

Copper Fundamentals

SIGNIFICANCE OF COPPER FOR POWER ORE

- **Power Ore recently acquired Opemiska Copper Complex** in Quebec past-producing Falconbridge high grade copper-gold operation consisting of the Springer and Perry mines
- Opemiska was in production between 1953-1991 via underground mining
- Given the looming global supply gap, Opemiska is a strategic acquisition that aligns with Power Ore's electrification metals focus

[Click here to view Power Ore's Opemiska Copper Complex Project Presentation](#)

CHEMISTRY

- **High thermal, electrical conductivity**
- **50 parts per million (ppm)** in the Earth's crust
- Occurs as **Native Copper, Copper Sulphides, Copper Oxides**

COPPER USES

- Infrastructure
- Construction
- Electrical Components
- Wiring
- Chemicals

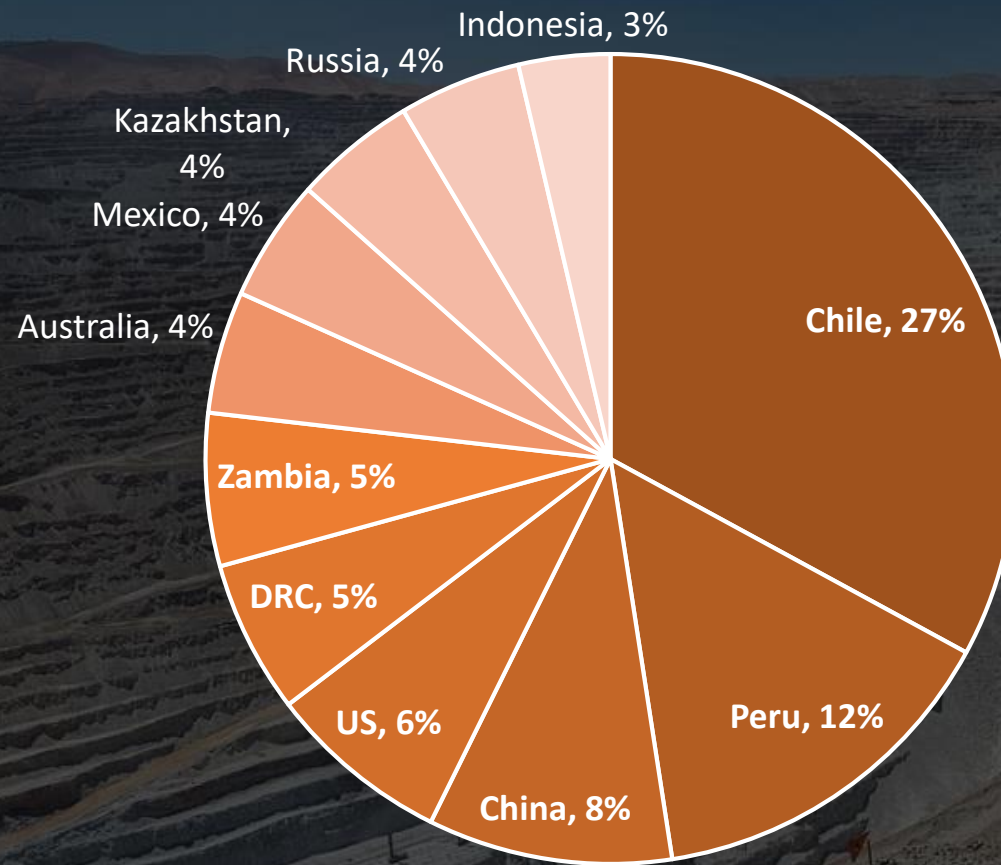
COPPER PRICE TREND



COPPER SUPPLY

- Chile and Peru contribute ~40% of global copper production
- Chilean copper head grades have fallen 50% since 2000, while cash costs are rising
- Top 3 Chilean mines:
 - Escondida (1,270 kt/year)
 - Collahuasi (454 kt/year)
 - El Teniente (432 kt/year)
- Top 3 Peruvian mines:
 - Cerro Verde (500 kt/year)
 - Antamina (450 kt/year)
 - Las Bambas (450 kt/year)

