



ANTOFAGASTA PLC

# Copper, Chile & Antofagasta plc

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# Antofagasta at a glance

## Group

- Market cap<sup>1</sup>: \$10.2 billion
- Strong balance sheet
- 65% owned by Luksic Group, 35% free float
- FTSE 100

## Mining division

- Top 10 copper producer
- Gold and moly by-products
- 4 operations in Chile, one of the world's most developed and stable mining locations
- Significant potential production growth

## Transport division

- Provides rail and road cargo services in Chile's Antofagasta Region

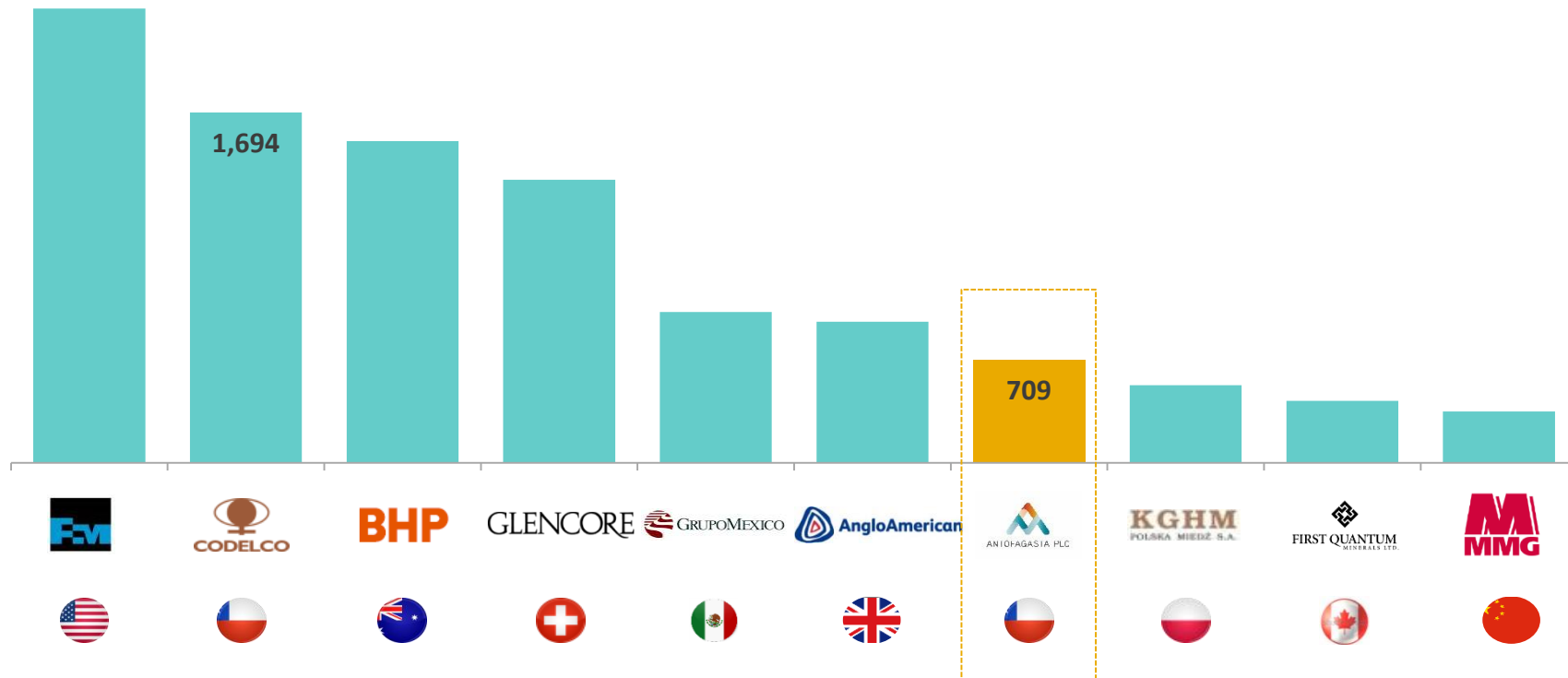


1. As of June 30 2017

2. Production 2016, 100% basis

# Top 10 global copper producer

Top-10 global copper producers, based on 2016 consolidated production ('000t)



