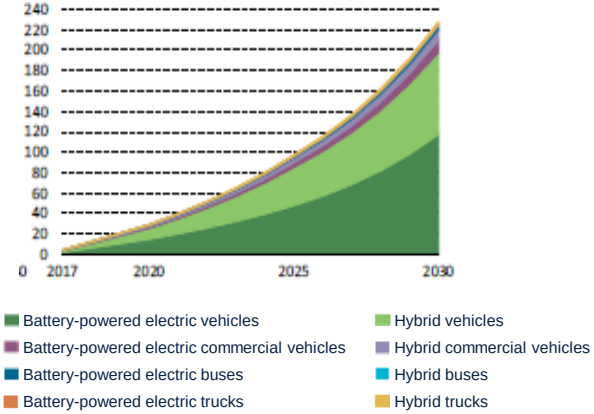
(million units)



Source: International Energy Agency (IEA)

Number of electric vehicles in the world

(million units)



Source: International Energy Agency (IEA)

France will put an end to the sale of diesel and gasoline cars by 2040.

July 2017

UK to ban new gasoline and diesel vehicles by 2040

July 2017

Denmark wants to ban the sale of gasoline and diesel cars by 2030.

October 2018

BBVA Research

Peru: situation in the mining sector

February 2019

Creando Oportunidades

Appendix 1. Projects in the pipeline in the new mining investment cycle

Total investment: USD 9.8 billion

Quellaveco (Copper)

Total Investment: USD 5.3 billion
Company: Anglo American (60%) and Mitsubishi (40%)
Location: Moquegua
Annual production: 300,000 MTF/Cu
Entry into operation: 2022
Other data: Cash cost (C1) USD 1.05 per pound

Mina Justa (Copper)

Total Investment: USD 1.6 billion
Company: Marcobre
Location: Ica
Annual production: 102,000 MTF/Cu
Entry into operation: 2021
Other data: Cash cost (C1) USD 1.4 per pound

Toromocho expansion (Copper)

Total Investment: USD 1.3 billion
Company: Chinalco
Location: Junín
Annual production: 75,000 MTF/Cu
Entry into operation: 2020

Quecher Main (Gold)

Total Investment: USD 300 million
Company: Yanacocha
Location: Cajamarca
Annual production: 200,000 Oz
Entry into operation: 2019

B2 San Rafael (Tin)

Total Investment: USD 200 million
Company: Minsur
Location: Puno
Annual production: 4,000 - 5,000 MTF
Entry into operation: 2020

Marcona expansion (Iron)

Total Investment: USD 1.1 billion
Company: Shougang
Location: Ica
Annual production: 10 million MT
Entry into operation: 2018

Source: MINEM and BBVA Research

Appendix 2. Direct impact of metal mining*

Exports

60% of the value of exports

Private investment

11% of private investment

GDP

10% of the total production

Use

5% of the employed workforce

Tax revenues

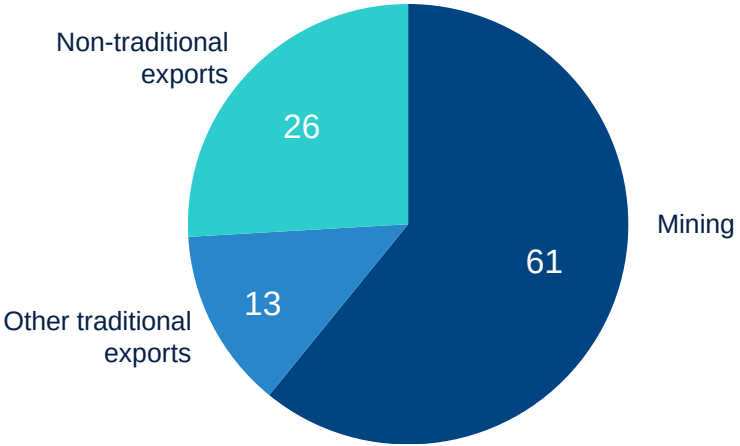
5% of the tax revenues

* Data from 2017

Appendix 2. Importance of metal mining in exports

Exported value: share in 2017

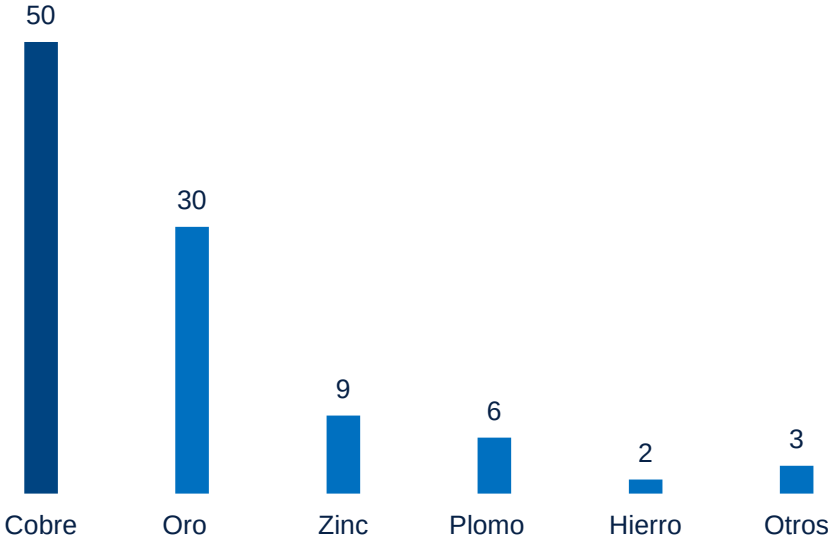
(%)