COPPER SUPPLY



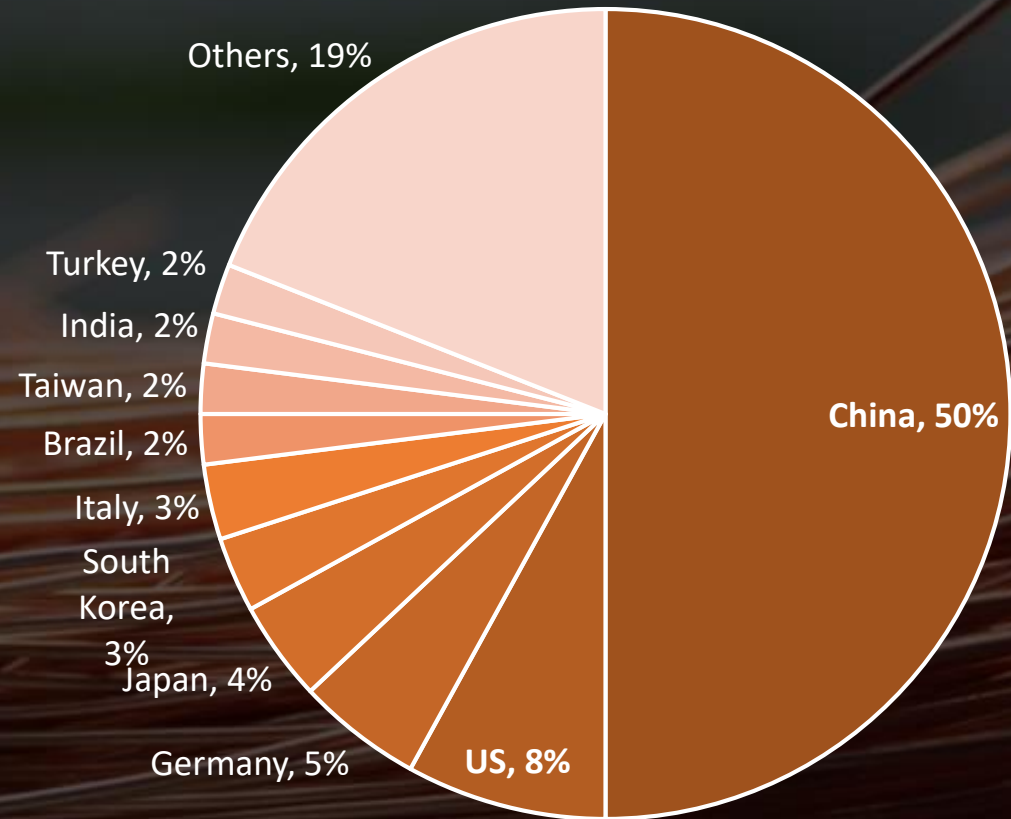
Data Source: DBS Group Research, Copper and its Electrifying Future (May 10, 2018)

COPPER DEMAND

- China accounts for 50% of global copper demand
 - Primary uses include electrical network (37%), Construction (20%), white goods (16%), machinery (11%), and transportation (8%)
 - Belt and Road Initiative (BRI) expected to significantly impact copper demand in the long term
- Average global demand growth estimated at 2% per year, while a +/- 1% impacts global demand by ~225,000 tonnes¹
- Apart from traditional demand drivers, copper will benefit from the electrification revolution and increase usage of renewable energy
 - This will be enhanced by emerging economies including India and ASEAN members

