



Opportunities in Chilean Mining

Joaquín Villarino
President, Chilean Mining Council

Asia Copper Conference

November 29, 2012

CONSEJO MINERO



Agenda

- 1. Introduction: Mining Council**
- 2. Chile in the mining world: challenges and opportunities**
- 3. Chile and PRC: Long term friendship**



Agenda

1. Introduction: Mining Council

2. Chile in the mining world: challenges and opportunities

3. Chile and PRC: Long term friendship

Mining Council



- Association of the largest copper, molybdenum, silver and gold producers in Chile, both national and foreign, private and public.
- The purpose of the Council is to communicate large-scale mining, the challenges it faces and its role in Chilean development, in addition to contributing to the process of sound public policy formation.

Mining Council

Members

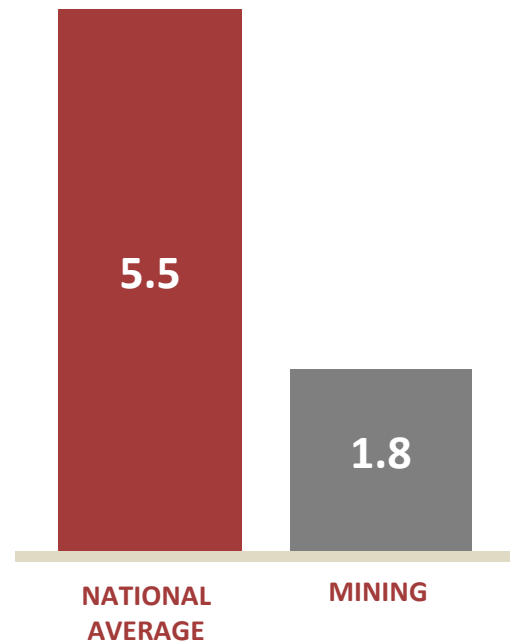
Together, these companies represent
over 95% of national
copper, molybdenum, silver and gold
production.



