

Copper: From Mine to Cable

Copper is an essential metal for the modern global economy. It is present in almost all industrial sectors: from energy to telecommunications, from automotive to electrical infrastructure. It is at the heart of the energy transition, electrification, and global urbanisation. Despite its long history, the copper market today faces challenges related to production, growing demand, and geopolitical tensions.



1. Historical Origins and Industrial Role

Copper is one of the first metals used by humankind. Employed since prehistory for tools, weapons, and then decorative objects, it has accompanied the evolution of human societies towards increasingly complex technologies. Today, it is indispensable in electrical, electronic, construction, and transport applications, thanks to its high electrical and thermal conductivity, ductility, and corrosion resistance.

2. From Mine to Cable: Value Chain

The transformation of copper follows a long industrial journey:

01	02
Mining extraction	Crushing and grinding
Open-pit or underground mines extract copper ore.	The ore is fragmented to release the mineralisation.
03	04
Concentration	Refining
Copper is concentrated by flotation or hydrometallurgical processes.	Obtaining refined copper in the form of cathodes (purity > 99%).
05	06
Industrial transformation	End use
Refined copper is processed into wires, cables, tubes, electronic components, and semi-finished products for various industries.	In electrical grids, vehicles, industrial installations, clean technologies, and electronics.

This chain shows the importance of copper not only as a raw material but as a vital industrial input for the modernisation of energy and digital infrastructures.

3. Global Production & Key Players (2025)

Copper production relies on a small number of countries rich in mineral resources:

- Chile: world leader, producing approximately 24–25% of extracted copper.
- Mexico, Peru, United States, Indonesia, Democratic Republic of Congo (DRC) are also among the major producers.
- Refined copper is then primarily processed in Asia, notably in China, which is both a major producer and the leading global consumer/refiner.

According to estimates, global mined copper production (ore) is expected to reach approximately 23.5 million tonnes in 2025, with projected growth to \approx 30.9 million tonnes by 2034 if current projects materialise.



4. Copper Market: Price, Supply and Demand

Current Situation (end of 2025)

The global copper market remains under pressure:

- Despite an anticipated slight growth in refined production, concentrate availability limits expansion.
- Professional bodies expect an increase in refined production of approximately 3.4% in 2025, but a slowdown to less than 1% in 2026, while consumption continues to grow.
- Some analysts also anticipate refined production deficits for 2025 and 2026, reflecting supply constraints and mining disruptions worldwide.

In commodity markets, copper was trading in December 2025 around 10,500 – 11,000 USD/tonne (~7.00 – 7.60 CHF/kg for scrap), according to the London Metal Exchange (LME), amid tight supply and robust demand for infrastructure and clean technologies.

5. Volatility Factors & Market Influences

The copper market is influenced by a combination of external factors:

Energy transition Demand for clean technologies (electrical grids, renewable energies, electric vehicles, data centres) increases pressure on copper demand.	Geopolitical dependence The concentration of reserves and production in certain areas (notably Latin America, DRC, Asia) exposes the market to political, environmental, and logistical risks.
Decreasing ore grades Ore grades in deposits have declined over decades, making extraction more costly and complex.	Recycling Although representing a growing share of supply, recycling does not yet fully offset primary supply constraints.

These elements make copper a highly volatile asset, subject to significant price fluctuations depending on global supply and demand conditions.

6. Outlook & Trends towards 2030

Structural Pressures

- The continuous increase in global demand, particularly in Asia, driven by urbanisation and clean technologies, is expected to push demand to grow faster than supply in the coming years.
- Some analysts forecast structural deficits as early as 2025–2026, reflecting production limits compared to industrial and energy demand.
- The advent of electric vehicles, increased digitisation, and modern energy infrastructures requires more copper per unit produced compared to traditional sectors.

Opportunities

- Copper remains central to investment strategies in the energy transition, particularly for electrical grids, renewable energies, and digital technologies.
- The expansion of refining and processing capacities in new markets could create opportunities to diversify supply chains.
- The development of recycling and circular economy technologies can improve supply efficiency.



Conclusion

From the ore extracted in the large deposits of Chile, the DRC, or Peru to the electrical cables that power our cities and vehicles, copper is an indispensable strategic metal. It frames modern life, illustrating the tension between accelerated demand, driven by the energy transition and global urbanisation, and structured supply constraints.

The future trajectory of copper will depend on a combination of technological innovation, political decisions, mining development, and industrial agility to meet growing demand in an increasingly connected and electrified world.

Sources

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