Source: SNL

# 2016 Copper demand by region – An emerging market story

China

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India

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Asia excl. China and India

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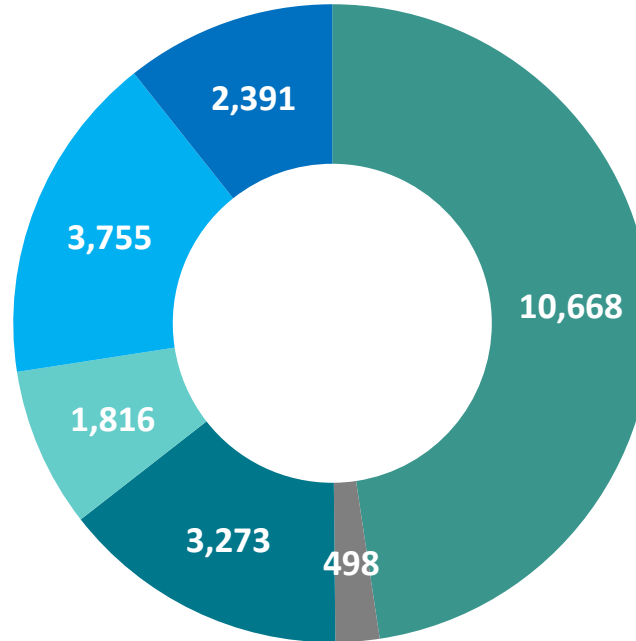
USA

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European Union

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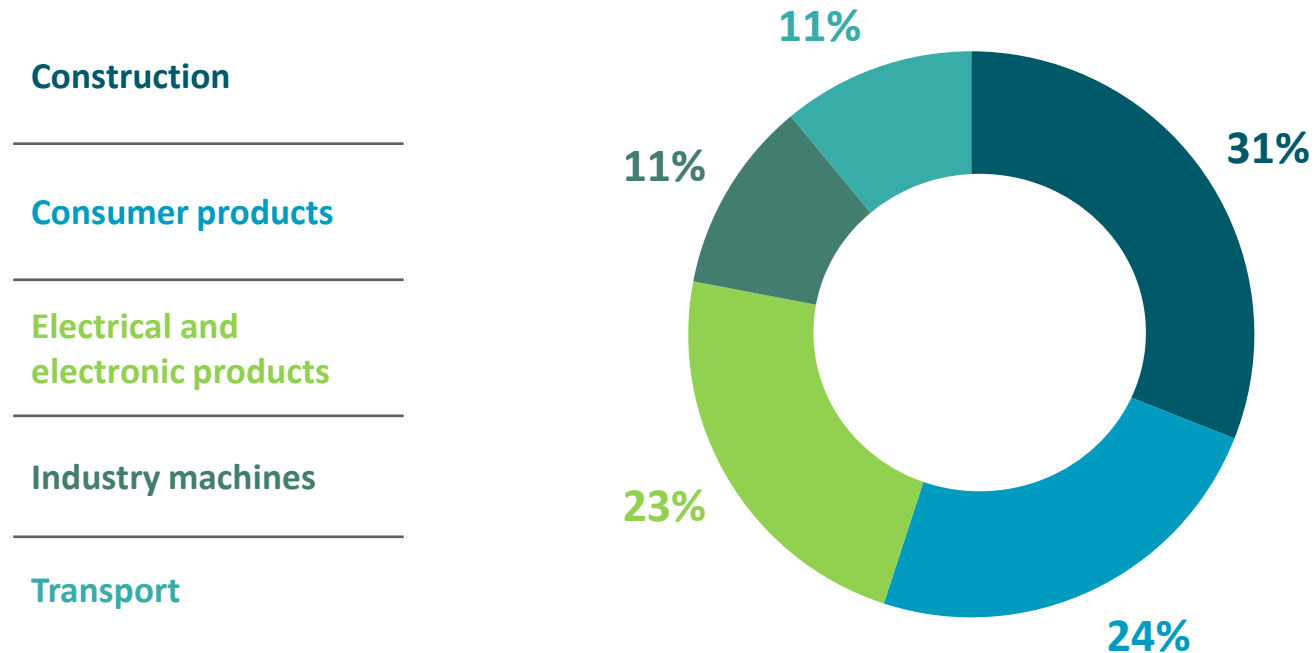
Rest of the world



