



Energy and Mining in Chile

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CONSEJO MINERO

Introduction

□ Chilean Mining Council

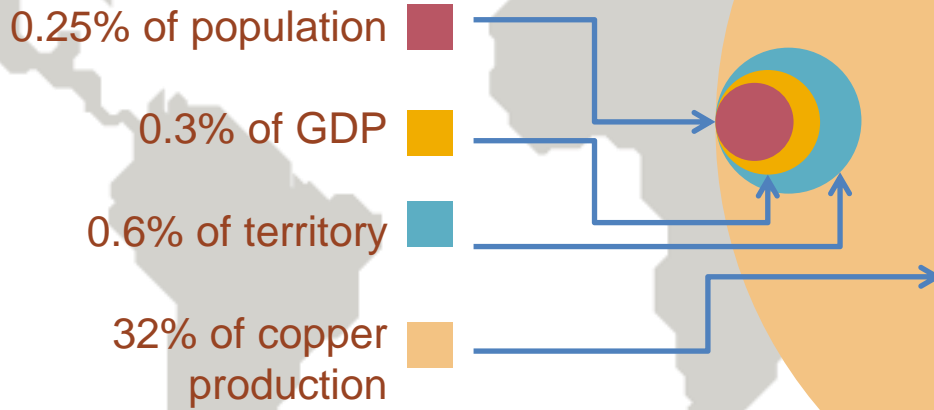
- Association of the largest producers of copper, molybdenum, silver and gold in Chile, both national and foreign, private and public. As a whole, these companies represent over 95% of national production of such metals.
- The purpose of the Council is to communicate the large-scale mining activity, its challenges and role in the Chilean development, as well as contributing to the process of sound public policy formation.

