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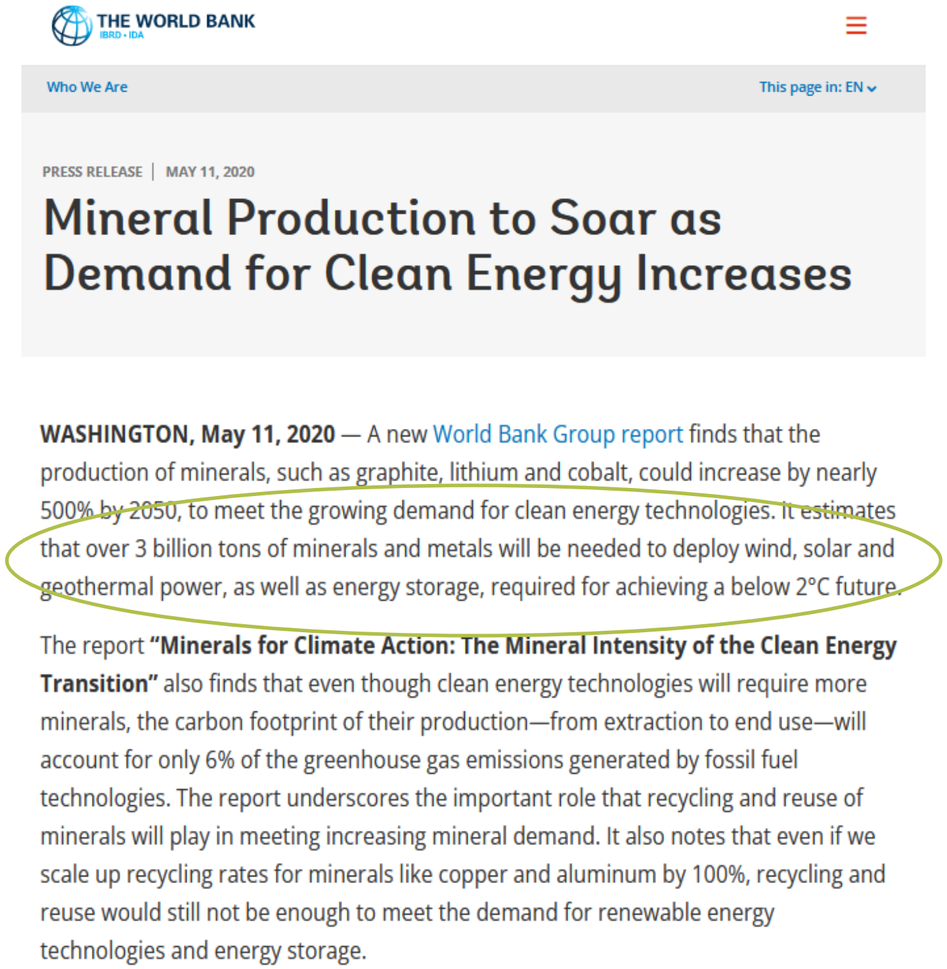
Making the Impossible Possible

FROM CLEAN ENERGY TO NATIONAL DEFENSE: ALASKA'S MINERAL PRODUCTION AND POTENTIAL

Karen Matthias
Executive Director, AK Metal Mines

September 21, 2023
Resource Development Council

Growing Demand for Responsibly Sourced Minerals



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PRESS RELEASE | MAY 11, 2020

