December 13, 2024

Rare Earths, Energy and Trade Policy

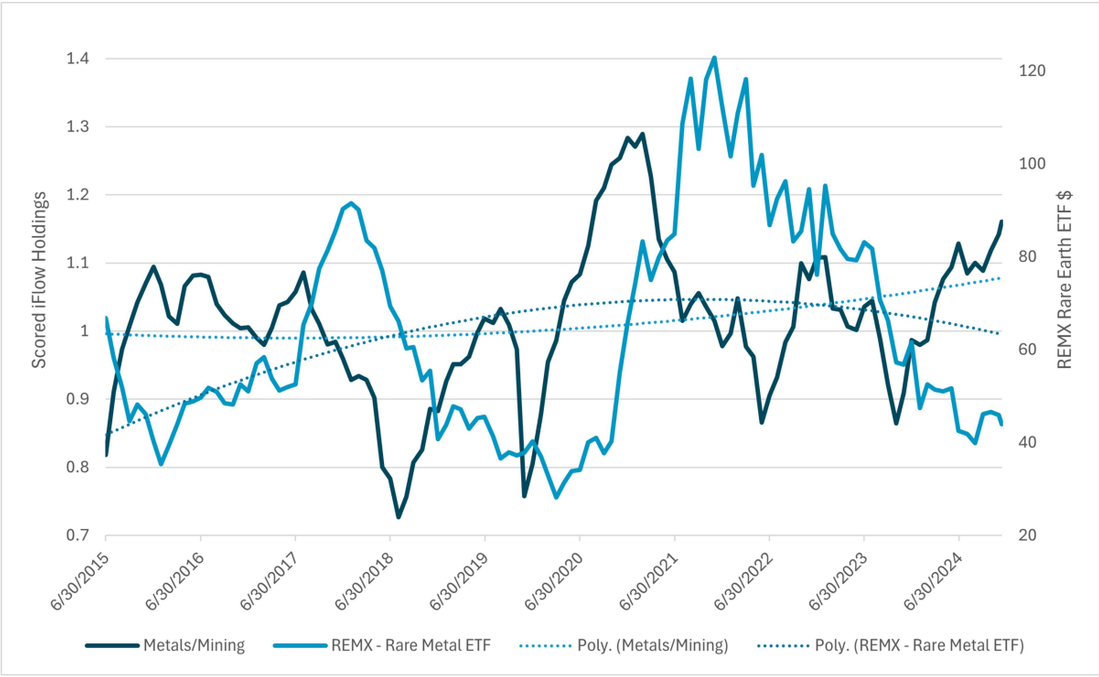
- **2025 is set to be a year of commodities.** The Trump administration wants to increase US energy output, with US Treasury nominee Scott Bessent proposing drilling up to 3 million barrels of oil a day as part of his "3-3-3 plan." The role of other drilling and mining operations beyond energy is going to matter even more as Trump trade policy shifts to tariffs.
- **China and the US are already in a trade war** over key rare earth metals. Our flows show that materials, particularly in the mining sector of the US, Canada and Australia have seen a bounce linked to the latest news. FX is also part of the 2025 playbook because of commodities.
- **Uranium and other nuclear materials will also be important in the year ahead** as energy stability and sustainability continue to be critical for meeting increasing electricity demand globally. Markets have continued to link uranium to the AI boom and data center demand.

While the focus of the trading markets is on how we end 2024, investors are focused on how 2025 starts. Uncertainty over monetary and fiscal policy globally has set up the next few weeks of trading to be unusual, as 2025 consensus calls are less compelling until January 20, when President-elect Trump takes office. There is concern about the order of change as well, with tax cuts, deregulation, deportations and tariffs all important anchors to the economic landscape ahead. One area that is already posing the risk of a trade war, as it did during Trump's first term, is rare earth metals. The other key focus is energy, as plans to increase oil production and deemphasize green energy make uranium, which is both an energy and a material product, important to consider in the year ahead.