□ Members

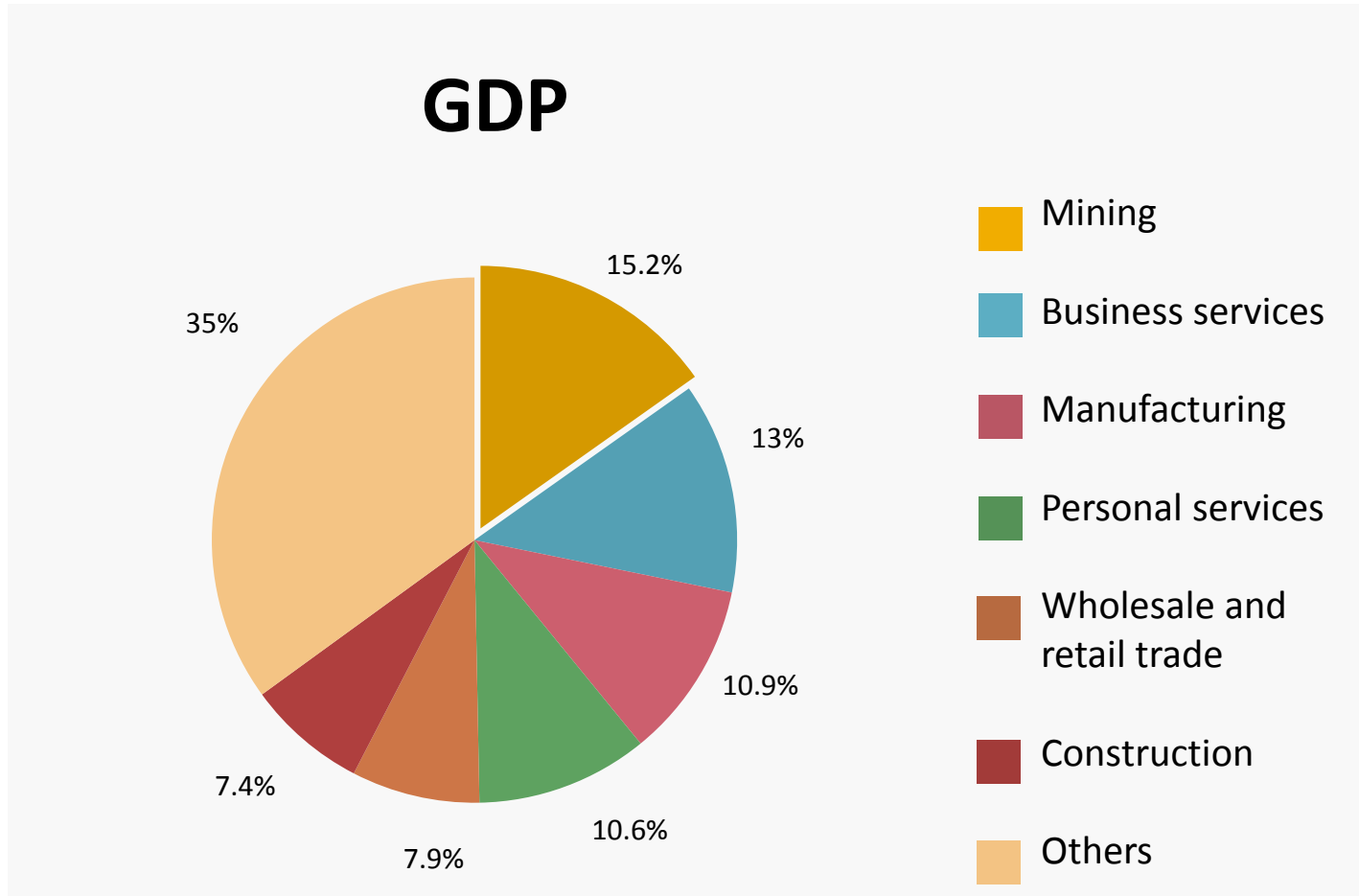


Introduction

Chile in the world

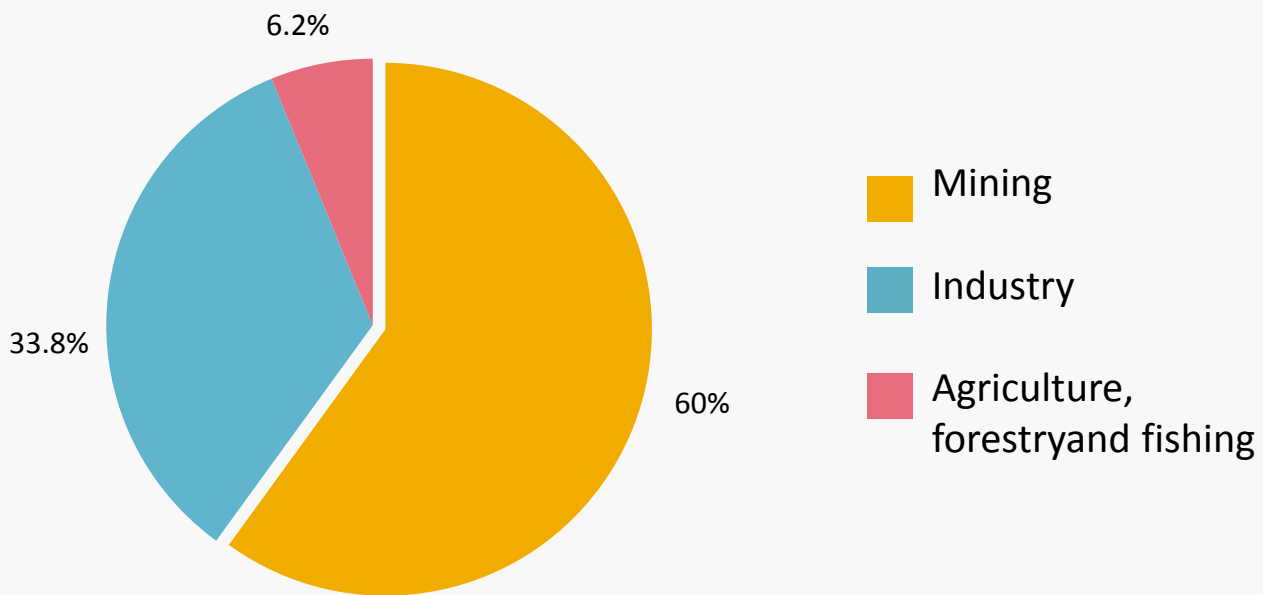


RELEVANCE OF MINING IN CHILE



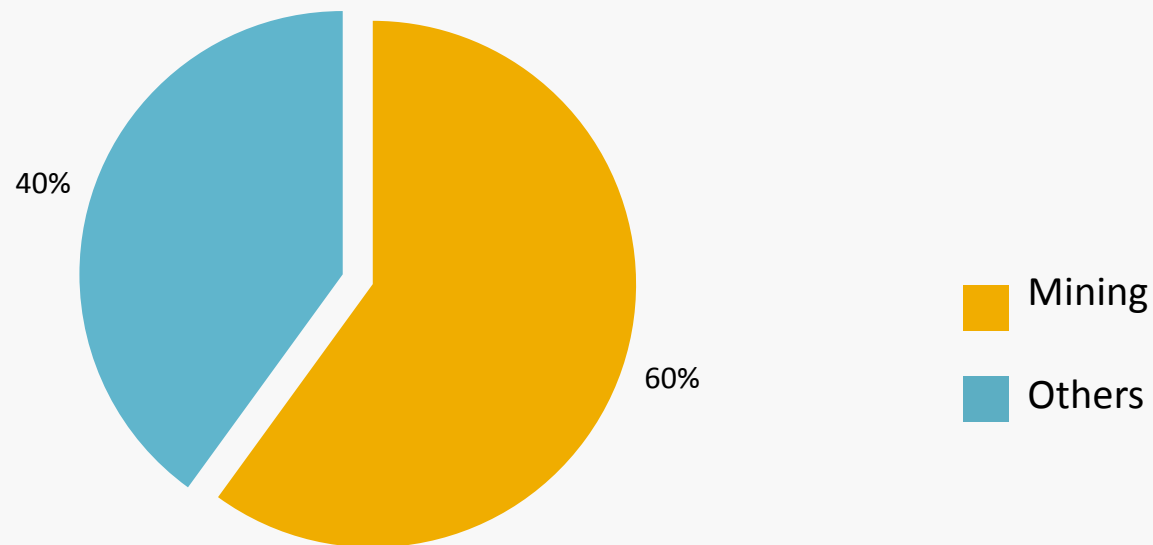
RELEVANCE OF MINING IN CHILE