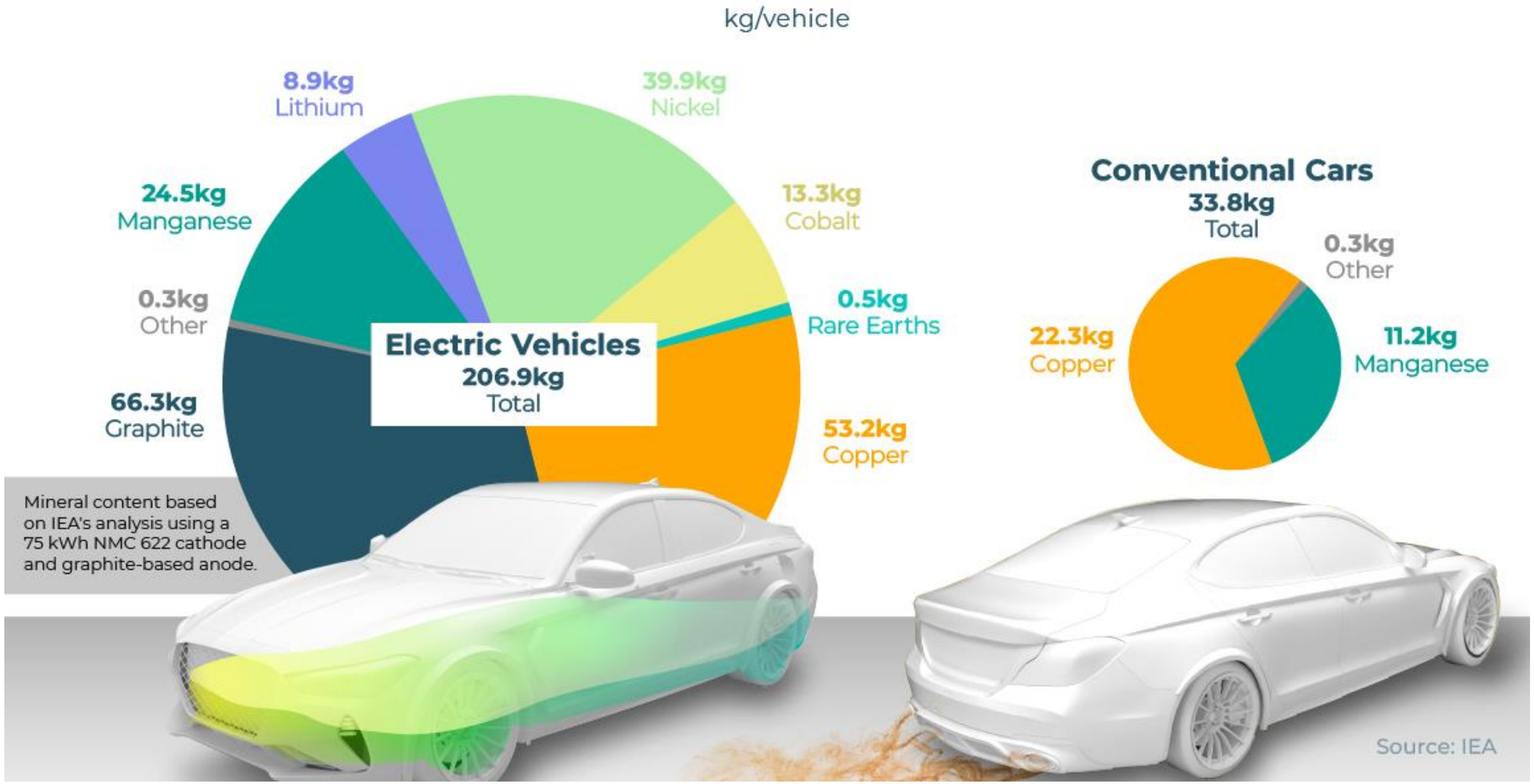
Mineral Production to Soar as Demand for Clean Energy Increases

WASHINGTON, May 11, 2020 — A new World Bank Group report finds that the production of minerals, such as graphite, lithium and cobalt, could increase by nearly 500% by 2050, to meet the growing demand for clean energy technologies. It estimates that over 3 billion tons of minerals and metals will be needed to deploy wind, solar and geothermal power, as well as energy storage, required for achieving a below 2°C future.

The report **"Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition"** also finds that even though clean energy technologies will require more minerals, the carbon footprint of their production—from extraction to end use—will account for only 6% of the greenhouse gas emissions generated by fossil fuel technologies. The report underscores the important role that recycling and reuse of minerals will play in meeting increasing mineral demand. It also notes that even if we scale up recycling rates for minerals like copper and aluminum by 100%, recycling and reuse would still not be enough to meet the demand for renewable energy technologies and energy storage.