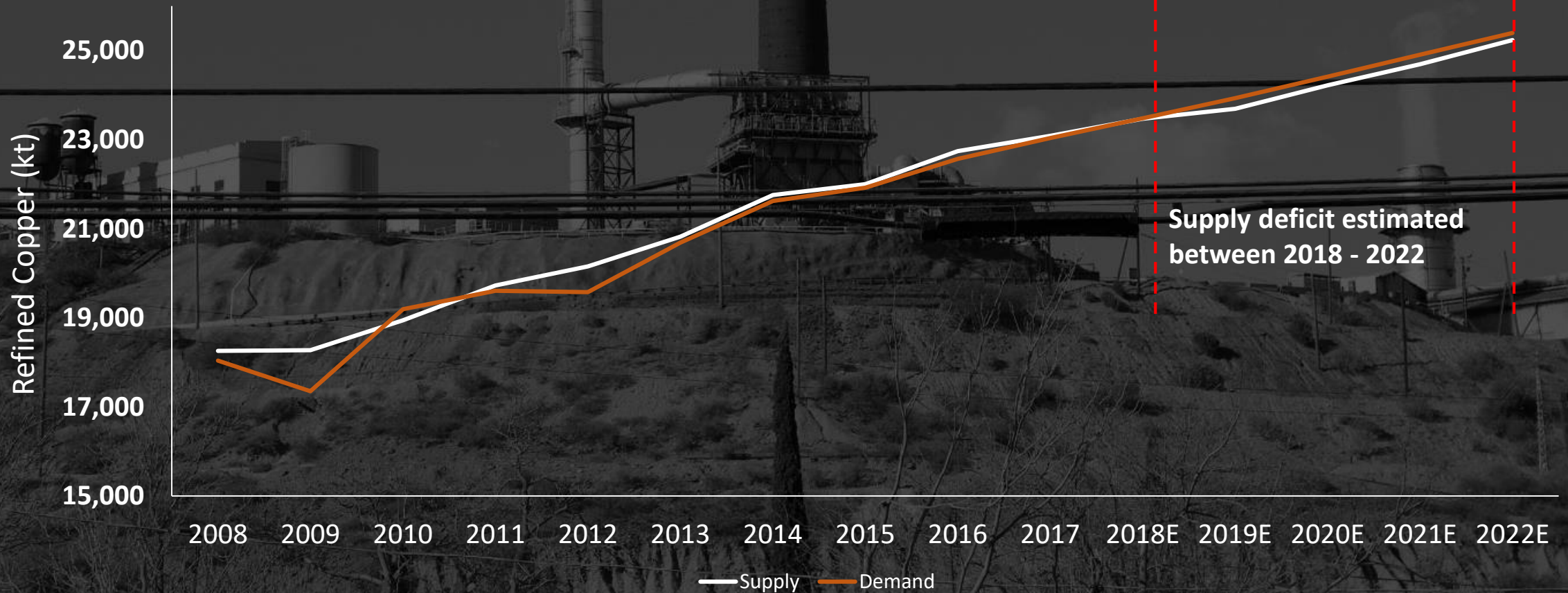
¹ from Scotiabank GBM, Commodity Fundamentals Remain Solid Despite Macro Overhang (October 10, 2018)

COPPER DEMAND



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REFINED COPPER SUPPLY & DEMAND



Supply deficit estimated between 2018 - 2022

¹ from Scotiabank GBM, Commodity Fundamentals Remain Solid Despite Macro Overhang (October 10, 2018)

COPPER GEOLOGY BASICS

Two major deposit types yield ~80% of global copper production

Porphyry deposits

- 50-60% of global production
- Polymetallic—significant source of gold, silver, molybdenum
- Related to the movement of oceanic crust under continental or oceanic crust (i.e. subduction)—occur in areas where continental plates have collided
 - Canadian Cordillera, Andes Mountains, western margin of Philippines, Indonesia, Papua New Guinea
 - Fracture controlled, stockwork of quartz veins and breccias containing copper sulphides with gold/moly
- Deposits are typically >100 million tonnes, and grade 0.2% - >1.0%

Sediment-hosted deposits

- 20% of global production
- Polymetallic—significant source of lead, zinc, silver, cobalt
- Disseminations of fine-grained sulphides in continental sedimentary rocks (i.e. black shale, sandstone, limestone)
 - Central African Copperbelt—600km long, 50km wide spanning across Zambia and DRC
- Deposits are typically ~22 million tonnes (often significantly larger, >100 million tonnes), and grade > 2.0%

SUMMARY

1. Copper is extremely versatile, and has optimal thermal and electrical properties. It is used in infrastructure, construction and anything electrical
2. Global copper supply dominated by Chile and Peru. Chilean copper supply at risk due to lower head grades, rising costs at traditional, large scale mines
3. Global copper demand expected to increase, and will be driven by China as well as India and ASEAN members. Electrification and renewable energy developments will further contribute to global copper consumption
4. Copper demand is expected to outpace copper supply, creating a supply deficit for the next 3-4 years given the lack of new mines coming online—**this will be a catalyst for rising copper prices moving forward**

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