Exports



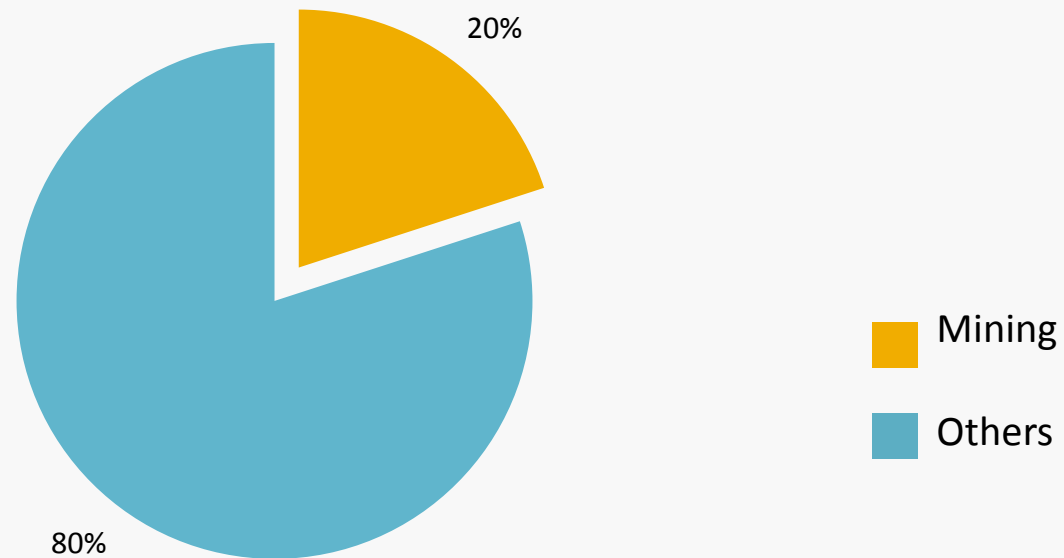
RELEVANCE OF MINING IN CHILE

Foreign Investment



RELEVANCE OF MINING IN CHILE

Contribution to fiscal revenue





MINING REQUIREMENTS



Mineral Resources