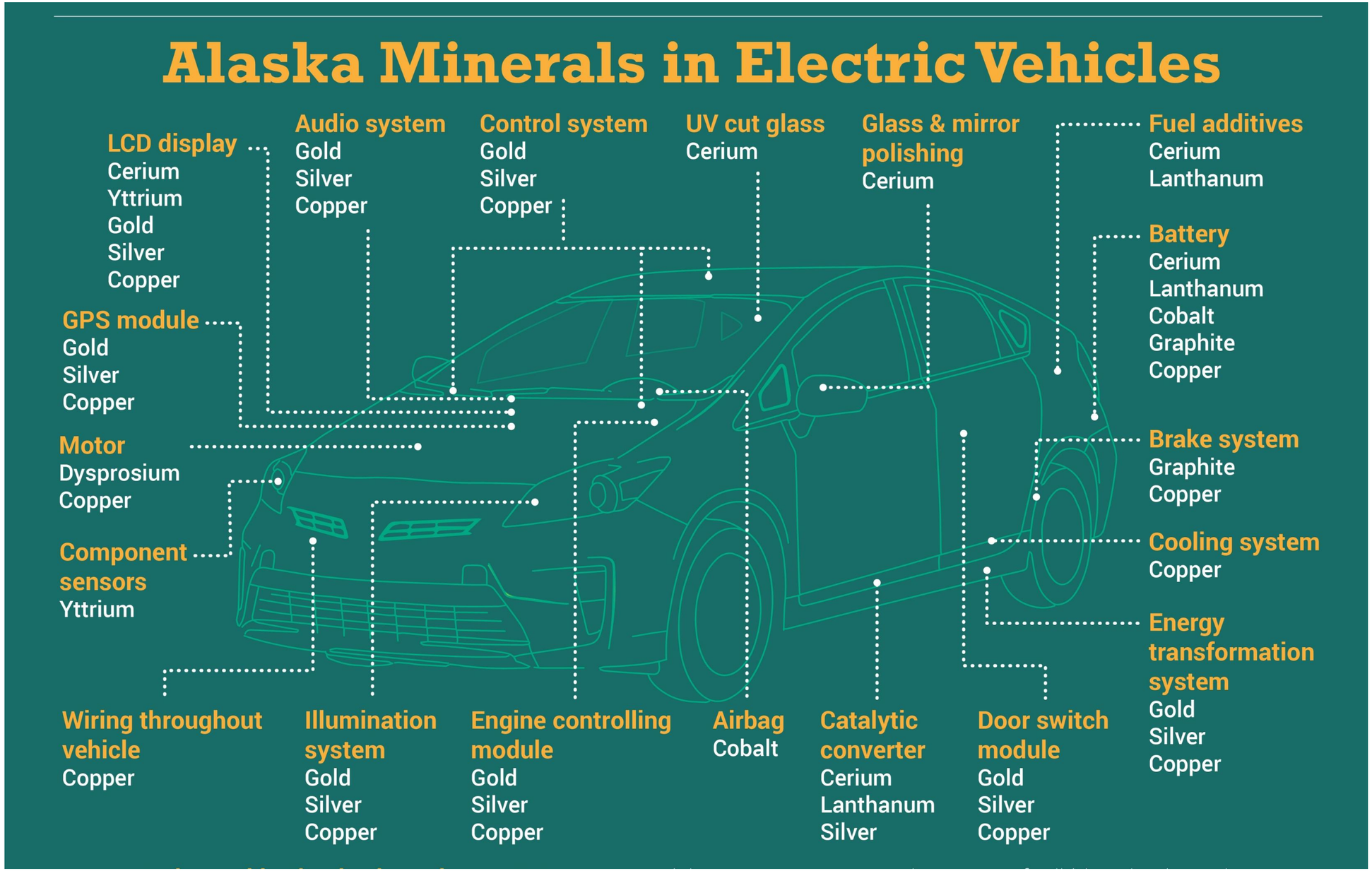
"Over 3 billion tons of minerals and metals will be needed to deploy wind, solar and geothermal power, as well as energy storage, required for achieving a below 2°C future."