27 billion USD

Share within mining exports in 2017

(%)



*Other: silver, molybdenum, tin.
Source: BCRP

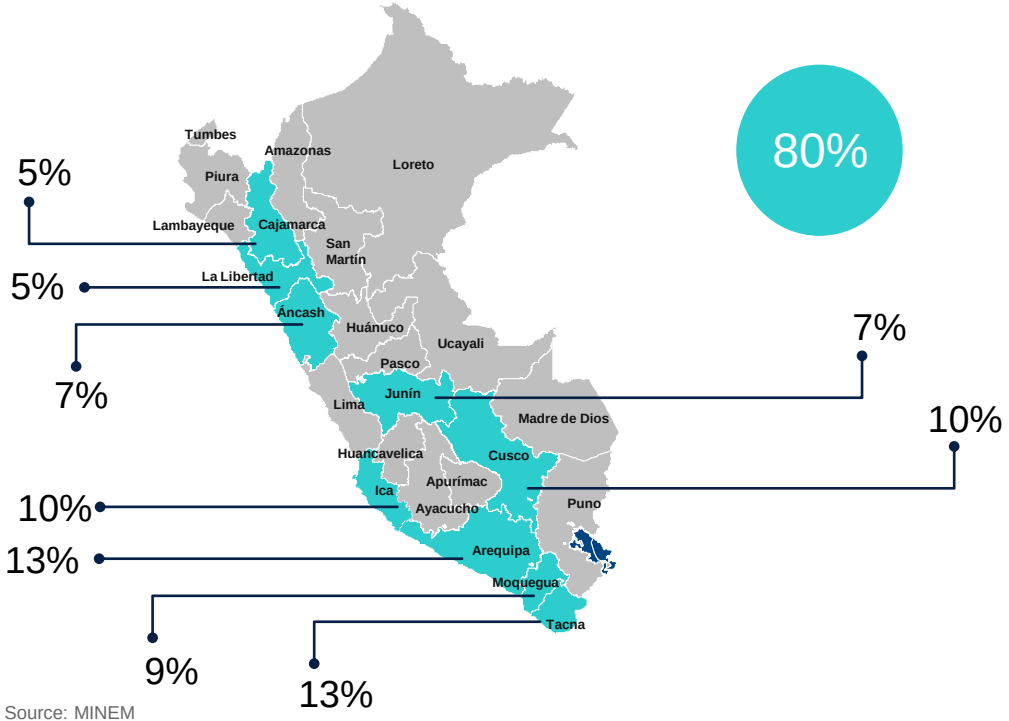
Appendix 2. Importance of metal mining in private sector investment

Mining investment (2017)	4 billion USD
Private investment	11%

Source: MINEM and BCRP

Regional share in mining investment, 2017

(%)



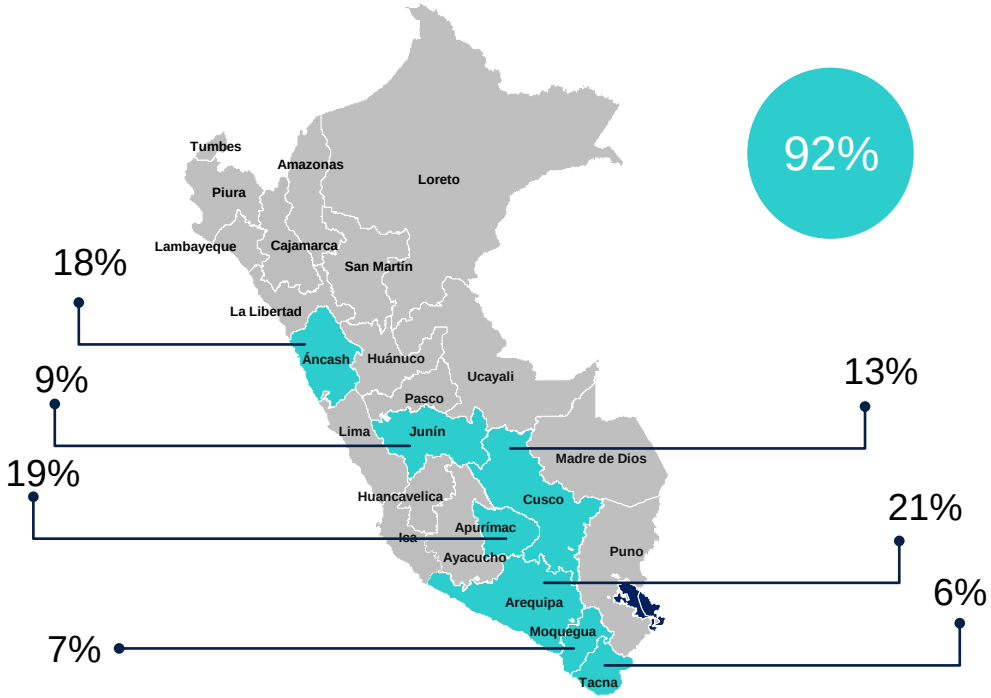
Source: MINEM

Appendix 2. Importance of metal mining in national production

GDP: sectoral share in 2017
(%)

