



Why COPPER is Beyond Critical

Copper has always been critical for societal and economic growth, and the clean energy transition has made it even more important.

The Copper Development Association (CDA) is the copper industry's market development, engineering, and information services arm chartered to enhance and expand the copper markets in North America.

11,000 Years of Copper Use

Ever since humans discovered it in 9,000 BC, copper has helped advance civilization in various ways.

- 8700 BC**
Stone age societies hammered **native copper** into sheets, shapes, and ornaments.
- 4500-3500 BC**
The Copper Age began, and humans manipulated copper into **agricultural tools** and **weapons**.
- 2400-2200 BC**
Copper's use in **wound sterilization** and **surgical tools** was documented in Egyptian medical texts.
- 2750 BC**
Ancient Egyptians used copper for **pipes** and **plumbing**.
- 700-600 BC**
The first **rounded copper coins** were used in Lydia (now Turkey), and copper was also used to build temple **roofs**.
- 1400**
Greeks and Romans developed **musical instruments** from brass, an alloy of copper and zinc.
- 1700-1900**
As the Electricity Age began, humans used copper to make **wires, cables, batteries, and heat exchangers** due to its excellent conductivity.
- 1500-1600**
Copper was used to make **scientific instruments** and **roofs** in Renaissance Europe.
- 1990-2000**
New technologies like **telephones, floppy discs, and computer chips** used copper as a conductor.
- 2000-2010**
Motor rotors were made out of copper for increased efficiency. Copper demand from **cell phones** also soared as they became mainstream.
- 2010-Present**
Besides its widespread uses in the modern economy, copper is now a vital part of **EVs** and **clean energy** technologies.

Source: Copper Development Association

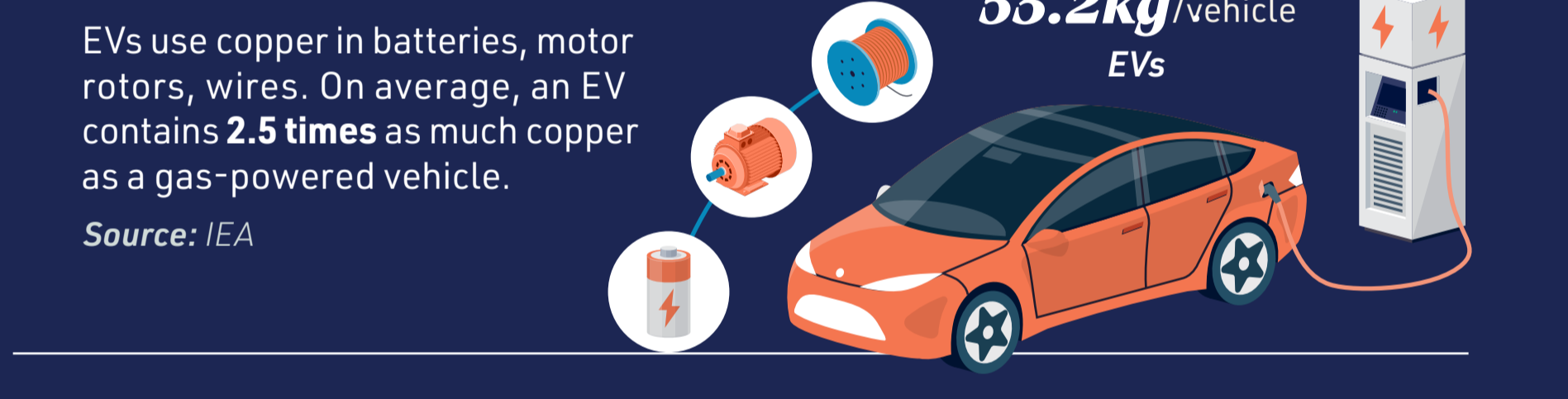
Copper Critical Today and Tomorrow

Today, every sector from infrastructure to transport, electronics, and energy, relies on copper.

As the world gears up for clean energy, copper will be more in-demand than ever.