Mining Council

Mining has the highest labor standards in Chile

Accident rate 2011
Work-related accidents
per 100 workers



Mining Council

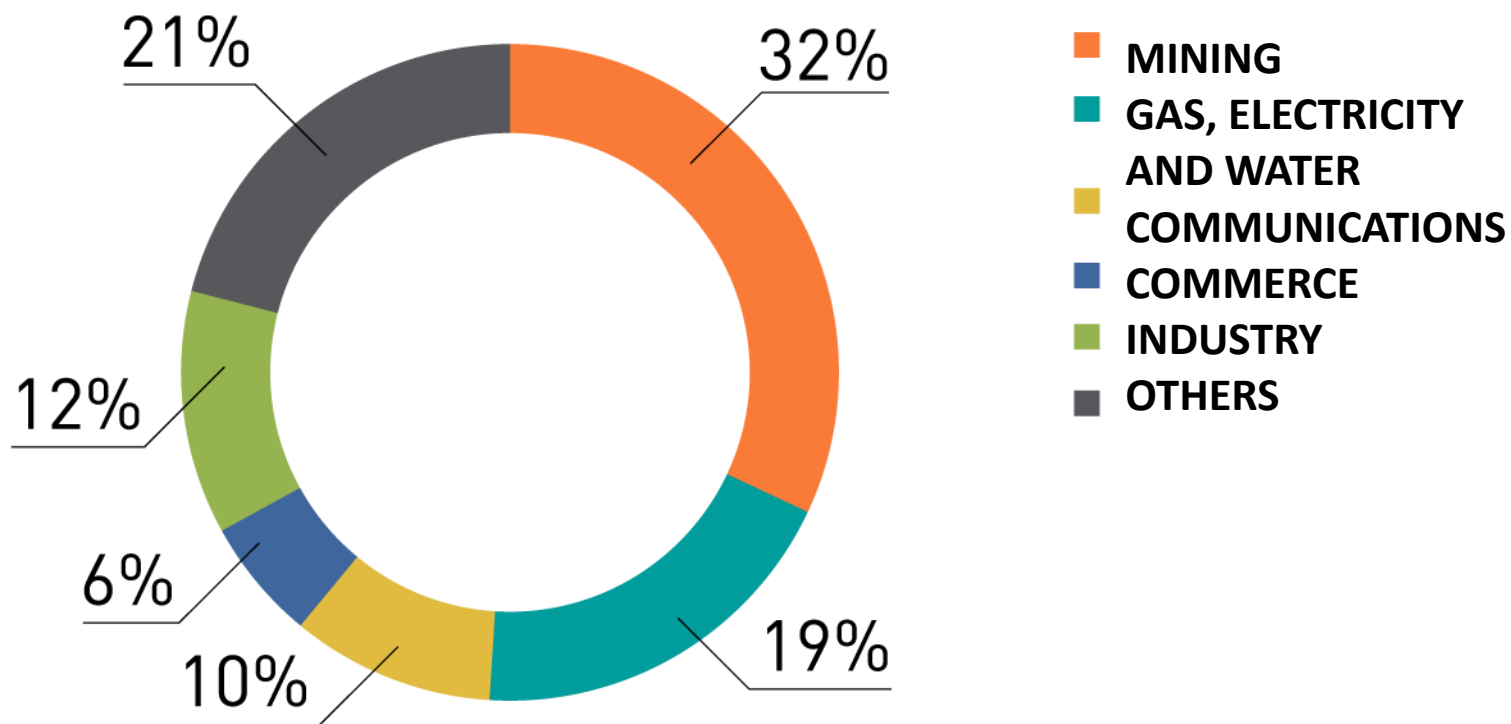
Mining operations map



FDI

FDI by sector, 1974-2010

US\$ 77 billion, current





Agenda

1. Introduction: Mining Council

2. Chile in the mining world: challenges and opportunities

3. Chile and PRC: Long term friendship



World trends: risks

Business risks for mining and metals 2012-2013

RESOURCE NATIONALISM

SKILLS SHORTAGE

INFRASTRUCTURE ACCESS

COST INFLATION

CAPITAL PROJECT EXECUTION

MANTAINING A SOCIAL
LICENSE TO OPERATE

PRICE AND CURRENCY VOLATILITY

CAPITAL MANAGEMENT
AND ACCESS

SHARING THE BENEFITS

FRAUD AND CORRUPTION

ACCESS TO WATER & ENERGY

World trends: risks

Business risks for mining and metals 2012-2013

RESOURCE NATIONALISM

SKILLS SHORTAGE

CHILE

CHILE

INFRASTRUCTURE ACCESS