Mineral content of Electric Vehicles vs. Conventional Cars



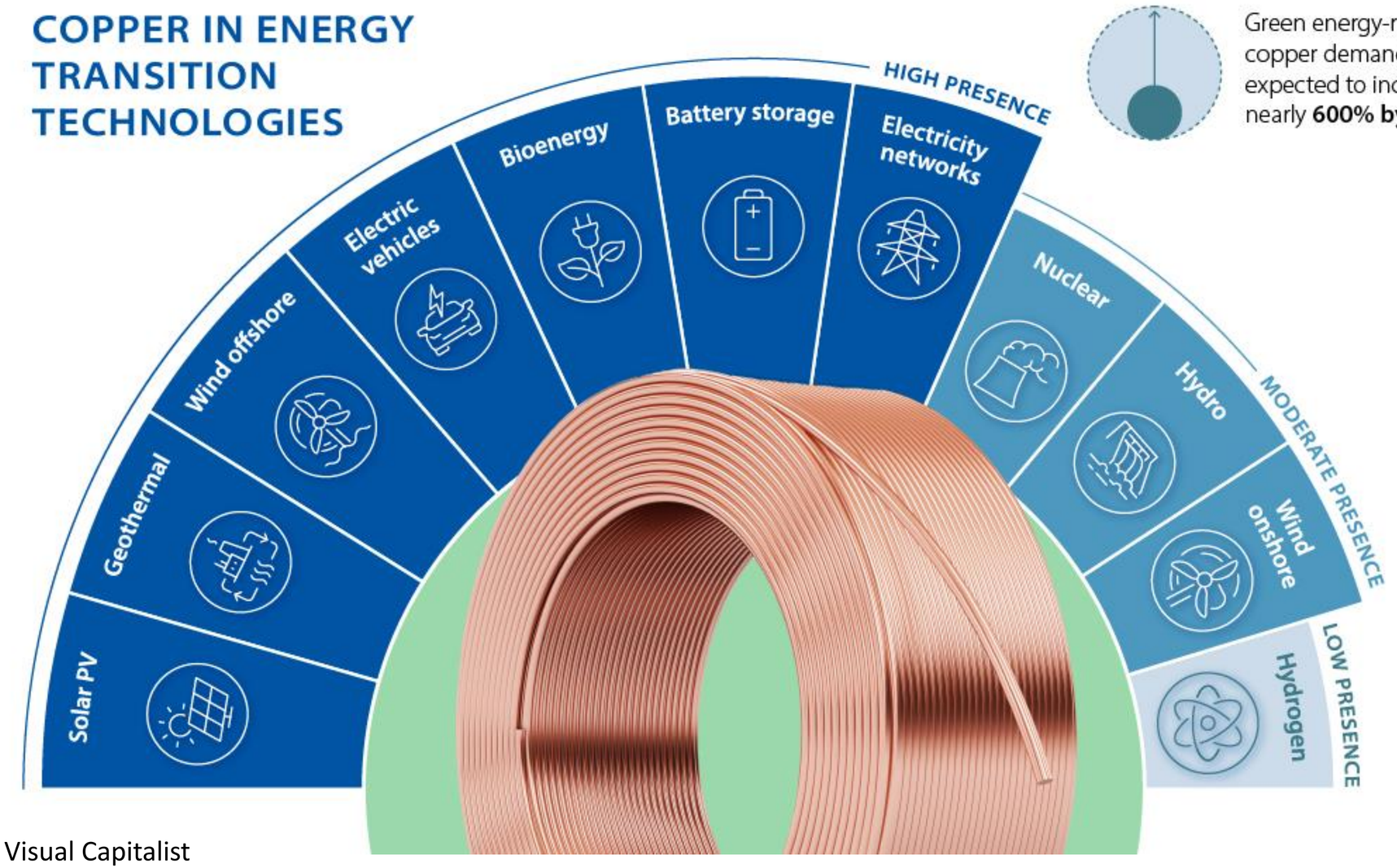
Data source: International Energy Agency analysis; Graphics: Visual Capitalist, 2023-02-08

