Recycling Batteries Will Be a Big Focus in the Energy Transition

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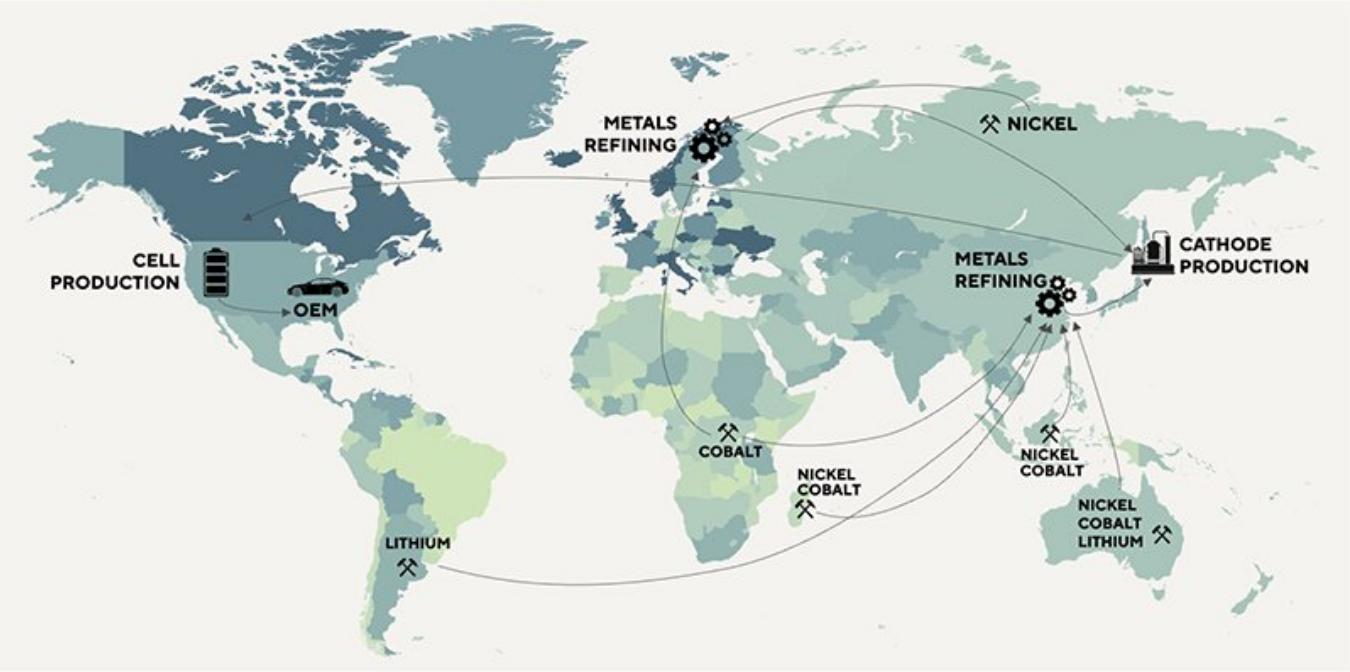
Those of us following the markets in 2022 have tended to hear certain words again and again:

- Supply chains
- Energy shortage
- Inflation
- Renewable energy metals

We need energy. We want to transition from significant emissions of greenhouse gases toward more sustainable, climate-neutral sources of energy. We believe foreseeing the demand for batteries dropping at any point in the near future is difficult.

But there is a problem. Redwood Materials, a company that is focusing on battery recycling, articulates it very clearly in the title of figure 1 and then in their infographic. The COVID-19 pandemic laid bare the fact that many things have built toward highly globalized supply chains. Batteries are a critical example, and securing supply is a topic that many regions are thinking about today.

Figure 1: Today's Supply Chain Requires Critical Materials to Move 50,000 Miles Before Making Their Way into a Cell…



Source: https://www.redwoodmaterials.com/

A Circular Economy?

Intuitively, recycling battery metals makes a lot of sense. Instead of constantly sourcing more nickel, cobalt, lithium and other metals, if the existing stock of metals is already out of the ground and in use in various physical products, it would more be efficient to use them again and again. The map in figure 1 also makes another important point—the specific metals used in the manufacture of batteries are not evenly dispersed across the globe. Certain countries and regions have lots and lots, while others don't have any.

