



Rodney's Take

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Give It to Me Straight, Doctor (Copper)

I've spent a fair amount of time researching the bottlenecks in transitioning our vehicles from internal combustion engine (ICE) cars to electric vehicles (EVs). Some of the critical minerals, like cobalt, come from countries with which we'd rather not engage, so we use go-betweens. The Orwellian-named Democratic Republic of Congo (DRC) uses partly child labor to mine, in dangerous conditions, 60% of the world's cobalt, and most lithium is shipped to China for processing. While so many in Western countries are calling for the end of ICE vehicles on environmental grounds, they aren't proposing solutions for solving the damage we're funding upstream.

Yes, battery manufacturers are building more iron phosphate units for EVs, because they are cheaper and at least the process cuts out the DRC, but such units have less range than lithium-ion batteries and still require lithium. With all of the problems we have sourcing minerals that are in short supply domestically, you'd think that we'd be bending over backward to increase the supply of things we can dig out of the ground here in the U.S., but we're not. Instead, we're doing our best to delay new supplies through never-ending permitting and reviews. We don't have to look to potential new lithium mines for examples. The evidence is there in our old friend [Doctor Copper](#), which might lose its credentials in the years to come, as we export it instead of relying on our domestic sources for necessary supplies.

The shiny red metal gets its honorary PhD by sussing out turns in the economy; demand for copper supposedly indicates economic health. Of

course, it's the manufacturing clients of mining companies that really earn the degrees. These companies dial up or down their demand based on what they see on the economic horizon, changing their views often at the same time as (but sometimes ahead of) economic turns. This allows investors simply to look to the price of copper or one of its substitutes, like Freeport-McMoRan (NYSE: FCX), to get a rough idea of whether the economy is doing well or slowing down.

The move to EVs might change this, at least domestically.

Electric vehicles require four times more copper than ICE vehicles, while a single wind turbine requires 4.7 tons of the stuff. By 2040, the International Energy Agency expects the solar energy industry to use 68 times as much copper as it does today. And none of this contemplates how we're going to get all of the newly generated power to distribution points or how we're going to construct half a million charging stations in less than seven years. To say that our electrical grid can't handle the juice is a vast understatement.

And yet, we're not falling all over ourselves to open new mines. Instead, we're slow-walking them, as if restricting mining will somehow make the bottleneck go away. It won't.

We domestically source over half of the copper we use, even though we have 48 million metric tons in U.S. reserves. Half of the imported supply comes from Chile, which is better than getting it from the DRC, but it would be best if we handled it ourselves. The permitting process in the U.S. takes five times longer than in Canada or Australia, each of which has standards similar to ours. Two large, proposed copper mines in the U.S., Rosemont Copper and Resolution Copper, have been in permitting since 2007 and 2013, respectively. Each time these companies clear a regulatory hurdle, they're dragged back into court, which puts off mining operations and pushes our domestic supply further out in time.

As domestic car manufacturers bring more EVs to market, more power generation comes from renewables, and we try to find a way to get that

power to those EVs, the need for copper will soar, and it won't just be here in the U.S. We'll be competing with other nations doing the same thing, only we'll be sitting on our resources instead of using them. The mostly likely outcome is a dramatic increase in the price of copper, no matter what happens in the economy. By not taking advantage of our own resources, we might elevate the good doctor to a king.

Rodney

Got a question or comment? You can contact us at info@hsdent.com.