Europe's Strategic Transformation in Critical Raw Material Management

written by Tracy Weslosky | November 26, 2023

The recent provisional agreement by the Council and the European Parliament to bolster the supply of critical raw materials with the proposed Critical Raw Materials Act heralds a pivotal advancement in Europe's raw material strategy. Awaiting formal adoption, this agreement is a testament to the European Union's commitment to transforming its raw material dependency into a pillar of continental strength.

Teresa Ribera Rodríguez, the acting Spanish third vice-president, underscores the significance of this initiative within Europe's broader ecological and demographic ambitions. The regulation ambitiously aims to enhance the EU's role in the extraction, processing, and recycling of 34 critical raw materials, with a special focus on 16 considered strategic. A key aspect of this agreement is the inclusion of aluminum in the strategic list and the emphasis on recycling, with benchmarks set to reach at least 25% of the EU's annual raw material consumption.

This paradigm shift towards sustainable raw material management extends beyond environmental objectives, aiming to fortify economic resilience. The regulation seeks to diversify critical raw material imports, capping the EU's reliance on any single third country to a maximum of 65% for each strategic raw material. This strategy is poised to spur innovation, as evidenced by the temporary classification of synthetic graphite as strategic and the provision for member states to veto projects within their jurisdiction.

Swiss mining giant Glencore PLC (LSE: GLEN | OTC: GLCNF | HK: 805) has aligned with these trends, announcing a pilot electric vehicle (EV) battery recycling plant. Initially eyeing Sardinia, the company is now scouting other locations across Europe and North America. This move mirrors the wider shift in the decarbonization and EV sector towards recycling, a strategic response to market fluctuations and environmental considerations.

Melissa Sanderson, Director of the Critical Minerals Institute (CMI), highlights that these developments are indicative of an overarching trend. The EU's legislative emphasis on recycling over primary mining resonates with the decarbonization and electric vehicle sectors' trajectory. Glencore's strategic pivot to recycling efforts is a response to these evolving market and legislative landscapes.

The new EU regulations may also significantly impact Glencore's broader initiatives. Should Italy ratify the proposed law, it could streamline the authorization process for Glencore's larger recycling project, potentially relocating it to mainland Italy due to opposition in Sardinia. Sanderson notes that the industry's exploration of alternative materials, beyond current focuses like lithium, signals a dynamic and evolving sector.

In conclusion, these developments indicate a major shift in the management of critical raw materials, steering towards a future where sustainability, economic resilience, and innovation are central to the EU's industrial strategy. The anticipated Critical Raw Materials Act, integral to the Green Deal Industrial Plan, may not yet be formally adopted, but its influence on industry and environmental policy is already evident. As corporations like Glencore adapt to these changes, we can anticipate a continued evolution in the landscape of raw material management and recycling

Net Zero Carbon and other “planning dilemmas” Part 2

written by Steve Mackowski | November 26, 2023

In Part 1 of this series, I introduced the concept of going to the plan’s end result and working backwards through the planning process. I recommend this for some of the more difficult planning tasks, as it eases the mental burden. By that I mean, when faced with the challenge of planning for the world to meet a net zero carbon by 2050, the mental challenge is enormous. So, let’s break it down.

A world that is meeting a net zero carbon target by 2050 will have to have achieved many linked but somewhat individual tasks and schedules. There are simply too many individual tasks to list, so I’m going to try and sub-group so that we can at least get a conceptualized overview of the challenges ahead.

1. Physical Resources.
2. Technology.
3. ESG Concerns.
4. Power Requirements.
5. Human Resources.

I’ll try and cover each sub-group and provide linkages as we develop our thoughts. FYI. I have heeded my own advice here and started the process from the end and worked backwards. What you’ll see are my thoughts and impressions formulated over many years in Critical Materials, ESG management, and planning, coming together hopefully with each article to get us all on

board and with a clearer, more transparent, an honest view of the Net Zero Carbon issue, a Net Zero future and its requirements.

OK. Let’s start with Physical Resources. You will have all been made aware by various reports that the amount of Physical Resources required for electric cars, wind turbines, solar power farms etc. is enormous. If not gigantic. It is certainly numbers of orders of magnitude bigger than current production levels. It is staggering to try to imagine 10 times (for example) the production of lithium, copper, chromium, rare earths, etc not to mention the steel and aluminum required for associated infrastructure. But let’s put the issue of scale aside for the moment. I want to first dispel the notion that recycling will be the answer. I am not going to say that recycling is not important and should not be avidly pursued, but what I am saying is that recycling is not the “big-ticket” answer to the Physical Resources requirements. I’ll demonstrate with a mathematical exercise.