Source: BCRP

Regional share in copper production, 2017
(%)



Source: MINEM

Appendix 2. Importance of metal mining in the generation of employment

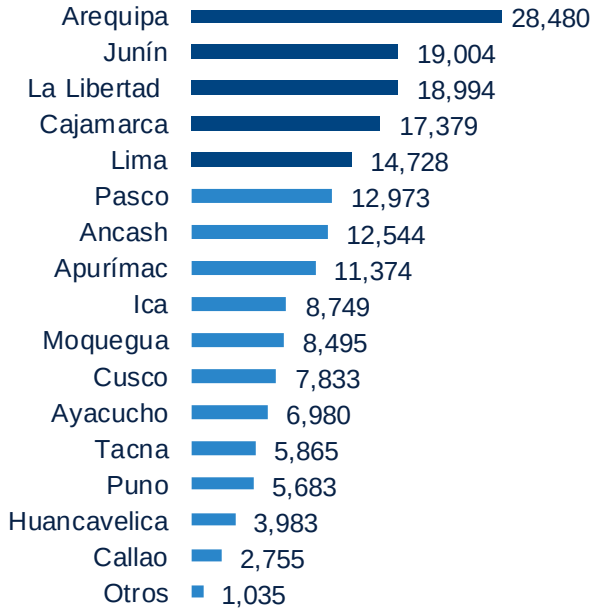
190,000
Direct jobs* generated by mining

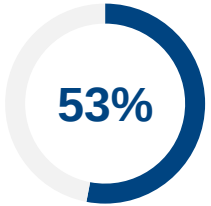
For each direct job **4**** indirect jobs are created.

5% of the Economically Active Population (EAP) employed (2017)

Distribution by region of direct jobs generated by the mining sector in 2017

(%)



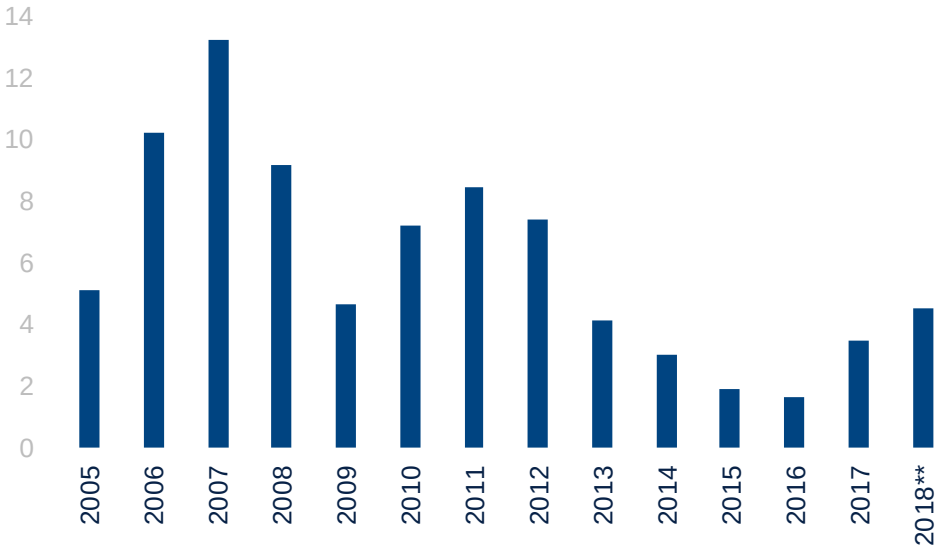


* Illegal mining is not considered.
** The calculation prepared by MACROCONSULT (input-output table of 2007, basic prices) is considered.
Source: MINEM

Appendix 2. Importance of metal mining in tax revenues

Tax revenues linked to mining production*

(% of tax revenue)

