

Make A Fortune Selling Antarctic Water!

by Bill Menke, February 25, 2025

At New York City prices, the water in the Antarctic Ice Sheet is worth 50 quadrillion dollars!

It's simple arithmetic: New York City charges \$4.87 for a hundred cubic feet of water (about three cubic meters). The massive Antarctic Ice Sheet contains about thirty million cubic kilometers of frozen water, free for the taking. If we sell it all to New York City, our *gross income* will be 50 quadrillion dollars¹.

However, our *net profit* will be less. We might even lose money because we will incur expenses to produce, process and transport the water that we might not be able to fully recover through its sale. And we will be faced with environmental costs, too, because releasing all that water from the ice sheet will raise sea level by 200 feet. People living in low-lying areas might sue us. And, once we get our ice-mining infrastructure in place, New York City may not be interested in buying all of the water we are capable of producing. And at the City's current rate of consumption, it would take about two hundred thousand years to sell all our water. So interest on debt could be a significant expense.

This scenario points to a problem with valuing a natural resource as reserve multiplied by current price. A lot of details that might lead to the realizable value being substantially less are overlooked. A cynic might say that the very fact that the Antarctic Ice is not currently being mined implies that nobody with money to invest in such an enterprise believes that it could be profitable.

The news recently has been full of discussion of the value of Ukrainian rare earth elements. The "rare earths" is the name of a group of seventeen elements, some of which are vital components of wind turbines, computer displays and other economically-important devices. This focus is rather odd, because Ukraine has no significant reserves of the rare earths². It's like saying Antarctica has vast amounts of sugar - it doesn't. But one could see how an uninformed person might conflate sugar and snow, which are both white, granular materials. The discussion seems to be due to a mistake made by US Senator Lindsey Graham⁶, who in a 2024 speech conflated "rare earths" with "economically-important elements", and US President Donald J. Trump, who subsequently reiterated it⁵. The "trillion dollar" figure⁶ given by Mr. Graham for the value of Ukrainian rare earths reserve is wildly incorrect; the correct value is close to zero⁹.

The distinction between "rare earths" and "economically-important elements" is important because of China's near monopoly on the former and not the latter. The US really does have a strategic interest in diversifying its sources of the rare earth elements. Unfortunately, Ukraine cannot be a solution to the problem, because it has no significant reserves of the rare earth elements.

Ukraine does have economically-important reserves of lithium³, an element used in the rechargeable batteries ubiquitous in computers and cell phone and some electric vehicles. Ironically, although Ukrainian reserves total about 2% of the world's⁷ and are worth about thirty billion dollars, Ukraine currently produces no lithium. The reason is economic: the world is

currently experiencing a lithium glut and developing these reserves is not profitable at the currently depressed price⁴.

Global lithium sales are currently about four billion dollars a year. Were Ukraine to produce lithium at a rate similar to its fraction of world reserves, it would gross about eighty million dollars per year – a very small amount compared to the twenty-eight trillion dollar US economy.

Ukraine also has significant reserves of the economically-important elements titanium, vanadium, uranium, carbon (graphite) and manganese. However, its current production of these elements is very small by global standards –totaling just a few hundred million dollars per year.

I have been unable to track down the origin of Mr. Graham's trillion-dollar figure. However, estimates of Ukraine's mineral wealth can easily exceed that amount if one includes iron⁸, the major element in steel, which is Ukraine's most highly-valued reserve. Keep in mind though that the US has imposed tariffs discourage steel imports. The US wants to protect its iron mining and steel producing industry. It does not want Ukrainian iron.

How many people do you know who are involved in health care? A lot, I would guess. And how many people do you know in mining and metallurgy. I would be surprised if you knew any. That's because healthcare exceeds ten percent of the global economy whereas the metals industry is much smaller fraction of it. Mining and metallurgy are important because other industries depend on the availability of metals. But there's not enough money in the business for a whole country to get rich upon.

¹That's $4.87\$/100\text{ft}^3 \times 30 \times 10^{15} \text{ m}^3 / 2.83 \text{ m}/100\text{ft}^3 = 50 \times 10^{15} \$ = \50 quadrillion . See <https://www.nyc.gov/site/nycwaterboard/rates/rates-regulations.page> and <https://nsidc.org/learn/parts-cryosphere/ice-sheets/ice-sheet-quick-facts>

²<https://investingnews.com/daily/resource-investing/critical-metals-investing/rare-earth-investing/rare-earth-reserves-country/>

³The Washington Post cites Ukrainian lithium reserves of 500,000 tons, worth about \$34 billion at \$70,000 per ton, <https://www.washingtonpost.com/world/2025/02/18/ukraine-war-rare-minerals-metals>

⁴<https://tradingeconomics.com/commodity/lithium>

⁵<https://www.reuters.com/markets/commodities/trump-says-he-wants-ukraine-supply-us-with-rare-earths-2025-02-03>

⁶<https://www.lgraham.senate.gov/public/index.cfm/press-releases?ID=DB12ABDA-0E2C-4CD8-A5C2-D38B10837851>

⁷The US Geological Survey states the world reserve of lithium at 28 million tons. <https://pubs.usgs.gov/periodicals/mcs2024/mcs2024-lithium.pdf>

⁸The spot price of pig iron is currently about \$425 per ton. See <https://www.steelmarketupdate.com/2024/06/14/cru-pig-iron-prices-rise-on-tightened-market-balance/> Wikipedia gives Ukraine's iron ore reserves at 30 billion tons. See https://en.wikipedia.org/wiki/Metal_production_in_Ukraine. So the nominal value of Ukraine's iron is 15 trillion dollars.

⁹Ukraine's rare earth production is not quite zero because it mines about one and a half tons of Scandium (a few percent of world production), worth about six million dollars, as a byproduct of uranium mining. Scandium has applications in strengthening aluminum, but is one of the lesser uses rare earths. This brings out another issue with their mining. They are often produced as a minor byproduct of some other type of metal, and production decisions are heavily influenced by its price.