COST INFLATION

CAPITAL PROJECT EXECUTION

MANTAINING A SOCIAL
LICENSE TO OPERATE

PRICE AND CURRENCY VOLATILITY

CAPITAL MANAGEMENT
AND ACCESS

SHARING THE BENEFITS

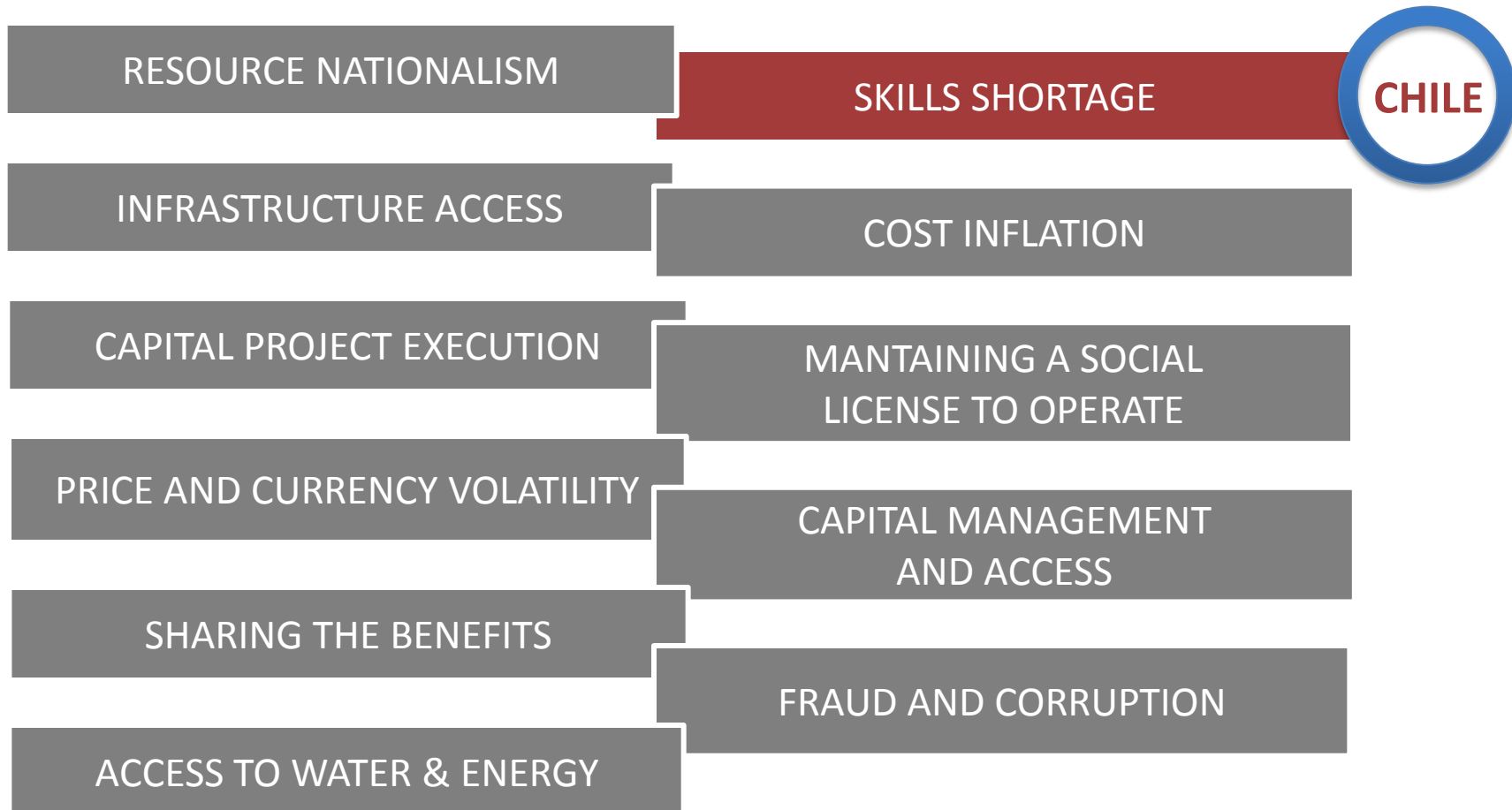
FRAUD AND CORRUPTION

CHILE

ACCESS TO WATER & ENERGY

World trends: risks

Business risks for mining and metals 2012-2013



Source: *The business risk report. Mining and metals 2012 – 2013*. Ernst & Young, 2012

Skills Shortage

- **Main factors:**
 - Low local unemployment
 - Scarcity in workers specialized in mining
 - Training not aligned with industry needs
 - Declining labor productivity
- Planned or announced projects magnify and escalate the problem
- Planning ahead is essential (short & long term)

The Mining Council's member companies are dealing with this challenge together, through the creation of the Mining Skills Council, Chile's first Skills Council.