Human Capital



Willingness to Invest



Water



Legal Framework



Energy



ENERGY, A KEY FACTOR

□ Impact on costs



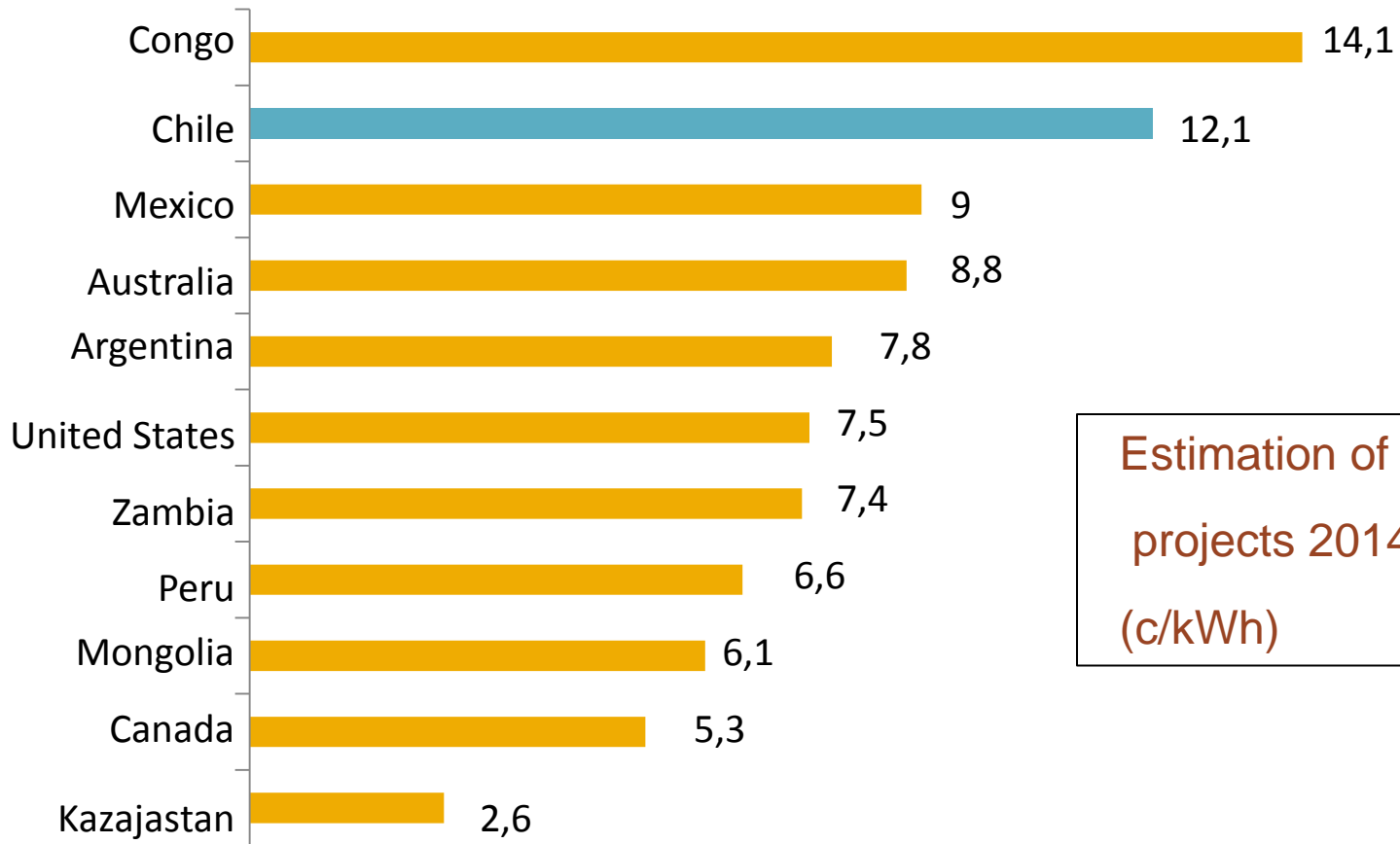
- One of the mining countries with the most expensive energy