Our iFlow data show that investors have already bought into the rare earth and uranium story. Further, the relationship of equity holdings in the mining industry has a negative correlation, suggesting the current price for rare earths is undervalued. Conversely, uranium looks overblown and set for a reversal. The spread of our holdings in mining industry equities and the rare earth ETF has stretched into the 5% percentile over the last 10 years. The average holdings of metals/mining is 1.0 over the last 10 years, while the average price for the Van Eck Rare Earth ETF is $63.45 – holdings currently have a score of 1.16 – or 15% over the average, while REMX is $43.89, or 31% below the long-term average. There are several logical reasons for the down trend in rare earth metals from their spike on the Russia invasion of

Ukraine in February 2022. First, alternatives to Russia and China supplying the West have been found. Second, demand has been lower than expected. And third, China supplied much of the world in 2023. The geopolitical link between mining, investment and trade is clearly a significant part of the 2025 investment horizon for the metals industry – particularly in rare earths and uranium.

Exhibit #1: Holdings in Metals/Mining from iFlow vs. Rare Earth ETF



Source: Bloomberg, BNY

There are implications to the risk of rare earth metals going up in 2025 beyond the risk of inflation, higher rates that follow and supply chain disruptions. The FX markets should see that USD weakness links back to commodity prices going higher, that AUD and CAD benefit notably and that it does not hurt equities as much as some fear. The correlation of AUD to both rare earths and uranium is more than 0.5 over the last 10 years. Similarly, CAD is -0.3 correlated to uranium and -0.51 correlated to rare earth metal prices. To put this all into perspective, the Canadian commodity basket from the Bank of Canada is -0.41 correlated while the RBA commodity basket is -0.28 correlated to AUD.

China last week imposed an export ban on the US for three key rare earth metals used in national defense and semiconductors – gallium, germanium and antimony. Gallium is used in radar circuits, antimony is key for bullets and artillery, and germanium is needed for thermal and night-vision equipment. China restricted exports of these metals back in August, but now it has banned them. This week the **US announced that it was doubling tariffs** on China solar wafers and polysilicon to 50% and increasing levies on tungsten products to 25%. Clearly, the transition from Biden to Trump is not going to change the course of the ongoing trade dispute between the two countries. It is therefore worth looking at key metals more closely to understand where alternatives can be found.

Germanium

- Germanium ores are rare and most germanium is a by-product of zinc production and from coal fly ash. China produces around 60% of the world's germanium, according to European industry association Critical Raw Materials Alliance (CRMA), with the rest coming from Canada, Finland, Russia, and the United States. China exported 43.7 metric tons of unwrought and wrought germanium last year, according to Chinese customs. But none to the US. $39 million worth of germanium was consumed last year, up 10% from 2021, according to the U.S. Geological Survey (USGS).

Gallium

- Gallium is found in trace amounts in zinc ores and in bauxite, and gallium metal is produced when processing bauxite to make aluminum. Around 80% is produced in China, according to the CRMA. Gallium is used to make gallium arsenide for use in electronics. Only a few companies – one in Europe and the rest in Japan and China – can make it at the required purity, says the CRMA. Canadian company Neo Performance Materials said it also makes gallium at the required purity.
- China exported 94 metric tons of gallium in 2022, up 25% on the prior year, according to Chinese customs. US imports of gallium metal and gallium arsenide (GaAs) wafers in 2022 were worth about $3 million and $200 million, respectively, according to USGS. But that has stopped completely in 2024. According to USGS, high-purity refined gallium production last year was estimated at about 290,000 kg, a 16% increase from 250,000 kg in 2021.

Antimony

- Similarly, China's overall October shipments of antimony products plunged by 97% from September after Beijing's move to limit its exports took effect. China accounted last year for 48% of globally mined antimony, which is used in ammunition, infrared missiles, nuclear weapons, and night-vision goggles, as well as in batteries and photovoltaic equipment.