World trends: risks

Business risks for mining and metals 2012-2013

CHILE

RESOURCE NATIONALISM

SKILLS SHORTAGE

INFRASTRUCTURE ACCESS

COST INFLATION

CAPITAL PROJECT EXECUTION

MANTAINING A SOCIAL
LICENSE TO OPERATE

PRICE AND CURRENCY VOLATILITY

CAPITAL MANAGEMENT
AND ACCESS

SHARING THE BENEFITS

FRAUD AND CORRUPTION

ACCESS TO WATER & ENERGY

Source: *The business risk report. Mining and metals 2012 – 2013*. Ernst & Young, 2012

Infrastructure access

- Investment in infrastructure fosters mining development.
- The need to expand existing production or to develop stranded deposits means that infrastructure access remains a key challenge
- Public-private alliance is fundamental.
- Chinese investors are increasingly influential in global infrastructure development.
- Investing in Chile's infrastructure would benefit the mining industry.



Infrastructure access

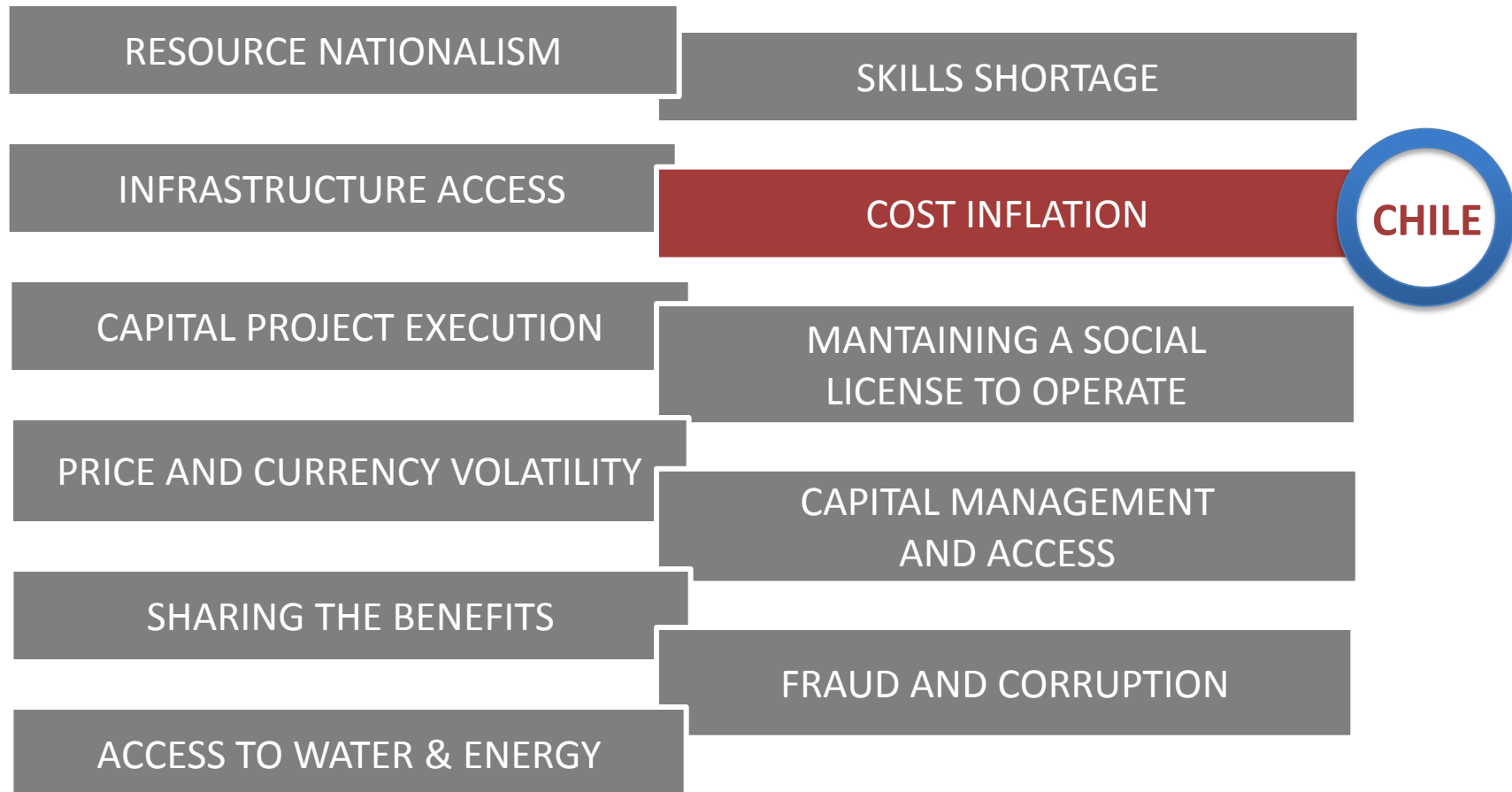
INFRASTRUCTURE INVESTMENT REQUIREMENTS 2012-2016