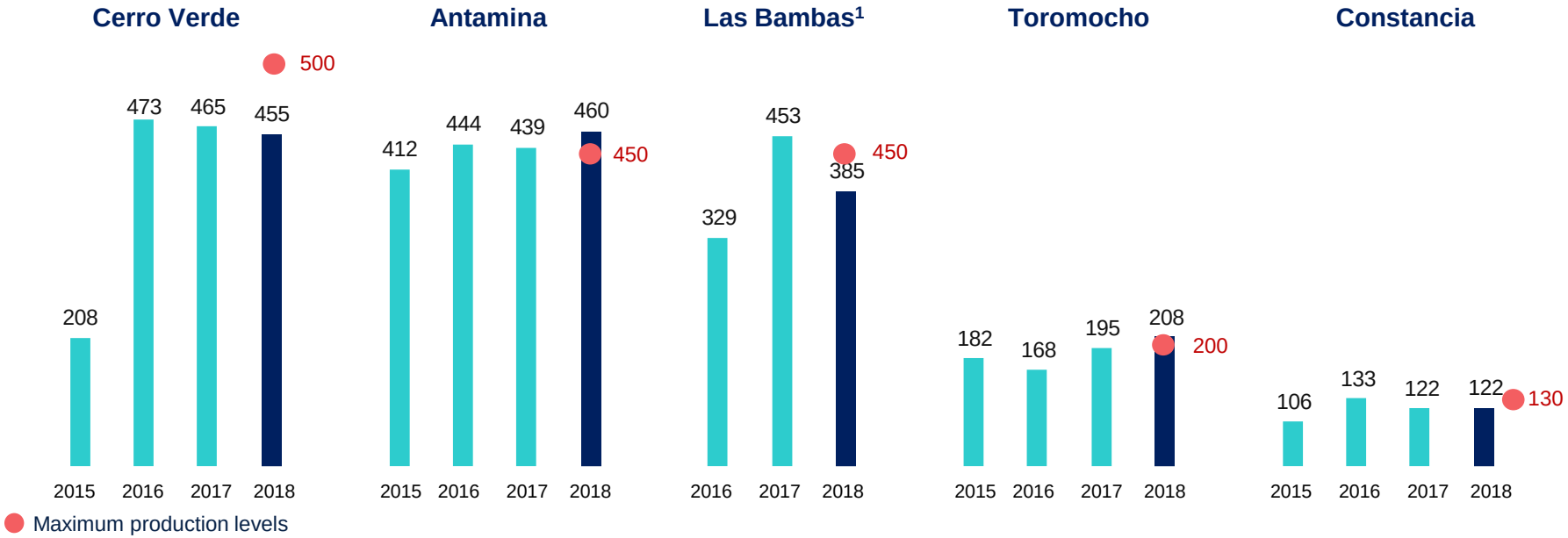


- Tax revenues from mining currently represent 5% of the total.
- In the coming years, tax revenues related to mining will increase due to higher profits from projects currently underway.

* Income tax (3rd category), royalties, lien and special tax on mining.
** Projection as of October.
Source: BCRP and BBVA Research

Appendix 3. The boom in metal mining production dissipated in 2017, when the new copper mines reached full operational capability.

Copper production in selected mines
(annual, MT thousands)



1: Production was reduced in 2018 due to a geotechnical problem in one of the walls of the Ferrobamba pit.
Source: MINEM, BCRP, and BBVA Research

Appendix 4. Concessioned projects portfolio

Pampa de Pongo

Investment: USD 2.2 billion

Company: Jinzhao Mining Perú S.A.

Location: Arequipa

Metals: Iron (15 million FMT Fe)

Current situation:

- The following studies are available: Engineering Study, Environmental Impact Study.
- In January 2018, the company presented the first modification of the Environmental Impact Study, which is being evaluated by SENACE.
- The company is looking for partners for the development of the project. Explorations are also being carried out to determine copper resources.

Corani

Investment: USD 585 million

Company: Bear Creek Mining S.A.C.

Location: Puno

Metals: Silver (approx. 8 million ounces)

Current situation:

- The Engineering Study has been approved.
- The Environmental Impact Study has been approved.
- The operating activities have been approved.
- The project operator is conducting an evaluation of capital and operational savings, as well as time reduction.
- There is a risk that new authorities will delay the start of construction.

Source: MINEM

Appendix 4. Concessioned projects portfolio

Zafranal

Investment: USD 1.157 billion

Company: Compañía Minera Antapaccay S.A.

Location: Arequipa

Metals: Copper (75,000 FMT Cu) and Gold (25,000 oz Au)

Current situation:

- The feasibility studies have been approved.
- The company is preparing its detailed EIA of the project, which is expected to be completed during the third quarter of 2019.
- The company has not yet submitted its application for operating activities.

Pukaqaqa

Investment: USD 706 million

Company: Nexa Resources Perú. S.A.A.

Location: Huancavelica

Metals: Copper (40,600 FMT Cu)

Current situation:

- During the second quarter of 2018 the social license was obtained to start the drilling campaign. In addition, the pre-feasibility study of the project is underway.
- The EIA has been approved.
- The project operator has not yet submitted its application for an Operating Permit.

Lagunas Norte

Investment: USD 640 million

Company: Minera Barrick Misquichilca S.A.

Location: La Libertad

Metals: Gold (240,000 oz Au)

Current situation:

- It is the first stage of the project that would extend the useful life of the mine by 10 years. The Engineering Study has been approved.
- An update of the EIA was presented in September 2018.
- The project does not contemplate a new operating permit and approval of the mine plan.

Source: MINEM

Appendix 4. Concessioned projects portfolio

Coroccohuayco

Investment: USD 590 million

Company: Compañía Minera Antapaccay S.A.

Location: Cusco

Metals: Copper (100,000 FMT Cu)

Current situation:

- Expansion of the Antapaccay mine. The feasibility studies have been approved.
- The company is in the process of modifying the EIA of the project that is currently in operation.
- The project operator has not yet submitted the application for an Operating Permit.

Magistral

Investment: USD 480 million

Company: Nexa Resources Perú S.A.A.