Alaska Minerals in Electric Vehicles



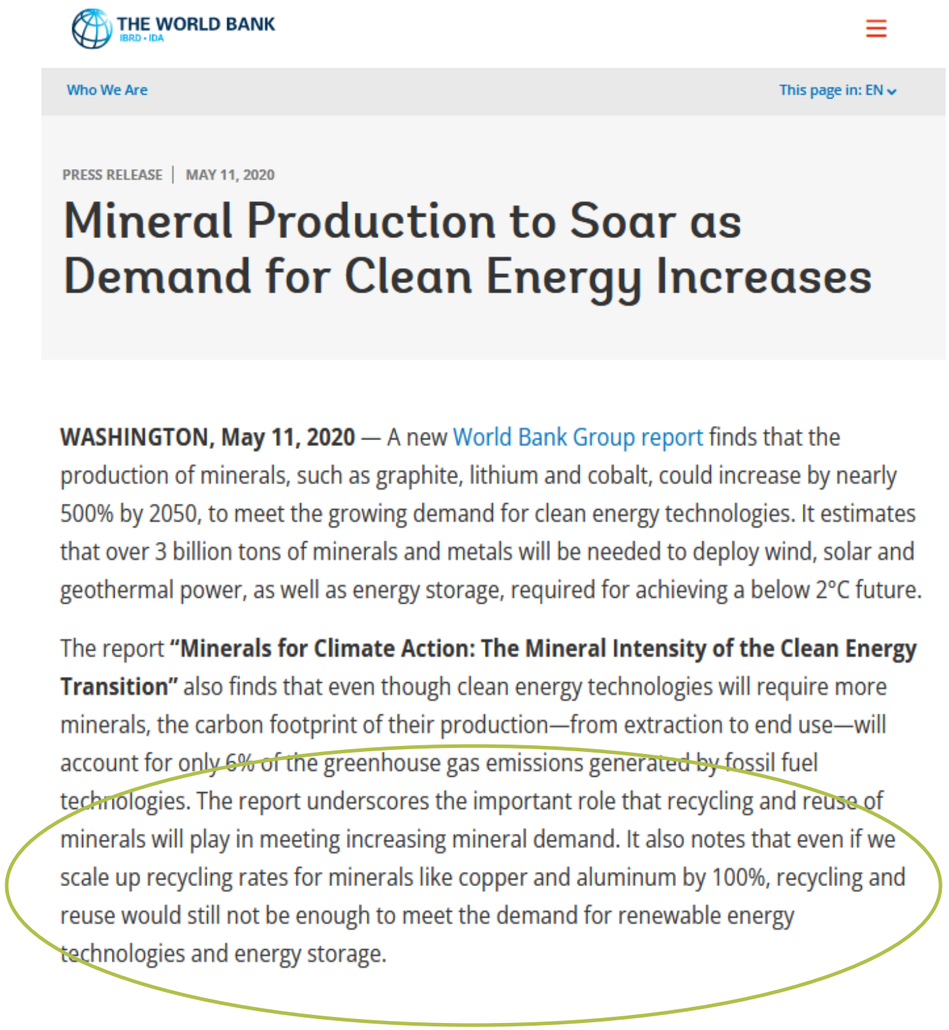
Source: www.blm.gov/alaska/minerals

Copper is key to climate change solutions



Source: Visual Capitalist

Is Recycling the Answer?



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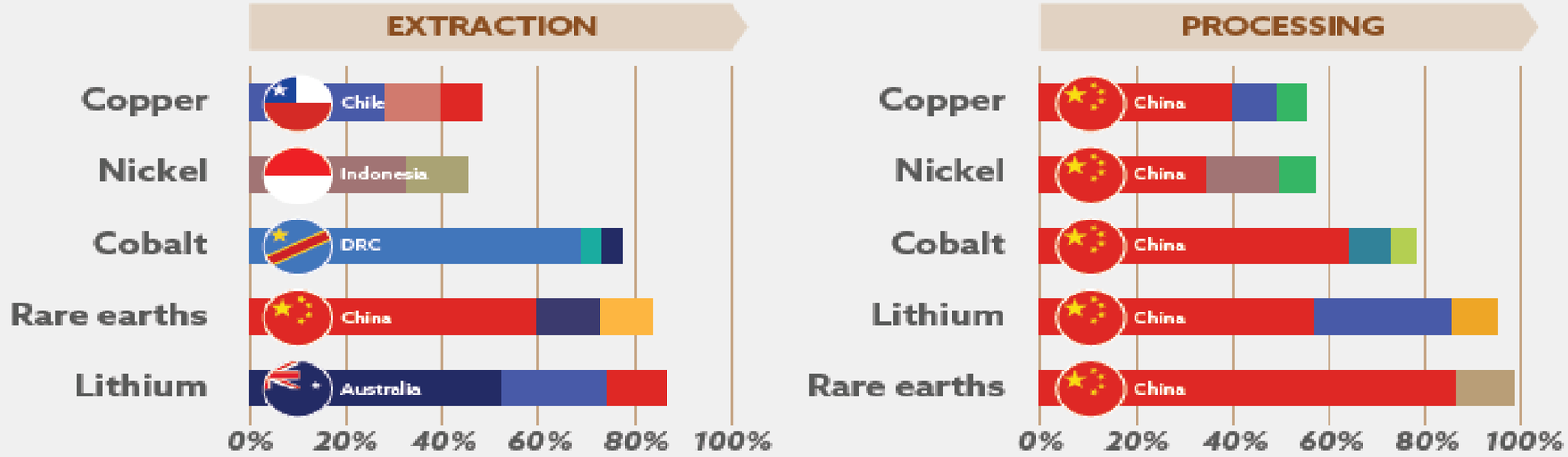
The US Dependency on Mineral Imports

The U.S. is home to an estimated **$6.2 trillion** in minerals, but we had net imports of **$90 billion** worth of minerals in 2021 alone.[2]

SHARE OF TOP THREE COUNTRIES EXTRACTING/PROCESSING CRITICAL MINERALS[5]