Sector	Total (US\$ Billions)
Urban road works (incl. Public transport)	11.721
Electricity	13.257
Ports	1.754
Water resources	3.276
Interurban road works	11.581
Airports	1.070
Hospital and prison infrastructure	5.031
Total general	47.690



World trends: risks

Business risks for mining and metals 2012-2013



Source: *The business risk report. Mining and metals 2012 – 2013*. Ernst & Young, 2012

Cost inflation

- Main factors :

- Labor

- Highest salaries in the market
 - Declining labor productivity
 - Technological solutions to mitigate wage inflation, e.g., automation (fly-in, fly-out workforce)

- Ore grades

- Sustained drop over the last 10 years
 - Natural aging of deposits
 - Incorporation of projects with lower grades
 - Uses for new technologies

- Energy

- Chile has one of highest energy costs among the mining countries
 - Mining represents about one third of the country's energy demand
 - Energy already accounts for 15% of costs and is expected to reach 20%.

- Supply constraints

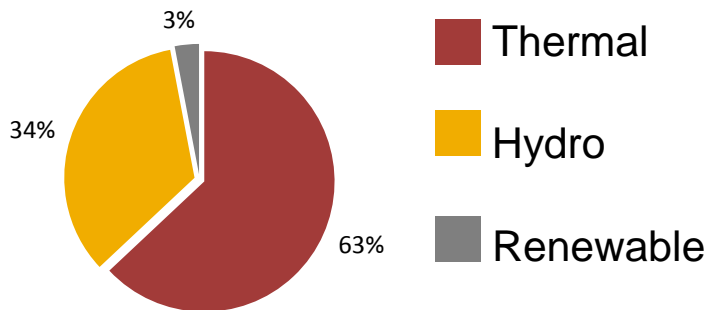
- Operation costs increased 24% in 2011.

**Cost inflation:
Expected to
intensify in the near
future**

Cost inflation

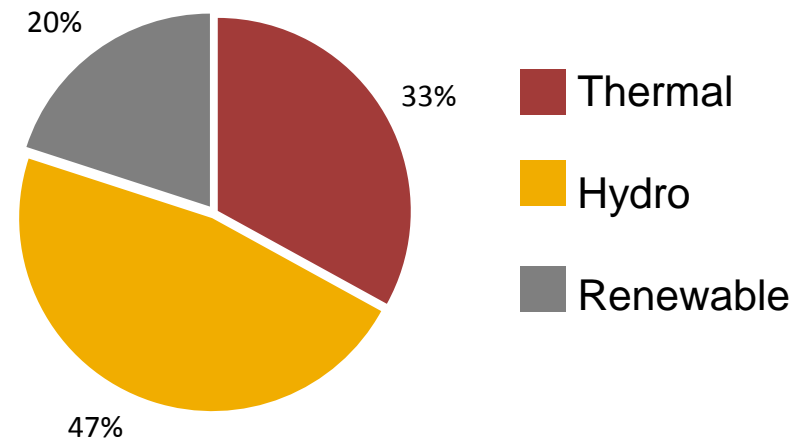
Generation capacity 2012

17,000 MW



Generation capacity 2020 (Government Forecast)

25,000 MW



**Additional capacity in 2020: of 8,000 MW,
3,000 MW would be for mining**

- Mining has pioneered the incorporation of nonconventional renewable energy sources.
- Few players in the energy market.