*Note: Copper demand in 000's tonnes*

*Source: Wood Mackenzie*

# 2016 Global copper demand by sector – Tier 1 commodity



Source: Wood Mackenzie

## Growing demand

- China consumption growth sustained through the transition to a “New Normal”
  - *Demographics – urbanization & higher income levels*
  - *Consumption led growth also copper intensive e.g. household appliances*
- Infrastructure
  - *Domestic grid, rail, road*
  - *One belt One road*
  - *India and other EM to follow (pace unknown)*
- Favorable impact of technology disruptions
  - Early days to fully quantify the impact of clean energy and transport technologies but big implications for the market



***Demand expected to continue growing @ 1 to +2% p.a.***

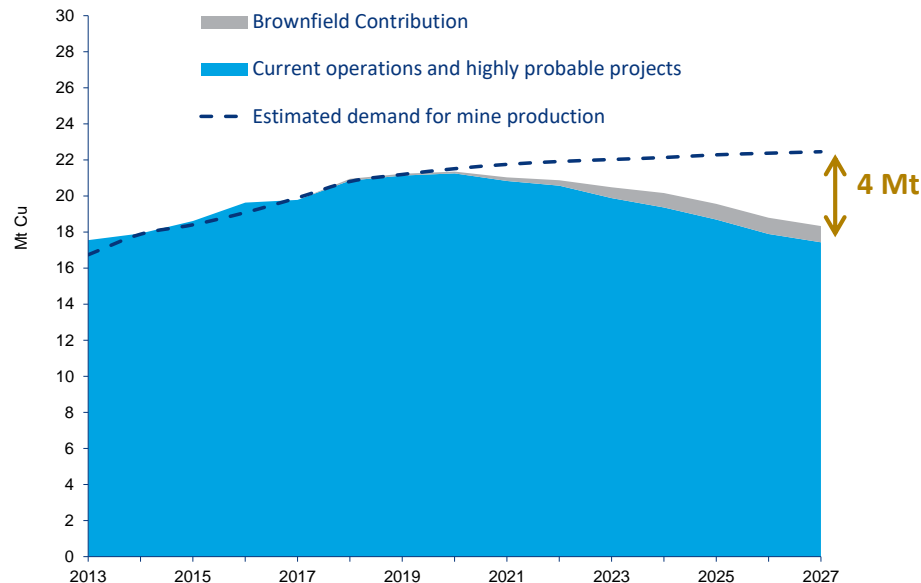
# Copper market fundamentals – supply

## Constrained supply



- Grade decline of existing operations
- Technical challenges on brownfields
- Light pipeline of new projects
- Limited success in new sizable discoveries
- Recent downturn and prevailing uncertainty drives caution on capital allocation
  - Regional geopolitics
  - China macro imbalances
  - Risk of protectionism disrupting trade and economic growth