□ Key factor in future water availability



ENERGY, THE KEY FACTOR

Energy cost in copper producing countries



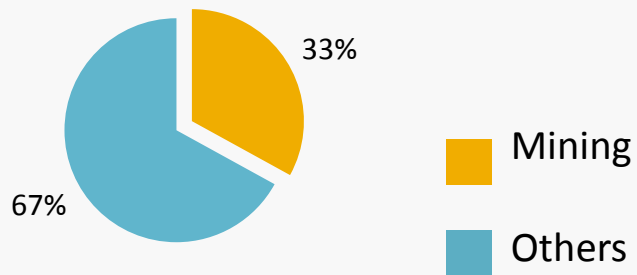
Estimation of costs,
projects 2014-2020
(c/kWh)



ENERGY, A KEY FACTOR

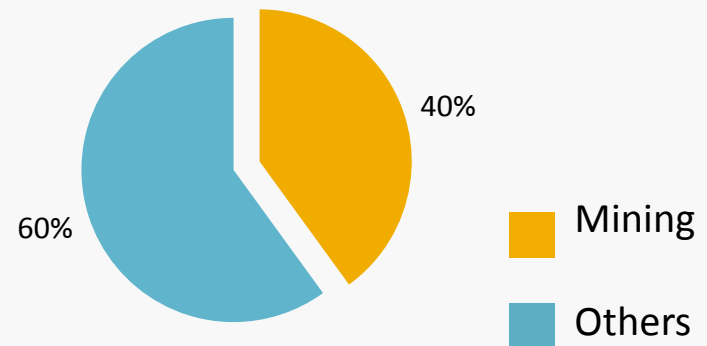
Electricity Demand in 2012

65,000 GWh



Electricity Demand in 2020 (Government Forecast)

100,000 GWh



2012-2020 Government Forecast

6% annual growth rate for country demand

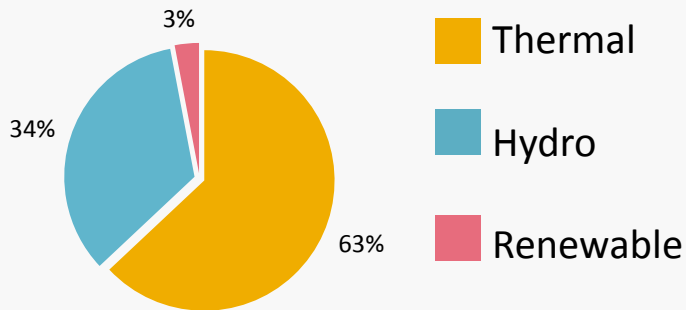
6.7% annual growth rate for mining demand: **US\$100 billion investment portfolio**
+50% production (5.6 to 8.4 million of tons)