Cost inflation

MINING SUPPLIES

Projected mining consumption (2012-2015)	US\$ million
	Total
Rubber inputs	1,753
Rental servivces	4,652
Power	13,930
Plastic inputs	3,307
Other Insutrial services	7,383
Oils	1,330
Office supplies	1,080
Maintenance services	11,357
Fuels	14,581
Explosives	2,460
Equipment	23,172
Enginering services	4,266
Constructon services	2,885
Construction material Supplies	6,451
Chemicals	5,467
Steel inputs and parts	12,530
Transport Services	3,777
Total general	120,381.9357

**US\$ 120 Billion
MARKET**

(2012 – 2015)

World trends: risks

Business risks for mining and metals 2012-2013

RESOURCE NATIONALISM

SKILLS SHORTAGE

INFRASTRUCTURE ACCESS

COST INFLATION

CHILE

CAPITAL PROJECT EXECUTION

MANTAINING A SOCIAL
LICENSE TO OPERATE

PRICE AND CURRENCY VOLATILITY

CAPITAL MANAGEMENT
AND ACCESS

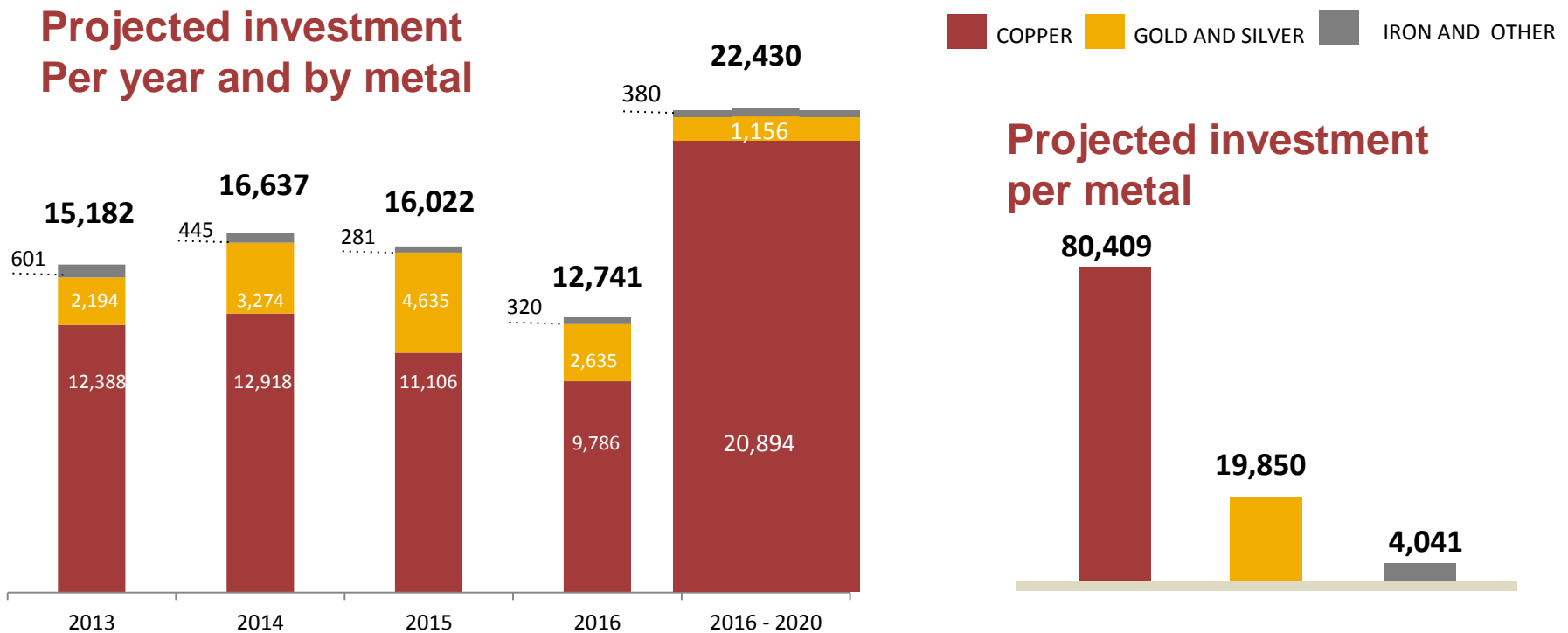
SHARING THE BENEFITS

FRAUD AND CORRUPTION

ACCESS TO WATER & ENERGY

Capital project execution

Projected investment in Chilean mining, 2013 - 2020 (US\$ millions)



Source: COCHILCO. Research and Public Policy Department, June 2012.

Capital project execution

- **Project portfolio:**
 - US\$ 104 billion
 - Increase in production by over 3 million tons.
- Mining companies are increasingly aware of global macroeconomic trends and are actively shaping their strategies accordingly.