It may be the case that we are early—and this is sometimes an issue in thematic equity investing. The concept and idea might be clear, but getting the timing of the possible takeoff right can be tricky. In this context, of course, one must think of the specific elements to be correct on to secure the best chance of a positive return on a thematic investment. We focus a lot on the idea, in this case, 'recycling batteries.' Some of us may have this idea, think it is good, and stop. But what if we are early? What if there are not yet enough batteries to be recycled, and most people are just buying new batteries? Our idea may then be at risk of not being one that can generate strong returns. Similarly, even if we get the idea correct and the timing right, we must find the correct companies. Maybe some companies make mistakes. Typically, if one is thinking of a framework, we believe it should include attention to the idea, attention to the timing, and then attention to the specific companies to improve the chances of a more successful outcome.

It is simple to picture the idea of electric vehicles ending their useful lives and heading to the scrapyard, similar to any other vehicle. However, we are still early in terms of electric vehicle adoption, so we don't have electric vehicles at scale heading to the scrapyard at the end of their usable lives. That day will likely come—but not immediately.

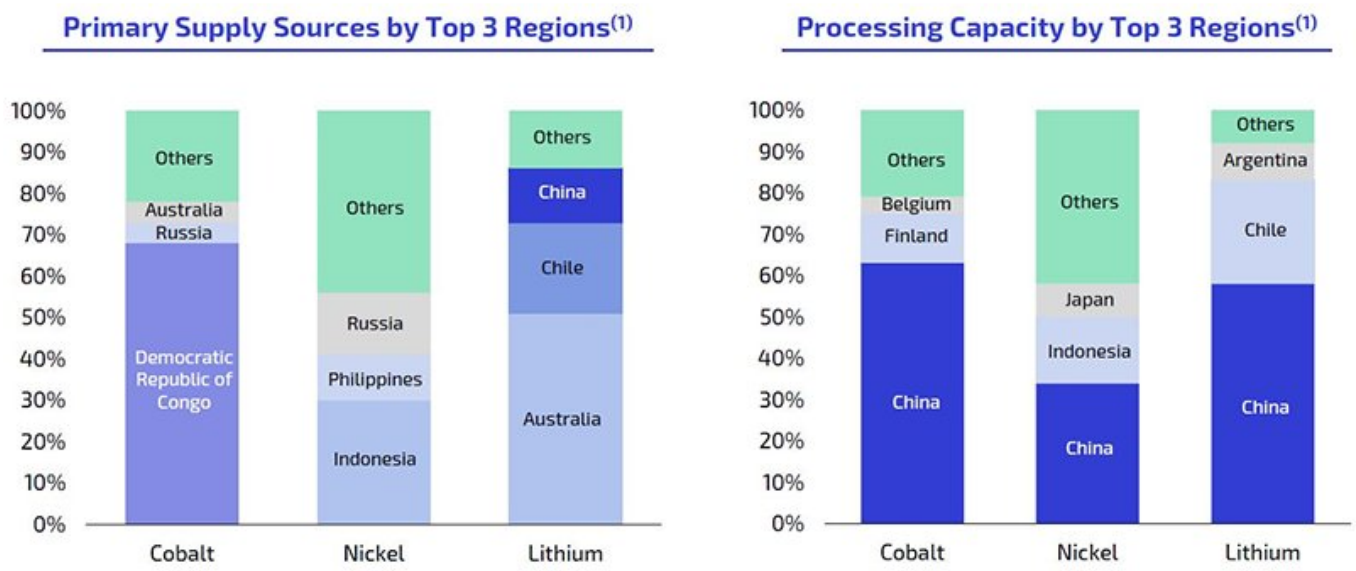
This is important to understand in that it tells us the materials being recycled are not expected to be actual batteries that were used for multiple years in electric vehicles—rather, the inputs into recycling will be more likely scrap material from the increasing number of gigafactories coming into live operation. This scrap could account for 78% of the pool of recyclable materials in 2025.1

It is then estimated that in the mid-2030s, end-of-life batteries will supersede scrap materials from factories, but extracting the valuable lithium, cobalt, nickel and other metals from existing end-of-life batteries is generally a more involved process than processing scrap metals from factories2.

Geopolitics May Offer a Natural Push Toward Recycling Firms

In 2022, when one is trying to analyze the possible forward path of the relationship between Western countries—namely the U.S.—and China, it is very difficult to know what might happen. Therefore, as we look at figure 2 and see that China is the major processor of some of the most important battery metals, we can foresee that this may be a major source of tension for Western countries. Based on what we can see today, we have to imagine that Western countries would prefer a greater independence of supply away from a dependence on China if that can be a reasonable possibility.

Figure 2: China Is a Leader When It Comes to Processing Battery Metals



Source: LI-Cycle June 2022 Investor Presentation. Refers to within the presentation that this data came from the International Energy Agency, with figures as of May 2021.