Location: Huancavelica

Metals: Copper (40,600 TMF Cu)

Current situation:

- The EIA and feasibility studies have been approved. The company is in the process of preparing its engineering studies.
- The project operator has not yet submitted the application for an operating permit.

Santa María (expansion)

Investment: USD 120 million

Company: Compañía Minera Poderosa S.A.

Location: La Libertad

Metals: Gold (36,000 oz Au)

Current situation:

- The EIA and the feasibility and engineering studies have been approved.
- The project does not contemplate a new operating permit and approval of the mine plan.

Source: MINEM

Appendix 4. Concessioned projects portfolio

Los Chancas

Investment: USD 2.8 billion

Company: Southern Perú Copper Corporation

Location: Apurímac

Metals: Copper (100,000 FMT Cu)

Current situation:

- The pre-feasibility studies have been approved.
- In August 2018 the company submitted the EIA for evaluation.
- The project operator has not yet submitted the application for an Operating Permit.
- According to the studies, they are analyzing if it is more convenient to carry out the processing of the minerals by leaching, which is a more economic process and of low initial capital (CAPEX), but where molybdenum or gold is not recovered; or if the flotation alternative is chosen, where the three metals can be recovered, but the initial capital will be greater.

Trapiche

Investment: USD 700 million

Company: El Molle Verde S.A.C.

Location: Huancavelica

Metals: Copper (65,000 FMT Cu)

Current situation:

- It is in the pre-feasibility stage.
- In August 2018, the company submitted an EIA update for evaluation.
- The project operator has not yet submitted its application for an Operating Permit.
- The company is working to strengthen relations with the community of Mollebamba in order to lay a solid foundation for the project.

San Gabriel

Investment: USD 431 million

Company: Compañía de Minas Buenaventura S.A.A.

Location: Moquegua

Metals: Gold (200,000 oz Au)

Current situation:

- The EIA has been approved. The company expects to obtain approval of its pre-feasibility studies.
- In October 2017, the company submitted to MINEM its request for approval of the mining plan for preparation and development activities.

Source: MINEM

Appendix 4. Concessioned projects portfolio

Río Blanco

Investment: USD 2.5 billion

Company: Zijin Mining Group (45%), Tongling Non-Ferrous Metals Group Holding (35%) and Xiamen C&D Co. Ltd (20%)

Start of construction: Undefined

Location: Piura

Metals: Copper (200,000 FMT Cu)

Current situation:

- The feasibility study has been approved.
- The company has not submitted the Environmental Impact Study.
- The company has been coordinating with various ministries in order to strengthen the presence of the State in the area and improve relations between communities.

Conga

Investment: USD 4.8 billion

Company: Newmont Mining Corporation (51%), Grupo Buenaventura (44%) and Sumitomo Corporation (5%)

Start of construction: Undefined

Location: Cajamarca

Metals: Gold (680,000 Oz) and Copper (54,000 FMT)

Current situation:

- The project has come to a halt at the feasibility stage due to socio-economic conflicts in the area of influence.

Tía María

Investment: USD 1.4 billion

Company: Grupo México

Start of construction: Undefined

Location: Arequipa

Metals: Copper (120,000 FMT)

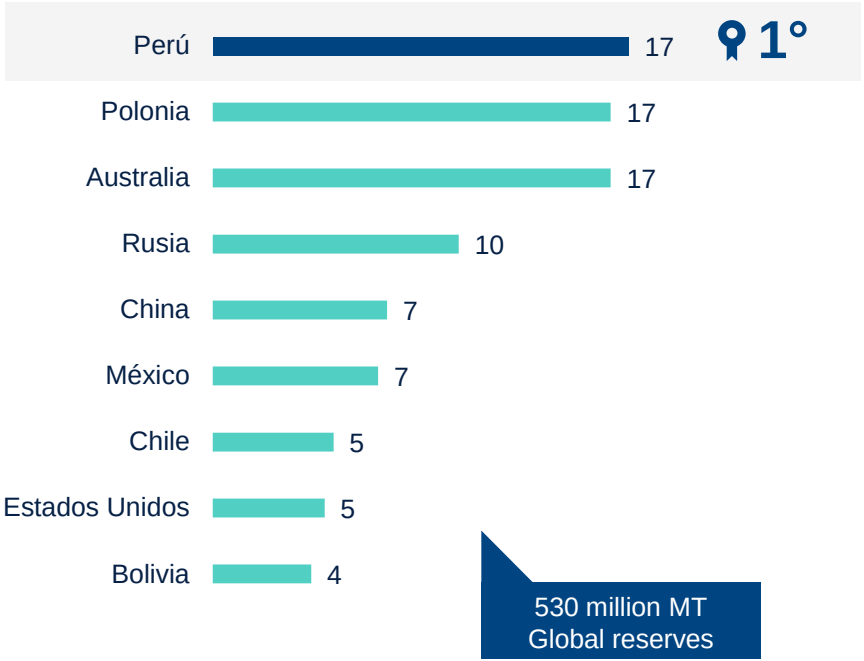
Current situation:

- The company has the engineering studies and the Environmental Impact Study of the project.
- The company is currently working with the State to obtain the construction permit, which has not been granted due to the social conflicts in the Tambo Valley.
- The conflicts are due to people's concern about impacts on the area and water use. Southern Copper ruled out in its EIA the use of the Tambo river basin as a source and offered a solution through the use of desalinated seawater.