Source: IEA, *The Role of Critical Minerals in Clean Energy Transitions*

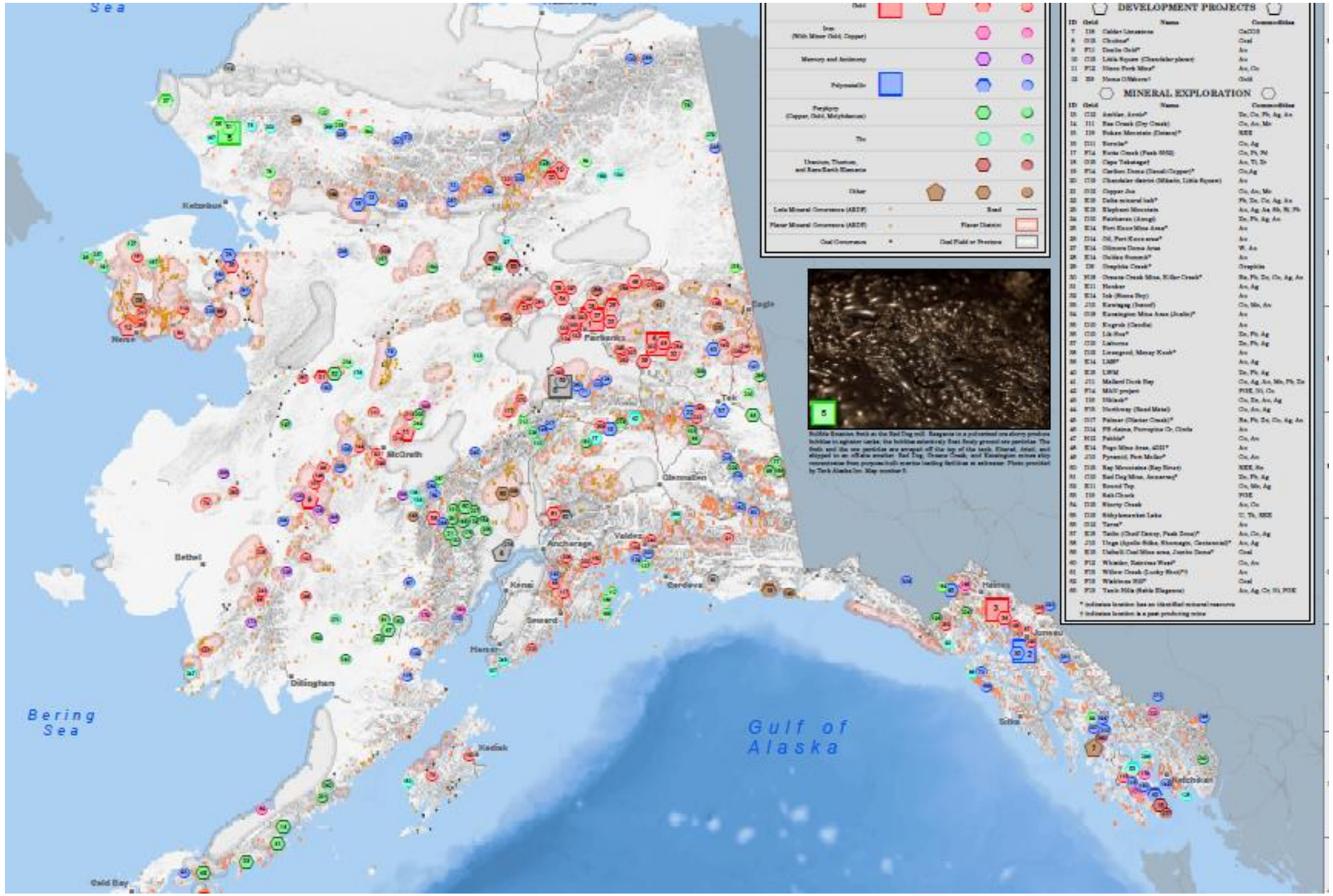
* Countries shown represent an indication of top market producers and consumers in each case.

2. USGS (2022), USGS Mineral Commodity Summaries 2022 https://pubs.usgs.gov/periodicals/mcs2022/mcs2022.pdf
5. https://elements.visualcapitalist.com/visualizing-chinas-dominance-in-clean-energy-metals/

President Biden: “We can’t build a future that’s made in America if we ourselves are dependent on China for the materials that power products of today and tomorrow.” 02/22/2022

Senator Sullivan: “Alaska has the critical minerals the world needs now to support all of these new technologies and of course to support our nation’s national defense.
02/07/2023

Alaska has unlimited potential…



…but will we unlock it?

Representative Peltola: “Alaska has a long history of safe and productive mining that benefits our communities. The resources and critical minerals in our state will be essential to our country’s renewable energy transition, and I believe that Alaska should lead the way to that transition by continuing our environmentally-sound mining practices.” 03/24/2023

Alaska's Advantage: Environmental Excellence

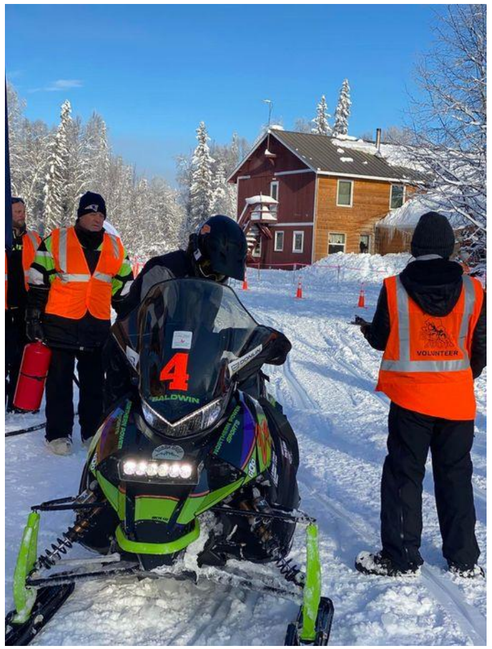
- Strict permitting: 40—70 permits to construct
- Close oversight during operation
- Rigorous environmental monitoring
- Closure and reclamation of land
- Financial assurance
- Excellent track record
- Culture of Safety