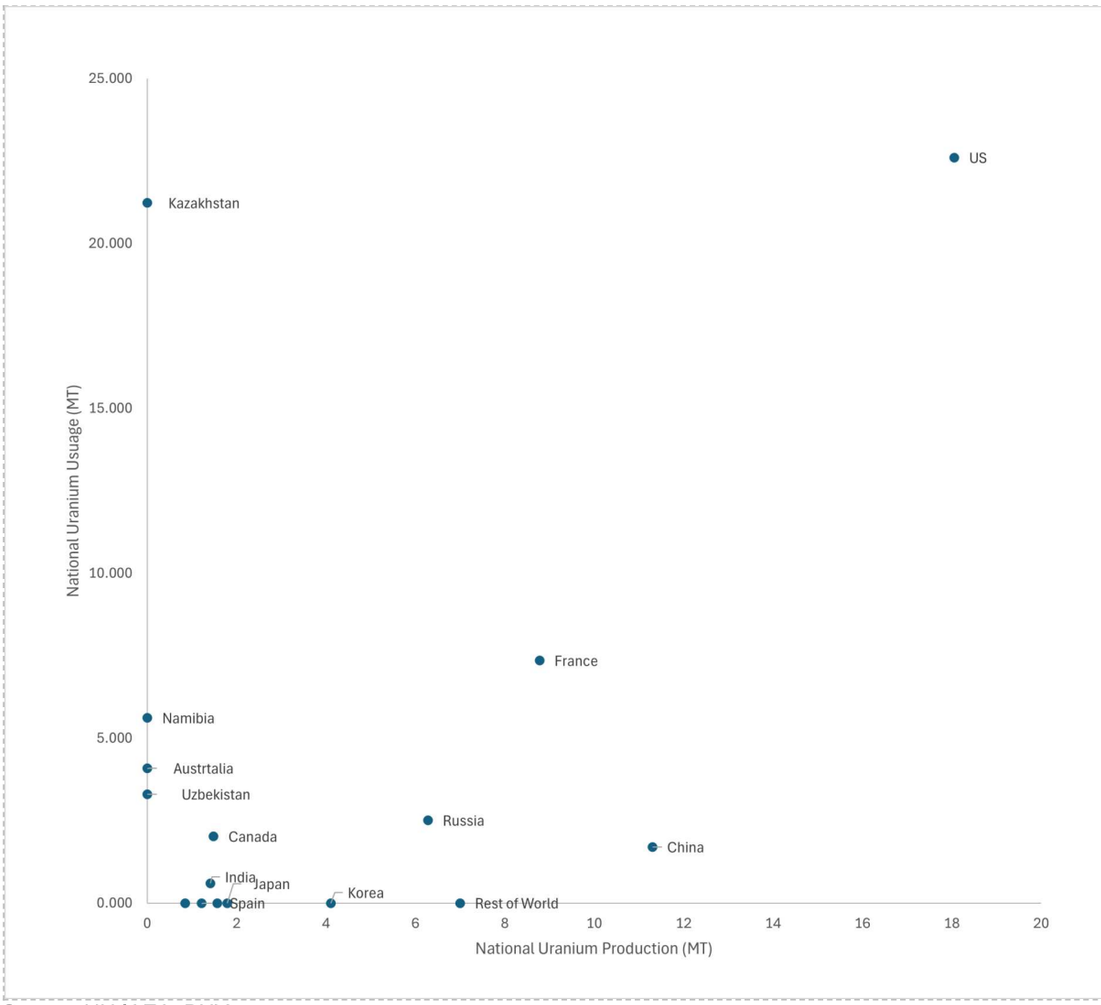
US and other alternatives

As of December 3, 2024, the Defense Production Act fund has nearly $1.1 billion in uncommitted funds. The incoming administration could, for example, disburse this money to US alumina refineries to increase capacity to extract gallium and to US zinc smelters to increase capacity to extract germanium.

As for antimony, two companies have grabbed the headlines this week. US public company Perpetua Resources signed an agreement with Sunshine Silver Mining in Idaho to explore processing of antimony in the US. Perpetua said it and Sunshine Silver expect to meet 40% of US domestic antimony demand. The company expects to receive the permit for the Stibnite project as well.

In Australia, Warriedar Resources Limited reports promising results from initial metallurgical tests at its Ricciardo deposit, showing high antimony recovery rates and significant potential for a marketable concentrate. The tests indicate an 83% recovery rate with a concentrate grade of 38.5%, pointing to a viable path for antimony production.