Let’s look at the current level of batteries (as an example). We need an assumptions list. We need a current output level, let’s use a starting point of 100 units. Each battery will last 10 years. The growth in the need for batteries is positive 10% per year. These absolute numbers are not really important in this discussion. It is the understanding of where they take us that’s important. OK. Question one – how much recycling can you do in year 1? Answer – None. There are no batteries to be recycled. They last for ten years! So not until year 11 are batteries available for recycle and these are the now “dead” year 1 units. 100 of them only. Then 110 in year 12. 121 in year 13.

I know I have simplified the situation but as I will repeat throughout this series of articles, it’s the overall impact that needs to be understood, not the detail as such. Look at the

following table of units needed to meet demand, the resources needed versus the effectiveness of recycling capacity.

Year	Batteries Demand	Additional Capacity to supply	Recycle Available	Cumulative Additional Capacity	Utilize Recycle to get new Capacity
1	100	0	0	0	0
2	110	10	0	10	10
3	121	21	0	31	31
4	133	33	0	64	64
5	146	46	0	110	110
6	161	61	0	171	171
7	177	77	0	248	248
8	194	94	0	352	352
9	213	113	0	465	465
10	234	134	0	599	599
11	258	158	10	757	747

So, it’s not until year 11 that recycled batteries have any effect. The battery demand and the resources required will have increased between 6 and 8 times by then. In fact, it won’t be until at least year 15 that any noticeable effect of recycling will be noticed. So, recycling may be a small part of an eventual solution, but it is not the saviour. Only increased output is. And increases in mining, processing, refining and manufacturing of this scale is to say the least challenging. And to meet the time challenge of 2050?

Well, let’s muddy the waters of our planning process a little more and introduce the complication of co-dependence. And by that I want you to think about the example of making electric cars. To make one car you need enough of the various components

to do that. Obviously! But what happens if you do not have any of component X? (Think of the current microchips issue for example). The whole schedule stalls until the production level of component X meets the needs for that volume of production. Now think back over the last ten years at the junior rare earths space. Why haven't they developed the capacity to meet the predicted needs? Well, the end user, the car companies in this example, didn't expand as fast as first thought (or is that hoped?) and the explorer couldn't get market contracts to justify getting the development capital. So, the co-dependence of the car company and the junior explorer, stalled the junior's development. In fact, it shut down many of the juniors. Those that managed to stay alive are now facing more years to get back up and the co-dependence will again surface as the slow ramp up of rare earths output will directly impact the growth of the output of electric cars! What is the impact of this co-dependence of mining development for the rare earths in the magnets needed for electric car output requirements in 2050? It will take some planning. Especially when you throw in the mix the co-dependence of all the other resources required, particularly those critical materials with a long timeline to development.

Another term I use is cross-dependence. Again, in the electric car example, the vertical supply chain for each element or assembly, or whatever, can be influenced by a separate although essential vertical supply chain. Let me explain. If you need as an example to create a vertical supply chain for each of three new components, say, the magnets (from rare earths), the batteries (from lithium) and microchips (from silica), will the planning process allow for the indefinite delay in one or more of the components? That is to say, can the rare earths development timeline needed for the magnets be affected by an extensive delay in the creation of a process, or development of

the resource, for say, lithium? Or silica? Of course, it can. The justification for the planned development of one is impacted by the achieved development timeline of the others. The car needs a number of successful developments in critical minerals in separate supply chains (and other components) to reach the final stage, producing the required number of vehicles by the timeline stated. And they have to have matching timelines otherwise the imbalance will cause a market condition where the component being developed the fastest may be stalled by the delay in the component being developed the slowest. Although co-dependence is taught in most Economics courses, as it is standard supply chain logic, cross-dependence has become much more odious today as the need for new components comes to light. And this is only the Physical Resources. Can you see this isn't a simple "Supply Chain" issue. Its not one component we are looking at here. It's many. It's a "Supply Array" issue!

Now we are getting started! Now consider the implications of the Republicans' defeat at the last USA elections. Did that have implications for the 2050 target? You betcha! As will the EU response to the looming energy crisis across Europe this winter. I'll call this dependence Geopolitical or GP-Dependence. So, we now have added another dimension to the planning process. The planning dilemma has to deal with a "Supply Matrix"! Wasn't in my Economics 101.