- The project portfolio has been in the process of adapting, but is sustained by the industry's positive outlook.
- Chile also offers an excellent macro-institutional and legal framework for investment.

World trends: risks

Business risks for mining and metals 2012-2013

RESOURCE NATIONALISM

SKILLS SHORTAGE

INFRASTRUCTURE ACCESS

COST INFLATION

CAPITAL PROJECT EXECUTION

MANTAINING A SOCIAL
LICENSE TO OPERATE

PRICE AND CURRENCY VOLATILITY

CAPITAL MANAGEMENT
AND ACCESS

SHARING THE BENEFITS

FRAUD AND CORRUPTION

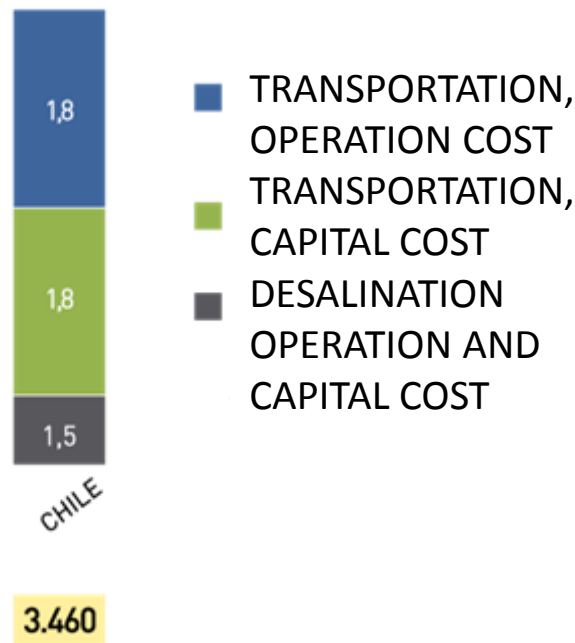
CHILE

ACCESS TO WATER & ENERGY

Access to water and energy

- Copper operations are mainly located in the north, the driest area in the world.
- Water:
 - Scarce
 - High cost (increasing use of sea water)
 - Significant influence on national policies
- Energy is a key factor in future water availability (e.g. Desalination)

Cost of using seawater
USD/m³



ALTITUDE OF
MINES
(M.A.S.L.)

Access to water and energy

- Water demand in mining (2011): **12.6 m³/s**
 - Less than 5% of national consumption.
 - Projected demand (2012 to 2020):



**INNOVATION AND
TECHNOLOGY ARE REQUIRED
TO FIND NEW SOLUTIONS**

- **Efficiency:**
 - Lower ore grades require more water.
 - Efficiency policies have prevented water demand from increasing.
 - Mining is the industry that has shown the greatest progress in water efficiency.
- **New sources**
 - Use of seawater
 - Water highway