Exhibit #2: Uranium Users and Producers by Nation



Source: UN IAEA, BNY

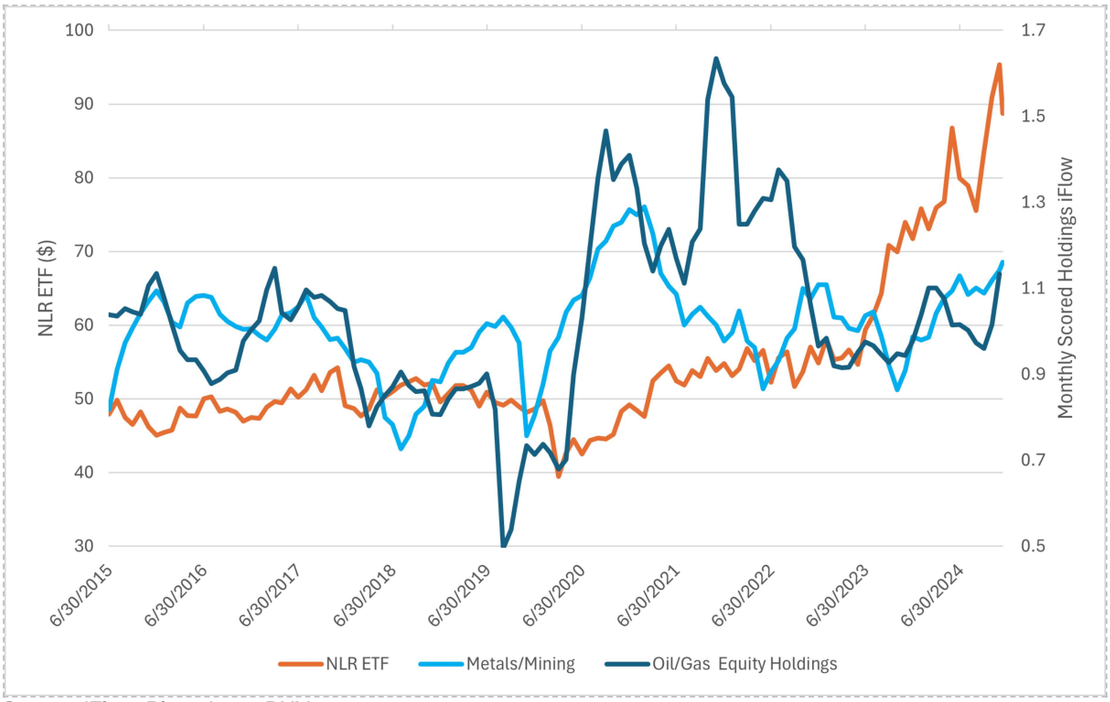
Then there is uranium. This metal has both energy and defense applications and has become increasingly important with the boom in AI as technology companies search for sources of electricity to power data centers. Uranium mining and reserve holdings are one part of the solution. Explorations have resulted in uranium reserves increasing by 25% over the past decade and they now stand at 5,150 metric tons, enough for 78 years at the current pace of consumption. For the past 20 years, 10% of US electricity has come from the nuclear power generated from decommissioned US, Russian and Ukrainian nuclear stockpiles. This source also satisfied 15% of global demand until 2014, when Russia first invaded Crimea.

Historically, uranium prices are negatively correlated to oil prices. Nuclear power plants are expensive to build and face heavy regulation globally. The recent rally in nuclear investments stands out as we can see from the NLR ETF. Demand for all things connected to small nuclear power plant technology has been elevated by AI and the increased use of data centers. Expectations that electricity demand will double over the next few years are based on the rise of autonomous driving and AI, making this part of the mining story as a driver of sector investments in materials, energy, technology and utilities. We can see that oil and gas investment holdings are linked to oil prices, but so too are mining and metals, while nuclear sits apart. The dynamic of uranium supply and demand and stockpiles into the next year will be another aspect to consider in global trade relationships.

Bottom Line: The ongoing US–China exchange of tariffs and export bans has implications for what happens to investment flows in 2025. We can see links between high-tech AI chips and the supply of rare earth metals globally. How the markets readjust supply/demand and price across commodities will drive inflation

views and FX currencies. When we look at iFlow we can see reasons to believe that AUD and CAD find support along with how some emerging markets win in a less global, more regionally focused world.

Exhibit #3: Nuclear ETF and iFlow Holdings in Oil/Gas and Metals/Mining



Source: iFlow, Bloomberg, BNY

Please direct questions or comments to: iFlow@bny.com

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