



Copper: The Future of Renewable Energy and Antimicrobials

Congress Should Enact Policies to Promote More Domestic Copper Production and Refining to Reduce Copper Imports and Ensure Copper Supply Chains for Renewable Energy Technologies and Antimicrobial Uses of Copper in Public Spaces

Copper Facts: Copper is Essential to Modern Life

- Copper is a highly efficient conductor of electricity and heat used in conventional energy and in renewable energy systems to generate power from solar, hydro, and wind energy across the world.
- Copper helps reduce CO₂ emissions because it lowers the energy needed to produce electricity. In many renewable energy systems, there is 12-times more copper being used than in traditional systems to ensure efficiencyⁱ.
- Copper is an essential component of electric vehicles, which use four times the amount of copper as conventional vehicles. It is also used in batteries, copper rotors in electric motors, electrical vehicle charging stations.
- Copper fire sprinkler systems are a valuable safety feature in buildings. Unlike plastic tubing, copper does not burn, melt or release noxious or toxic fumes in the event of a fire.
- Copper is used for antimicrobial touch surfaces in many hospital settings and in consumer products such as handles, doorknobs, fitness equipment to help prevent the transfer of disease and microbes. Copper tubing helps protect water systems from potentially lethal bacteria such as legionella.
- Copper and brass are the materials of choice for plumbing, taps, valves and fittings. Thanks in part to its aesthetic appeal, copper and its alloys, such as architectural bronze, are used in a variety of settings to build facades, canopies, doors and window frames. It is also being used for lead-free brass plumbing, high-tech copper wiring, and heat exchangers.
- Copper used in major public buildings, commercial buildings and homes in rainwater-management goods and roofing because it is attractive, and resists extreme weather conditions.ⁱⁱ Because copper is corrosion resistant, it is one of the materials of choice for infrastructure that needs to be useful for decadesⁱⁱⁱ.
- Copper can be recycled without loss of performance, but recycling will not provide the resources to meet the demand for copper in renewable energy applications, transmission facilities, and other uses according to a recent World Bank Group Report^{iv}.
- The World Bank found copper is an essential component in all renewable and low-carbon energy sources including: wind, solar photovoltaic, concentrated solar power, hydro power, geothermal, energy storage, nuclear, clean coal, natural gas, and carbon capture and storage technologies.

We Need to Mine More U.S. Copper and Increase Domestic Smelting Capacity to Reduce Our Reliance on China and Other Foreign Countries

The U.S. is fortunate to have significant mineral resources, including some significant copper deposits. According to the USGS' *2020 Mineral Commodity Summaries*, Arizona is the largest copper-producing state followed by Utah, New Mexico, Nevada, Montana, Michigan, and Missouri. Several mining companies are exploring and developing Minnesota's world-class copper deposits. According to the International Copper Study Group (ICSG)^v, the U.S. was the fourth largest copper producing nation in 2019 after Peru, Chile, and China.

Yet despite our abundant domestic copper resources, the U.S. imported 37 percent of the copper we used in 2020, and relied on China and other countries to smelt and refine much of the copper that we do mine^{vi}. The ICSG shows almost 50 percent of world copper smelter production came from China in 2019, dwarfing the roughly three percent of refined copper produced in 2019 from the three U.S. smelters (one in Utah and two in Arizona) that are still in operation. As the COVID-19 crisis clearly illustrates, relying on China for critical supply-chain materials like refined copper poses a serious threat.

The U.S. Can Become a Minerals Supply Chain Powerhouse – But Not if Congress Enacts Policies Putting Lands Off-Limits to Mining

Proposals to put lands off limits to mining or curtail mining on public lands are ill-considered policies that will increase our reliance on foreign minerals and disrupt domestic mineral supply chains. Examples of recently considered counter-productive proposals include:

- The Grand Canyon Protection Act (HR 1052) that withdraws significant acreage from mineral entry;
- Congresswoman McCollum's H.R. 5598 (116th Congress), which would prohibit mining the world-class deposits of the renewable energy minerals cobalt, nickel, and copper in Minnesota's Superior National Forest; and
- Chairman Grijalva's H.R. 2579 (116th Congress) that creates significant barriers to mineral exploration and development on western public lands for many renewable energy minerals including copper, silver, lithium, nickel, gold, and others.

These harmful policies will increase the country's reliance on China and other non-allied countries for the copper and other minerals that are essential to America's economy, technology, infrastructure, energy systems, and defense. President Biden's goal of "conserving 30 percent of America's lands by 2030," is similarly short-sighted. The federal government already owns about 28 percent of the U.S. continental landmass, and mining is restricted or prohibited on roughly 50 percent of public lands.

Lands with Mineral Potential Must Remain Open to Mineral Exploration & Development

ⁱ <https://copperalliance.org/benefits-of-copper/sustainable-energy-renewable-energy/>

ⁱⁱ <http://www.icsg.org/index.php/component/jdownloads/finish/170/3046>

ⁱⁱⁱ International Copper Study Group, 2020 <http://www.icsg.org/index.php/component/jdownloads/finish/170/3046>

^{iv} <http://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition>

^v <https://www.icsg.org/index.php/component/jdownloads/finish/170/3046>

^{vi} <https://www.usgs.gov/centers/nmic/mineral-commodity-summaries>

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