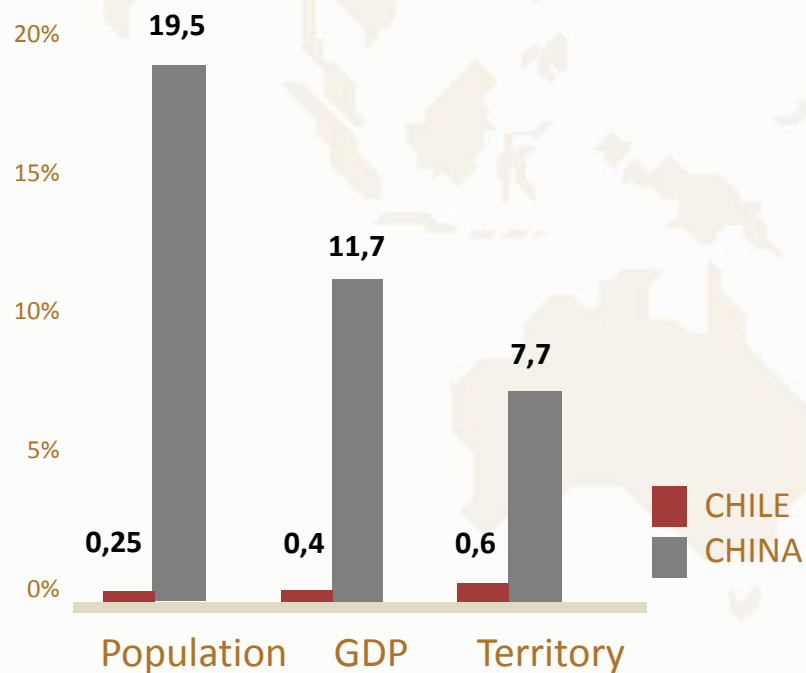


Agenda

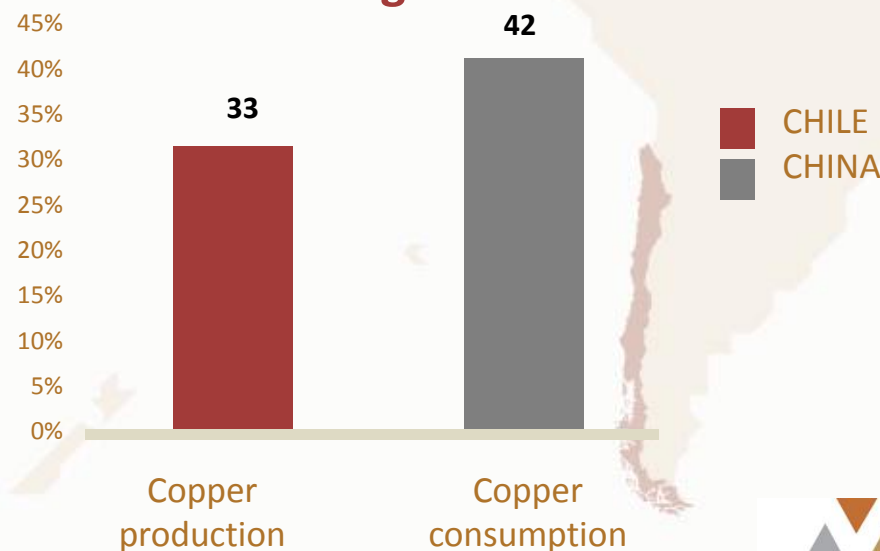
- 1. Introduction: Mining Council**
- 2. Chile in the mining world: challenges and opportunities**
- 3. Chile and PRC: Long term friendship**

Chile and PRC in the world

Chile and China present different realities in the world



However, the closeness in mining is clear



Strategic partners

Chile and PRC: Long term friendship

FUTURE

**Maintaining Chile's leadership as a copper producer,
supporting China's growth**

Strengthen cooperation and relationship

Business opportunities in mining and/or other related sectors

**Challenges identified.
Identify opportunities in challenges**



Thank you.

CONSEJO MINERO