## Expected copper supply



Source: Wood Mackenzie

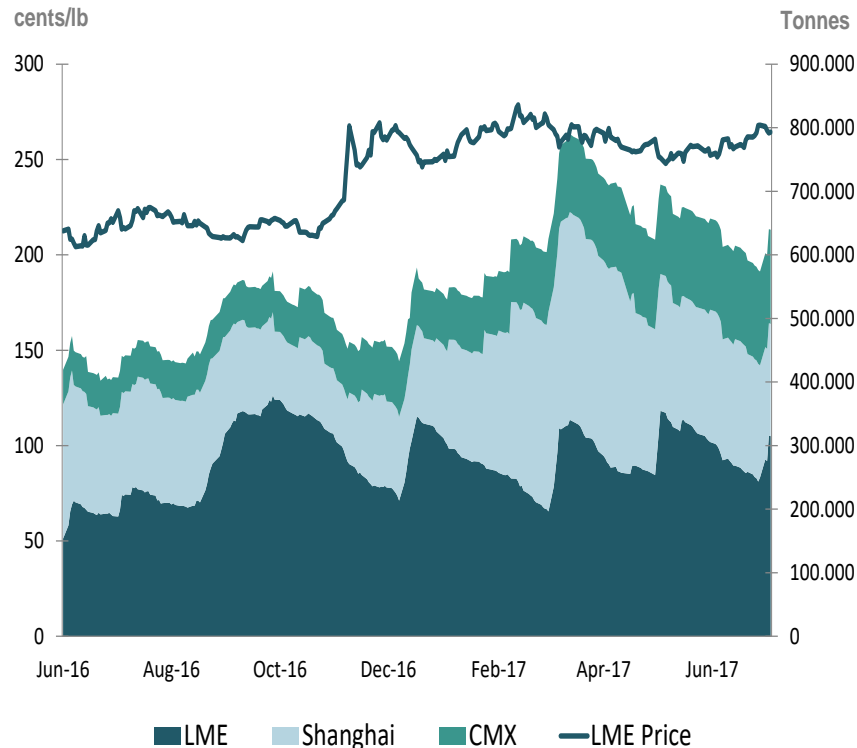
***Copper growth expected to be supply constrained***



# Copper price- Outlook positive but expect year-on-year volatility

- Market deficit possibly earlier than anticipated before
- Miners inability to respond quickly support prices
- Rate of supply growth slowing with only few committed major greenfield project
- Increased scrap availability, but China concerned with imports and recycling environmental impacts
- Believe new price floor probably established

## Copper Price & Exchange Inventories



# Chile offers a supportive mining environment



## Chile

- Copper key contributor to the economy (8% of GDP<sup>1</sup>, 51% of exports)
- History of stability and strong institutions – OECD country
- Solid public finances with low national debt (21.3% of GDP<sup>1</sup>)
- 29% of global copper production and 30% of world reserves

## Challenges

- Moving from middle income to high income economy
- Dealing with greater social expectations and demands on business
- Improving labor productivity through better access and quality of education

# Mining challenges must be addressed

## **Safety**

Embedding a culture of zero fatalities

## **Productivity**

Labour and capital

## **Deterioration of the quality of the deposits**

Lower grades, increased rock hardness and impurities, depth and geographical difficulties

## **Availability of water**

Drawdown of aquifers, climate change effects, increased population, limited permitting

## **Increasing demand for energy**

Power-intensive processes due to declining grade and rock hardness, use of desalinated water

## **Resistance to mining activity**

Greater environmental and social awareness

## **Regulatory and environmental changes**

Frequent amendments to labour, tax, environmental and other regulation

***Mining industry must address these issues to maintain competitiveness***

# Responding to the challenges

## **Productivity,** *a sustained effort*

**People** - Attract and retain the best talent in key disciplines.

**Organization** - Simplification of Support Functions & Clear Accountabilities in Operations .

**Assets** – Release latent capacity focusing on maintenance as the key driver.

## Efficient **capital allocation**

**Sharing infrastructure** - Internal District synergies & assess opportunities with third parties.

**Phased project development** - Modular growth and sequencing of investment.

**Focus on core business** - Enable third party investment in non-core infrastructure e.g. water, energy, acid.

## **Innovation,** *as a competitive advantage*

**Strategic choices for innovation** - Sulphides Leaching, Tailings Management, Mass Material Movement.

**Internally sourced innovation** - Internal Knowledge Sharing Platform: InnovaMinerals .

**Externally sourced innovation** - Open Innovation Platform - Foundation Chile.

**Technology Road Map** - To steer adoption of and integrate available technology solutions .  
Prioritize data driven decision making and moving people from remote sites.

