

# The 'futuristic' copper

It's a critical component for sustainable tech

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**I**t would not be an exaggeration to call copper the new oil.

The advent of EVs and new-age batteries means the need for far more copper. According to a Copper Development Association report, hybrid electrical vehicles (which run on batteries and gasoline engines) will require 85 pounds of copper.

In comparison, plug-in-hybrid vehicles will need 132 pounds and battery electric vehicles, which run only on batteries, 183 pounds of copper compared to 18-49 pounds for a petrol engine car.

The India Energy Storage Alliance (IESA) projects that the Indian EV market growing at a CAGR of 36 per cent till 2026 and the EV battery market at 30 per cent CAGR during the same period.

Yet, India will need to import more copper, resulting in higher outgo of precious foreign exchange. According to the Commerce Ministry, India earned a net foreign exchange of \$1.1 billion on the export of copper in 2017-18. However, after the shutdown of Sterlite Copper's smelter plant in May 2018, India has been seeing a net foreign exchange outflow of \$1.2 billion on rising imports.

Additionally, there will be a higher demand for copper in the EV ecosystem, especially in the charging stations. While the charger itself does not have much copper in it, the wires used to connect the charger to the electrical panel and the charging cables use copper.

The electrical conductivity, easy solderability and mechanical toughness make copper wire an ideal choice for solar panels and solar technology. On average, solar energy systems use up to 5.5 tonnes of copper per MW because these wires can be used for all wiring, cabling and heat exchanger requirements.

## 'Powering' demand

India's ambitious target of generating 450 GW of renewable power —

solar and wind — will require a lot of copper.

Globally wind turbines are fast emerging as one of the most environment-friendly renewable energy applications. Investments in large-scale wind power projects are rising as a result. India's total wind power generation capacity is expected to reach 170 GW by the end of 2022.

The suitability of copper with its requisite flexibility, strength and durability for wind turbines to withstand such harsh conditions without any degradation of functionality is a well-established fact today.

Additionally, smart grids, with built-in electronic hardware and automated software, are the future — as far as efficient energy storage is concerned. Not surprisingly, global investments in intelligent grids are growing at an impressive pace, with modular switchgear being produced on a scale.

The global copper market, valued at \$2,30,050 million in 2020, is expected to touch \$3,25,860 million by the end of 2027, growing at a CAGR of 5.1 per cent, according to the Global Copper Market Research report.

Hence, long-term prospects for copper remain bullish. Moreover, JP Morgan says that efforts to decarbonise the economy will account for more than 40 per cent of overall demand growth next year in the 25-million-tonne market.

Similarly, copper prices are expected to stay firm, with Bank of America predicting an average \$9,813 per tonne in 2022 and \$8,375 a tonne in 2023. Goldman Sachs predicts that copper prices could average \$11,875 per tonne in 2022, \$12,000 in 2023, \$14,000 in 2024 and \$15,000 in 2025.

So, copper will drive demand across the industrial sector and usher in sustainable technologies like electric vehicles, charging stations, solar panels and wind turbines worldwide.



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