Source: MINEM

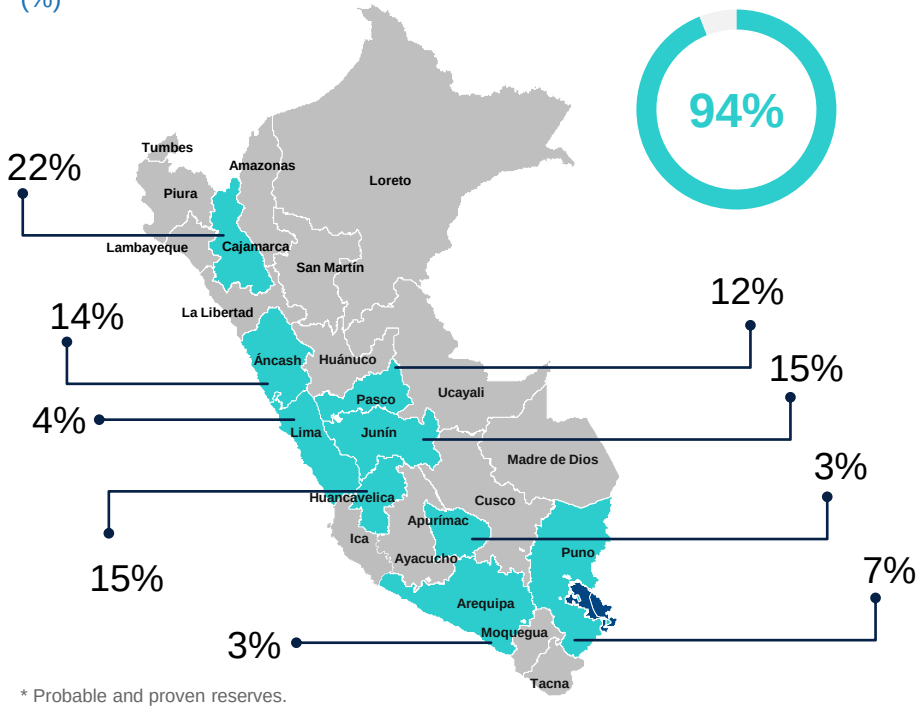
Appendix 5. First place in global silver reserves

Share in global silver reserves
(%)



Source: U.S. Geological Survey, 2018

Regional share of silver reserves*
(%)



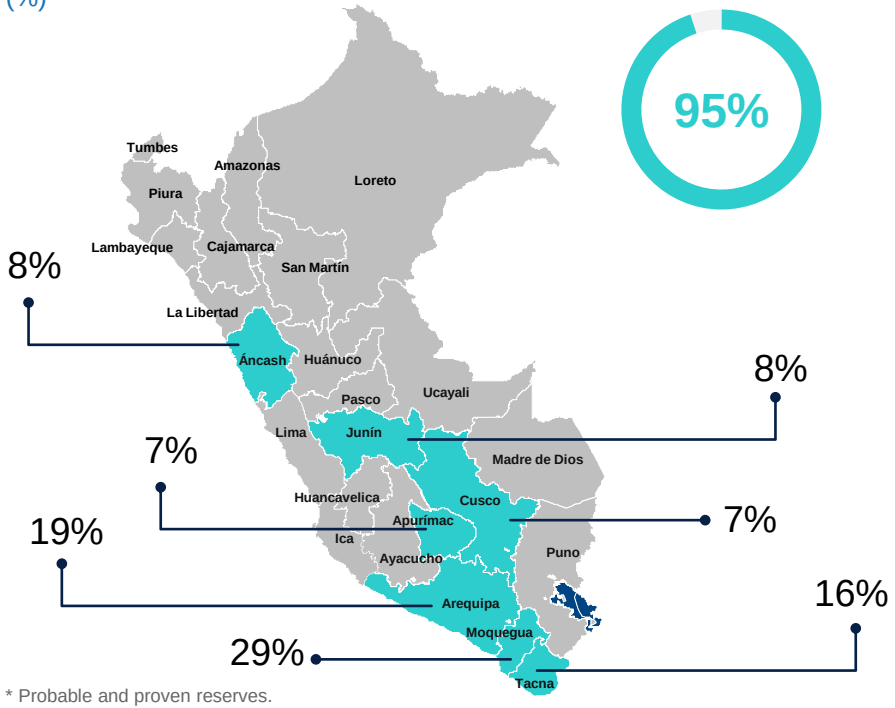
* Probable and proven reserves.
Source: MINEM

Appendix 5. Third place in global copper reserves

Share in global copper reserves
(%)