Local mines support local businesses

$1 billion spent on goods and services from 450+ AK vendors in 2022

Mine workers live in 90+ AK communities

Long-term Community Partnerships
$4.5 million contributed to ~280 AK non-profits in 2022



Benefits to ANCs, Local and State Governments in 2022

Royalty payments to Alaska Native Corporations: $266 million

- $1.8 Billion in total since 1989

Local government revenue: $55 million

- Largest property taxpayers in Juneau, Fairbanks, Northwest Arctic Borough

State government revenue: $131 million

- Alaska Mining License Tax, Corporate Income Tax, Rents & Royalties, other state agencies

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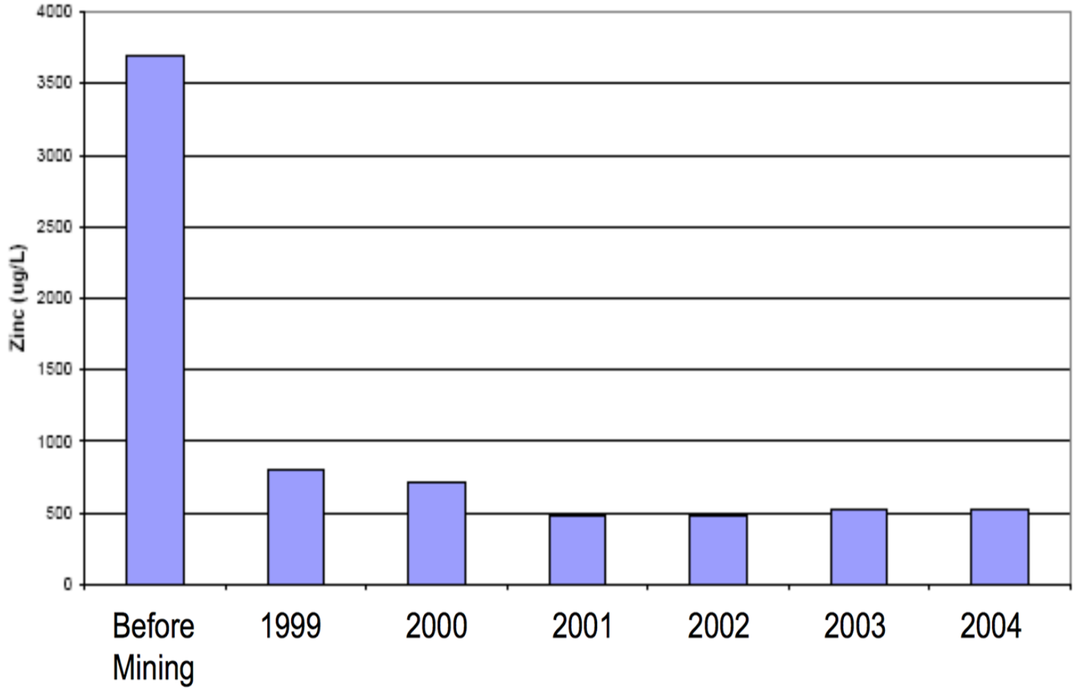
Additional Material – Environment

Red Dog Improved Water Quality

Red Dog Creek *upstream* from the mine

Zinc levels reported to DEC and EPA



Source: EPA Environmental Assessment NPDES Permit (AK-003865-3) Renewal – January 2006

Natural mineralization made Red Dog Creek toxic to fish. Water discharged from mine improved water quality and the creek now supports Arctic grayling and Dolly Varden.

