MINERALS IN THE MIDDLE:

U.S., China, And A New Techonomic Cold War?

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As yet another round of retaliatory tariffs go into effect, the escalating trade war between the U.S. and China is showing no signs of cooling off. The current clash of economic superpowers is a fight for position as the 21st century's epicenter of innovation and global producer of emergent technologies.

Where once the U.S. and China sought a win-win relationship, first-mover advantage in the impending revolution of disruptive technologies like 5G has created a mutually-exclusive endgame with a clear winner and loser. Ceding intellectual supremacy and the right to determine the course of the next century is seen as an unacceptable outcome for each side and therefore undercuts the perceived benefits of cooperation.

Whether looking at China's trillion-dollar Belt and Road Initiative or their consolidation of powerhouse tech companies, President Xi Jinping has sent a clear message. In the realms of big data, advanced weaponry, artificial intelligence, and renewable energy, China has ambitious plans to surpass the United States as the world's next techonomic superpower.

The race to manufacture and bring new technologies to market is dependent on the supply of resource inputs; most critically the supply of minerals. (Previously in Issue No. 5, we highlighted one micro-example of this dependence with the iPhone supply chain case study, which requires 60+ minerals to build.)

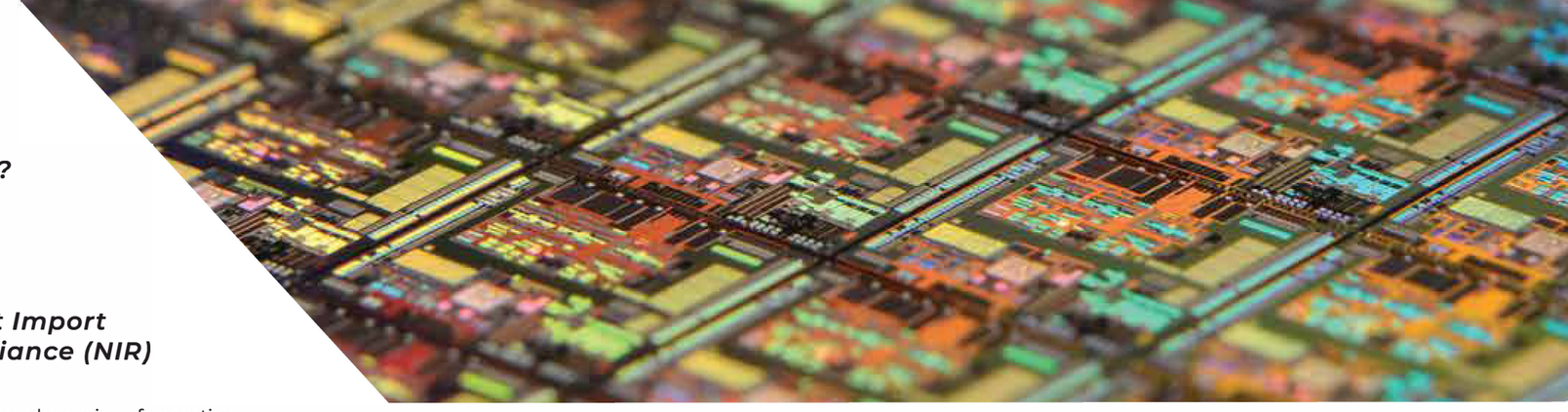
FROM THE BLOG:

MINERALS ARE THE FUTURE

Examine the iPhone supply chain case study & critical minerals in tech innovation

READ MORE

Unequivocally, minerals make our modern civilization and advanced economy possible. From civil to military, nearly all sectors of the U.S. economy rely on minerals. This important status no doubt makes mineral supplies a foreign policy issue around the world since no single country can domestically supply all of the mineral resources it needs.



KEY TERM | *Net Import Reliance (NIR)*

The term that describes the dynamic of meeting domestic resource demands through foreign supply is called **net import reliance** (NIR). It measures how much of a country's domestic consumption is fulfilled through imports.

Historically the United States imports its minerals from many countries so it isn't fully reliant on a single country for a mineral resource. However of our major import sources, China is the single largest supplier of mineral commodities for the United States, particularly for those required in all of the advanced technologies previously mentioned.

U.S. NIR | BY THE NUMBERS

Of the commodities that have a high net import reliance (>50% imported), ***12 of the 26 minerals*** on the list are sourced primarily from China:

CHINA'S GRIP ON RARE EARTHS

81 PERCENT China's share of global REEs production (2018)

500 PERCENT Cost of REEs processing in China over the past 3 decades

NIR Percentage

100%	GALLIUM
100%	GRAPHITE
100%	INDIUM
100%	MICA
100%	RARE EARTH ELEMENTS
96%	BISMUTH
95%	YTTRIUM
89%	DIAMOND
85%	ANTIMONY
84%	BARITE
75%	ABRASIVES
>50%	GERMANIUM

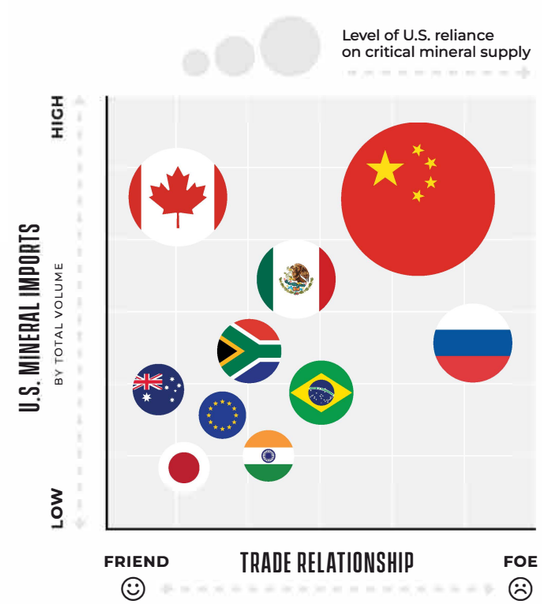
NIR: A POTENTIAL HEADWIND TO GROWTH & INNOVATION

The NIR dynamic is not unique to just the U.S.. Many other countries are subject to similar constraints of foreign reliance on mineral supply. The European Union, Australia, Japan and others are dealing with NIR challenges. China and the U.S. might be grabbing the media headlines, but the effects are more far reaching than simply a U.S. problem.

The U.S. government has already begun enacting countermeasures to secure reliable supplies from more cooperative partners and increase domestic production of high NIR critical minerals, including Cobalt and REEs. The dynamic geopolitical climate all but forces a more assertive and proactive effort through policy and private capital investment to meet a much larger portion of our domestic needs without heavy reliance on imports; especially those vital to the future innovation.

HIGH N.I.R.: NOT JUST A RARE EARTH PROBLEM

In 2018, imports made up more than ½ of the U.S. consumption for 48 nonfuel mineral commodities, and the U.S. was 100% net import reliant on 18. Of those, 14 of the 18 were critical minerals.



KEY U.S. TECH PRODUCERS

with high REEs supply needs

APPLE
Market cap: $827 B
- Electronics
- Rechargeable batteries

BOEING
Market cap: $197 B
- Aerospace
- Defense systems
- Commerical aviation

GENERAL ELECTRIC
Market cap: $83 B
- Renewable energy
- LED lights
- Laser imaging

SPACE X
Valuation: $35 B
- Advanced rocketry
- Space travel
- Satellite systems

ECONOMIC VALUE OF JUST 4 U.S. FIRMS:
$1.2 TRILLION