Source: U.S. Geological Survey, 2018

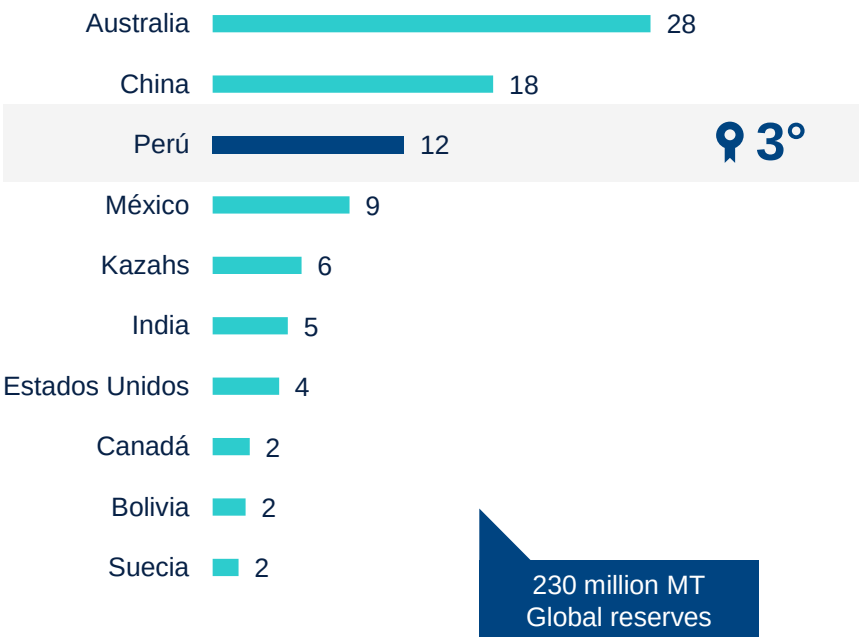
Regional share of copper reserves*
(%)



* Probable and proven reserves.
Source: MINEM

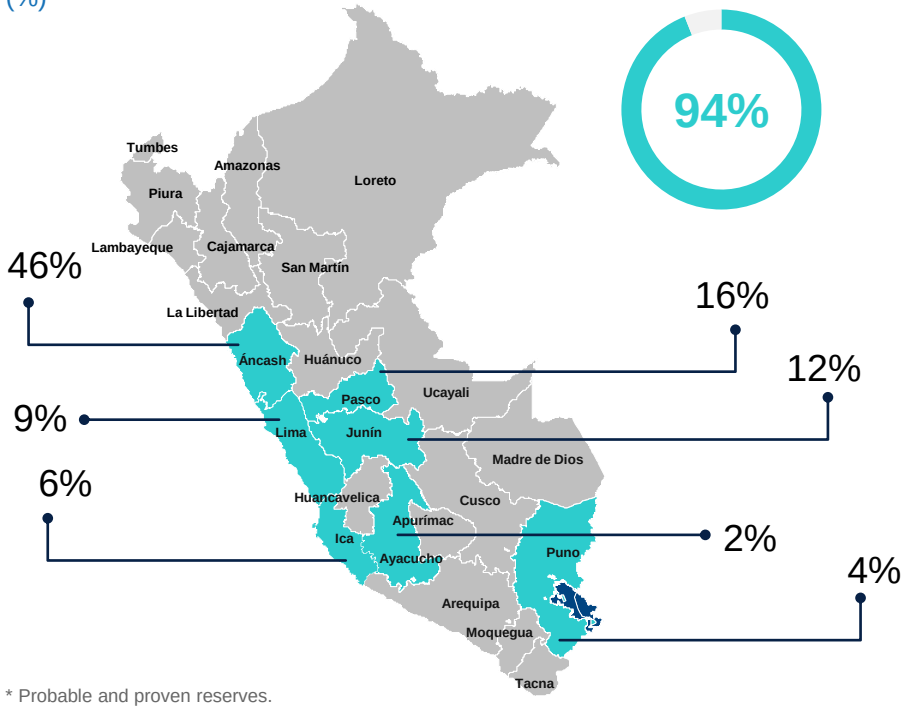
Appendix 5. Third place in global zinc reserves

Share in global zinc reserves
(%)



Source: U.S. Geological Survey, 2018

Regional share in zinc reserves*
(%)