Fort Knox Restored Nearby Creek

3. Award winning restoration project completed

Greens Creek Improved Fish Passage

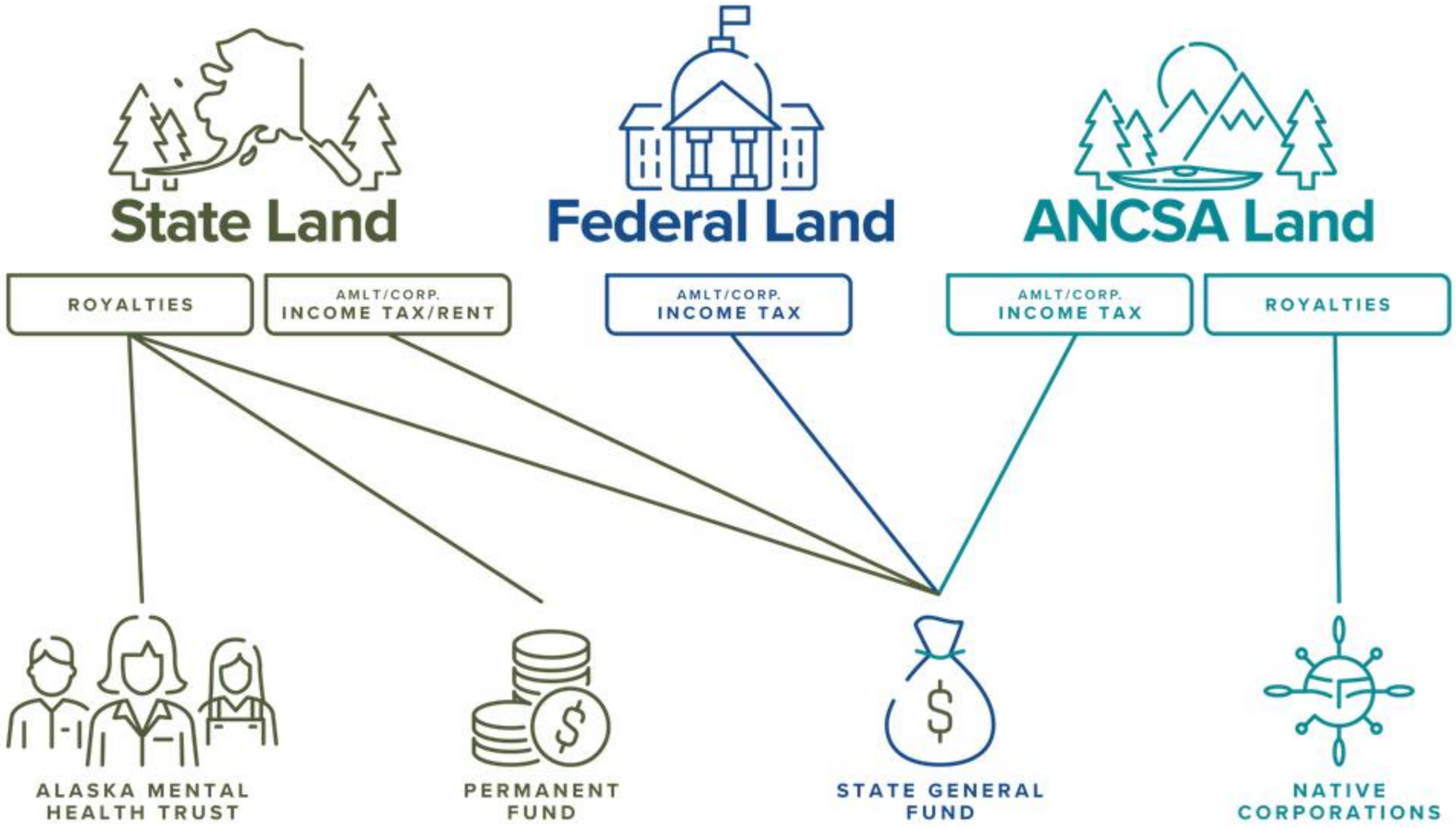
True North – Kinross Alaska

DNR Commissioner Corri Feige: “The developers leased state land, produced a valuable commodity to serve global markets, employed Alaskans, and paid state taxes and royalties. When they were done, they remediated the effects of their work and returned the land to the state for its next use. The system works.”

October 27, 2020

Additional Material – State Revenue/Taxation

Mining Taxes and Royalties Depend on Land Status



Mining Industry Payments to the State, 2022

Alaska Mining License Tax	$53,500,843
State corporate income tax	$17,837,133
State Fuel Taxes	$1,367,505
State mineral rents and royalties	$15,799,115
State material sales, other payments to DNR	$5,410,402
Large mine permit coordination program	$1,382,663
AIDEA facilities user fees	$13,400,000
AIDEA reimbursements for Ambler Access Road	$7,379,651
AMHTA (claims, rents, royalties, material sales)	$1,181,309
ARRC Mining Commodity Movement	$15,000,000
TOTAL	**$130,875,958**

McKinley Research Group (MRG), 2022 Mining Industry Economic Benefits Update, 02/24/2023. Sources: ADOR, ADNR, AIDEA, AMTHA, ARRC, Ambler Metals, and MRG estimates.
Notes: State Fuel Tax is based on a five-year average (2016-2020). ARRC payments are based on 2021 figures.