ENERGY, A KEY FACTOR

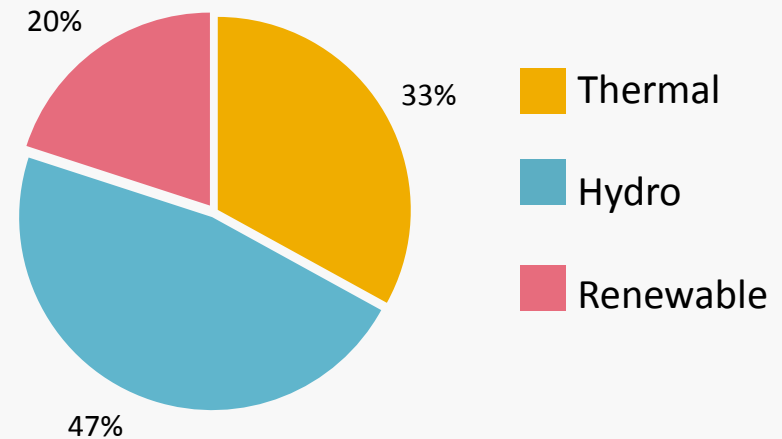
Generation capacity 2012

17,000 MW



Generation capacity 2020 (Government Forecast)

25,000 MW



Additional capacity as to 2020: 8,000 MW
3,000 MW of them would be for mining



PUBLIC POLICY DEBATE

- ❑ **Government strategy to face such challenging requirements**
 - Energy efficiency
 - More non-conventional renewable energy
 - More domestic renewable energy
 - Strengthening of transmission grid
 - More competition
 - Regional interconnection



PUBLIC POLICY DEBATE

❑ Energy efficiency

■ Government view

- A goal of 12% reduction over the trend (BAU) by 2020
- The message is: energy investments are necessary once efficiency has been accomplished

- We share the view but the goal is difficult for mining, because the main effort has already been made and mining is facing exogenous adverse factors (low grade, higher hardness, use of sea water).



PUBLIC POLICY DEBATE

- ❑ **More non-conventional renewable energy**
 - **Government view**
 - Current legal target of 10% share by 2024 would be doubled
 - But the environmental benefits should be balanced with competitive costs and continuous supply
 - Mining is committed to contribute, according to that balance



PUBLIC POLICY DEBATE

□ More domestic renewable energy

▪ Government view

- Hydro domestic generation should increase its share from current 34% to 47% by 2020
- Thermal generation (fossil sources) is still crucial, accomplishing tight environmental standards; zoning would be implemented
- We note that current environmental standards are among the tightest and any change would be passed on higher energy costs, which are already high
- Zoning for thermal-fossil power plants makes sense in order to face environmental and community opposition, but implementation is hard



PUBLIC POLICY DEBATE

❑ Strengthening of transmission grid

▪ Government view

- Current regulatory framework lacks of a long run approach for transmission investments
- Higher government involvement is needed in the design of transmission grids
- A bill on “public electric highway” has been recently sent to the Congress
- We need to find the right balance between our successful private and competition driven approach for electric markets, and a higher government involvement that would help to face environmental and community opposition



PUBLIC POLICY DEBATE

❑ More competition

▪ Government view

- It is a concern at generation and distribution levels
- On their energy supply contracts, mining companies are exposed to a highly concentrated and tight market
- This concentration and tightness comes from difficulties for new entrants and investments from incumbents due to:
 - environmental and community opposition
 - some regulatory lags



PUBLIC POLICY DEBATE

❑ Regional interconnection

■ Government view

- Our experience on this is limited and frustrating but the potential benefits are obvious
- Any future development should be based on reciprocity

■ We agree



CONCLUSIONS

- ❑ Mining is the booster of Chilean economic development
- ❑ Energy is crucial for mining
 - No available energy, no mining
 - No competitive energy, no competitive mining
 - No sustainable energy, no sustainable mining
- ❑ Future increase on energy demand is good news
- ❑ The concretion of these forecasts is challenging
- ❑ It is required a strong social and political consensus about the needs of energy and the instruments to fulfill those needs
- ❑ Government has taken first steps, but there is a long way ahead
- ❑ Mining industry is committed to finding solutions