The Copper Content of Clean Energy

kg per megawatt

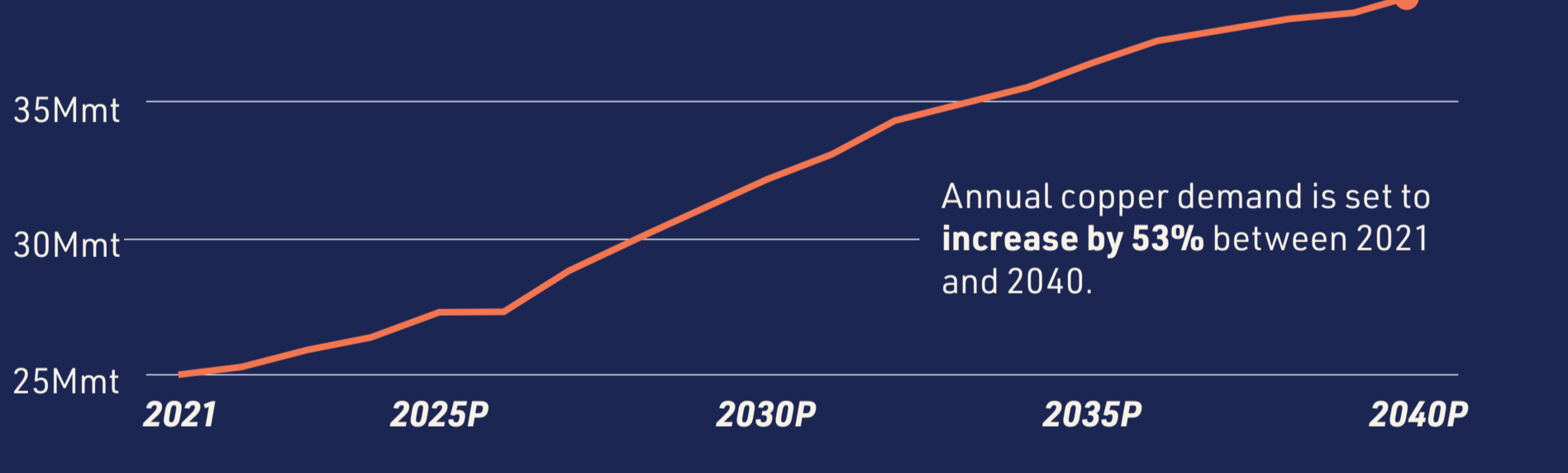


EVs use copper in batteries, motor rotors, wires. On average, an EV contains **2.5 times** as much copper as a gas-powered vehicle.

Source: IEA

Global Refined Copper Demand, 2021-2040P

Million metric tons



Annual copper demand is set to **increase by 53%** between 2021 and 2040.

Source: BloombergNEF

Copper's role in the economy today, along with its importance for the future, shows just how critical it is.

Despite not being on the official U.S. critical minerals list, copper **meets all three components of the definition of a critical mineral**:

- 1** It is essential to economic and national security.
- 2** It plays a key role in energy technology, defense, consumer electronics, and other applications.
- 3** Its supply chain is vulnerable to disruption.

The current USGS List of Critical Minerals, which excludes copper, is based on data from 2015-18. New data shows that copper meets the supply risk criteria.

Supply Risk Scores for Copper, 2015-2022P

Cutoff for inclusion on critical minerals list: **0.40**

	USGS Calculations				Copper Development Association Calculations				
	2015	2016	2017	2018	2019	2020	2021	2022 H1	2022P
Economic Vulnerability	0.932	0.921	0.933	0.922	0.931	0.933	0.978	0.968	0.968
Disruption potential	0.103	0.101	0.145	0.119	0.141	0.146	0.161	0.163	0.163
Trade exposure	0.309	0.307	0.380	0.318	0.367	0.367	0.493	0.479	0.477
Annual Supply Risk	0.310	0.306	0.372	0.327	0.364	0.368	0.427	0.423	0.422
Recency Weighted 4-Year Supply Risk				0.334	0.349	0.359	0.387	0.407	0.407

Based on a study by the CDA using the USGS' methodology, copper meets the cutoff score for inclusion on the Critical Minerals list.

Copper is beyond critical, and should be on the official Critical Minerals list, especially as demand increases.

The Copper Development Association

The Copper Development Association brings the value of copper and its alloys to society, to address the challenges of today and tomorrow.

The CDA is

- The world's foremost resource on copper and copper alloy applications.
- The link between world copper producers, copper product fabricators, and key decision makers in end-use markets.
- A team of talented, dedicated, and professional individuals committed to the sustainable use of copper.

Meet the CDA Team

Andy Kireta
President & CEO

Adam Estelle
Vice President

John Hilbert
Gov. Affairs Director