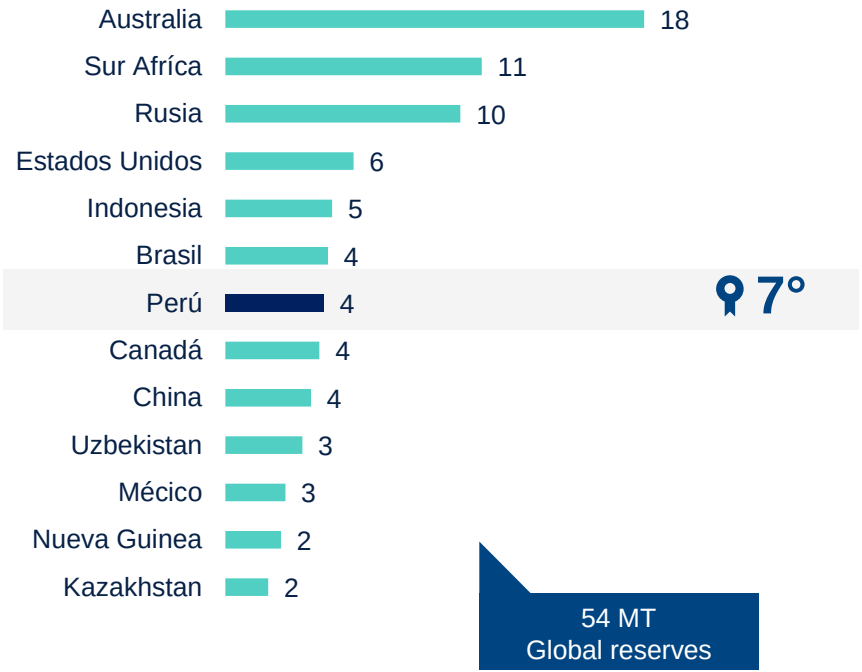


* Probable and proven reserves.
Source: MINEM

Appendix 5. Seventh place in global gold reserves

Share in global gold reserves

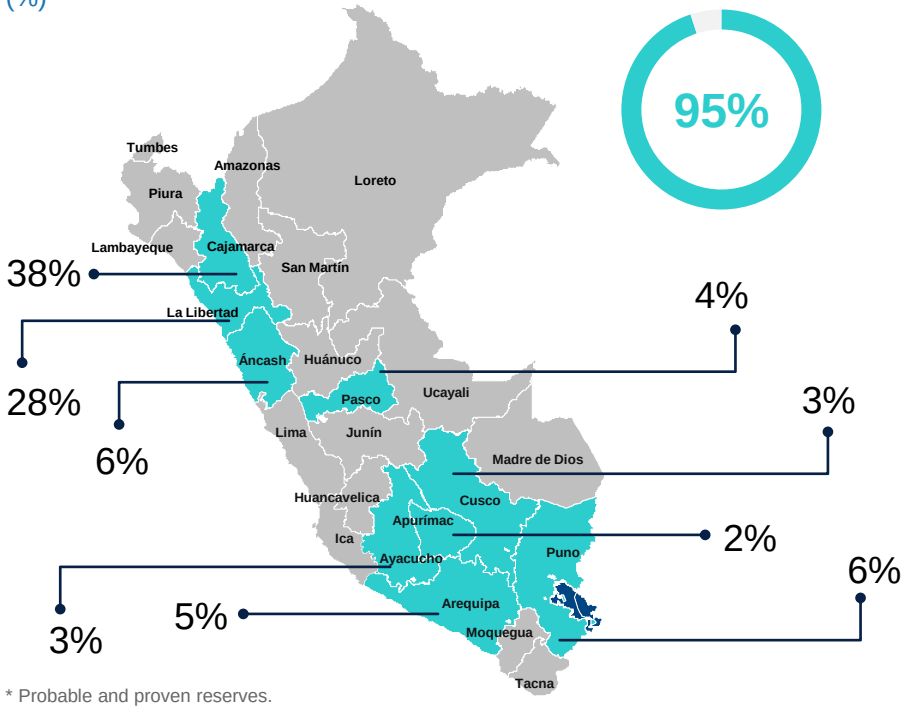
(%)



Source: U.S. Geological Survey, 2018

Regional share in gold reserves*

(%)

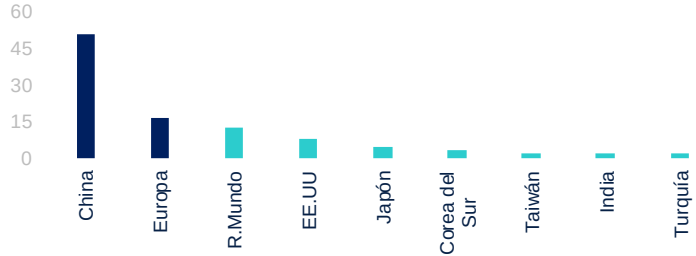


* Probable and proven reserves.
Source: MINEM

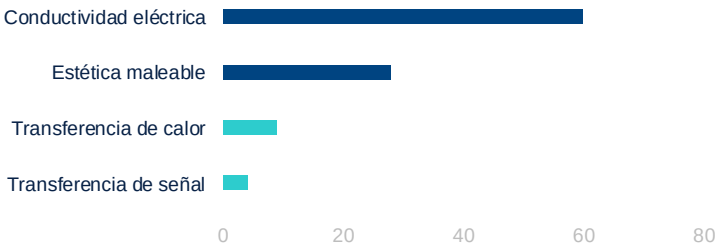
Appendix 6. Global demand for copper continues to rise. China is the main demander and the sectors that most use this metal are construction and the electricity network.

Global refined copper consumption
(millions of MT)

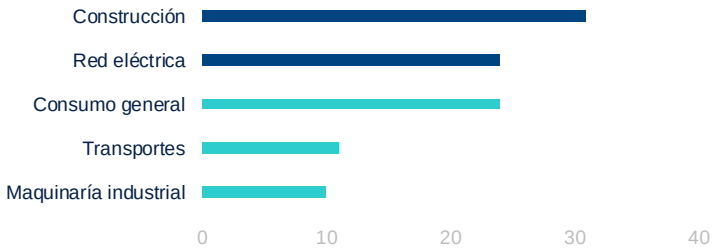
Copper consumption, 2017
(share, % of total)



Refined copper consumption by property
(share, % of total)



Refined copper consumption by sector
(share, % of total)



Source: Cochilco

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February 2019

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