Conclusion: Recent Activities Show Companies Making Moves on This Front

Ascend Elements is a startup that is aiming to be an emerging center of battery production in the southeastern U.S. Jaguar Land Rover and SK Group, along with other investors, have put $300 million into the firm. It is seeking to commercialize an efficient method, termed “Hydro-to-Cathode™,” to turn used lithium-ion batteries into new components. As of the recent funding, Ascend is valued at $500 million.3

The Inflation Reduction Act is also notable in that it focuses on defining how much battery material is coming from DOMESTIC production. Domestic in this context means “inside the U.S.” This creates an immediate incentive for recycling players to ramp up their production and operations in the U.S., as it would then connect electric-car tax credits for consumers back to batteries that are at least majority-sourced from inside the U.S.4

The primary risk in the space appears to be whether the recyclers can effectively achieve a scale of operations to bring down unit costs and allow for strong financial performance before waves and waves of existing EV batteries start getting retired. Even if batteries from laptops and smartphones are recycled—good for the world—it may not be enough material to scale operations and allow the companies to progress toward profitability5.

WisdomTree believes in the importance of the global energy transition, of which battery recycling is certainly a part that may grow over time. The WisdomTree Battery Value Chain and Innovation Fund (WBAT) includes exposure to battery recycling alongside other crucial battery supply chain functions. Diversification across the supply chain may mitigate the risk of being too early to certain parts of the picture. Here, we can think of our framework mentioned above, where we start with the idea, the timing, and then the companies. If we work in a supply chain manner, each step on the supply chain could represent a different idea. Recycling is one idea. Certain types of mining can be another idea. Other types of batteries can be another idea. Then, there is the timing. If we have different ideas, the market and developments around each may mature at different times. Lithium-ion technology is widespread already. Solid-state batteries are much less widespread. In our view, these are both strong ideas, and having both may diversify the timelines of potential success within a broader portfolio context. Finally, you have the companies. Having different companies within each idea, there is generally less impact of having one company make a mistake within a portfolio.

1 Source: https://www.benchmarkminerals.com/membership/battery-production-scrap-to-be-main-source-of-recyclable-material-this-decade/
2 Source: https://www.benchmarkminerals.com/membership/battery-production-scrap-to-be-main-source-of-recyclable-material-this-decade/
3 Source: Amrith Ramkumar, “Battery Recycling Race Heads Up After Inflation Reduction Act,” Wall Street Journal, 9/14/22.
4 Source: Ramkumar, 9/14/22.
5 Source: Ramkumar, 9/14/11.

Christopher Gannatti is an employee of WisdomTree UK Limited, a European subsidiary of WisdomTree Asset Management, Inc.’s parent company, WisdomTree Investments, Inc.

As of September 29, 2022, WBAT held 0%, 0%, 0% and 0% of its weight in Jaguar Land Rover, SK Group, Ascend and Redwood Materials respectively. Holdings are subject to change. Click here for a full list of Fund holdings.

Important Risks Related to this Article

There are risks associated with investing, including possible loss of principal. The Fund invests in equity securities of exchange-listed companies globally involved in the investment themes of Battery and Energy Storage Solutions (“BESS”) and Innovation. The value chain of BESS companies is divided into four categories: Raw Materials, Manufacturing, Enablers and Emerging Technologies. Innovation companies are those that introduce a new, creative or different technologically enabled product or service in seeking to potentially change an industry landscape, as well as companies that service those innovative technologies. Companies that are capitalizing on innovation and developing technologies to displace older technologies or create new markets may not be successful. The Fund may invest in a company that does not currently derive any revenue from innovation or developing technologies, and there is no assurance that a company will derive any revenue from innovation or developing technologies in the future. Battery value chain company stocks have experienced extreme price and volume fluctuations in the past that have often been unrelated to their operating performance. Battery value chain companies may be susceptible to fluctuations in the underlying commodities market. Additionally, energy storage solutions companies may be subject to the risks associated with the production, handling and disposal of hazardous components, and litigation arising out of environmental contamination. The Fund invests in the securities included in, or representative of, its Index regardless of their investment merit. The Fund does not attempt to outperform its Index or take defensive positions in declining markets and the Index may not perform as intended. Please read the Fund’s prospectus for specific details regarding the Fund’s risk profile. WisdomTree Battery Value Chain and Innovation Index: Designed to track the performance of companies primarily involved in Battery and Energy Storage Solutions (“BESS”) that meet Index eligibility requirements. BESS can be defined as technology that captures electrical energy in chemical form.