# Productivity improvements embedded in our organization

## Cost and Competitiveness Programme (CCP)



### Services Productivity

Contractors productivity



### Operating & maintenance management

Asset productivity



### Corporate & Organisational Effectiveness

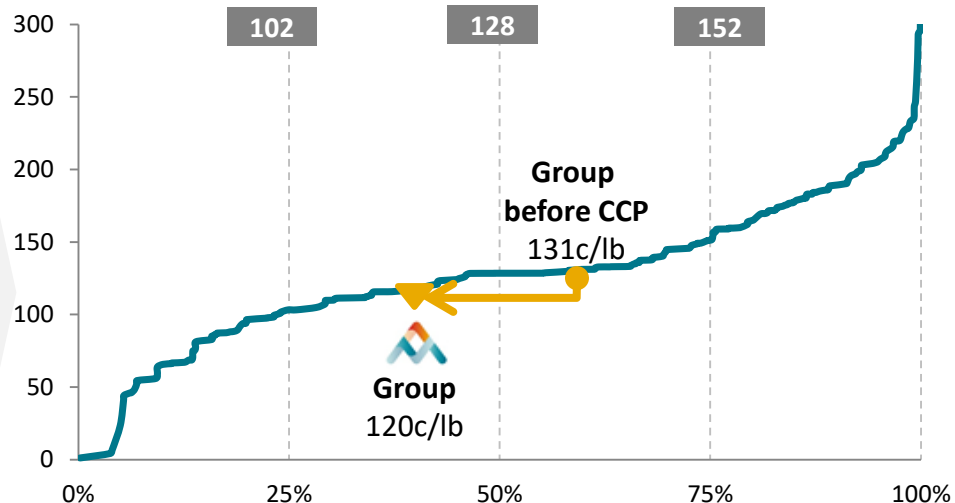
Labour productivity



### Energy Efficiency

Consumption efficiency

## 2016 Group competitiveness improved to the 2<sup>nd</sup> cost quartile <sup>(1)</sup>



1. Competitiveness measured in terms of 2016 net cash costs (including by-product credits).  
Source: Wood Mackenzie

**Cash costs fell by 15-20% in 2 years despite a 12% decrease in grade**

- ✓ **District view and planning to ensure efficient use of infrastructure capital**
  - Strong optionality allows development of new projects e.g. Centinela district with Encuentro Oxides project
  - Combined water supply for Centinela and Antucoya
  - Development of shared port infrastructure
- ✓ **Partnerships -public/private- to optimize investments**
  - e.g. desalination plant at Pelambres with joint water intake sizing for potential community supply private concession





# Antofagasta has been a pioneer in innovation



*Centinela sea water pipeline*

## Thickened tailings

- Large scale use at Centinela
- Pioneer in copper at current scale
- Solid content up to 70%

## Use of seawater

- Pioneer in the use of untreated seawater
- First at Michilla (1990s)
- Now at Centinela and Antucoya

*Centinela thickened tailings*



# Antofagasta has been a pioneer in innovation



*El Arrayan windfarm*



*Solar plant at Centinela*

## Promotion of renewables – wind and solar

- In use at Los Pelambres and Centinela
- Close to 50% of Los Pelambres' power consumption comes from clean energy

## Community relations - Somos Choapa

- An innovative relationship model
- Implemented in Los Pelambres
- Based on participation and transparency



*Caimanes agreement*



# Committed to sustained value creation

## Emphasis on disciplined production

- Only profitable production
- Every tonne must make an earnings contribution

## Focus on cost and operating reliability

- Protect margins
- Embedded Cost & Competitiveness Programme
- Releasing spare capacity

## Creating long term value through sustainability & innovation

- Community engagement model
- Social licence to operate or grow
- Embedded practice of innovation

## Positioned for growth

- Positive copper outlook
- Long term investment criteria
- Disciplined capital allocation
- Advance organic growth options