Now, that's just for electric cars! You now have to throw in co-dependence, cross-dependence and GP-dependence with all those other required developments that together meet the 2050 target, some of which it has been stated that the technology does not yet exist! And remember, all of these developments are competing for the same resources! The Critical Minerals at least. This "Planning Dilemma" is on a scale probably never seen in the Western World. Well, not since World War II.

I think that's enough on the Physical Resources issue. There have been many articles, reports etc on this topic from others, but don't forget the reasoning behind the issues of recycling, co-dependence, cross-dependence and GP-dependence. It will come back later.

I'm looking forward to reviewing the Battle of the ESG Titans online debate as ESG is a passion of mine. Since the Battle was live at 3am Thursday morning 15th December in my part of Australia, I will change the order of the 5 sub-groups listed above for discussion. I'll discuss ESG concerns next (article 3), to incorporate thoughts from The Battle, and discuss Technology in article 4.

I'm thinking: have a great time over the holidays, stay safe and see you next time.

TechMet's Brian Menell with Jack Lifton on the "extreme supply-demand dislocation" in technology metals due to EV market demand

written by InvestorNews | November 26, 2023

In this episode of the **Critical Minerals Corner** with Jack Lifton, Jack speaks with Brian Menell, Chairman and CEO of TechMet Ltd., about the "extreme supply-demand dislocation" in

technology metals as the electric vehicles and energy storage industries accelerate.

In this InvestorIntel interview, which may also be viewed on YouTube (click here to subscribe to the InvestorIntel Channel), Brian went on to say that TechMet is an investment company that invests in projects across the technology metal supply chain adhering to the highest level of ESG standards. With focus on cobalt, lithium, nickel, tin, tungsten, vanadium, and rare earths projects, Brian told InvestorIntel that TechMet is "only metals and mining company with significant direct U.S. government equity participation." Brian also provided an update on some of the projects that TechMet has invested in which includes the largest lithium-ion battery recycling company in North America and the cheapest producer in the world of electrolytes used in vanadium redox flow batteries.

To watch the full interview, click here

About TechMet Ltd.

TechMet is a private industrial company that is building controlling or significant minority positions in world-class projects across the technology metal supply chain.

To learn more about TechMet Ltd., click here

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If you have any questions surrounding the content of this interview, please email info@investorintel.com.

Pilot Plant Project to Produce Battery Metals Yields Positive

First Steps

written by InvestorNews | November 26, 2023
Last week, Canada Silver Cobalt Works Inc. (TSXV: CCW | OTC: CCWOF) ("CCW") announced that bench-scale test work has yielded positive results in producing a concentrate required for its Re-2Ox process.

In addition to owning a silver-cobalt exploration project, CCW also owns a proprietary hydrometallurgical process known as Re-2OX that can process mineral concentrates into cobalt sulphate, an important component for making Electric Vehicle ("EV") batteries.

Re-2OX Process

The environmentally-friendly Re-2OX process, bypasses the smelting process, to produce a cobalt sulphate hexahydrate from feed material such as mineral ore, tailings or recycled batteries.

While the Re-2OX process recovers cobalt, manganese, nickel, silver and other metals, it can also remove toxic compounds. The recovered metals can be sold without smelting or further processing.

In 2018, the Company extracted an 82-kg sample of vein material from its Castle Mine in northern Ontario, Canada and sent it to SGS Laboratories in Lakefield, Ontario.

The vein material was processed into cobalt-rich gravity concentrates and then run through the Re-2OX process. The process produced EV battery-grade cobalt sulphate at 22.6% cobalt that exceeded the specifications required by battery manufacturers at that time.

The Re-2OX process recovered 99% of the cobalt, 81% of the nickel and 84% of the manganese from the concentrate and, importantly, removed 99% of the arsenic.

SOURCE:

Battery Metal Pilot Plant Underway

CCW is now working with SGS on a Pilot plant to scale up the Re-2OX process for the production of cobalt-nickel-rich gravity concentrates. The Company believes the process can be an economic method of producing, locally sourced, client-specific battery metals for the North American EV market.

The plan calls for the Pilot plant to be built and operated by SGS in Lakefield, Ontario and use silver-cobalt ore from the region including the Castle Mine property.

In May 2020, CCW released a maiden NI 43-101 mineral resource estimate for the Castle Mine project of 27,400 tonnes of material at an average silver grade of 8,582 g/t (250.2 oz/ton) for a total of 7.56 million Inferred ounces, and 2.54 million cobalt ounces at a grade of 3,260 g/t cobalt.

Frank Basa, CEO and Director commented, “The economics of harvesting both the base metals and silver, then adding value by processing it into premium EV battery metals will provide the Company with two solid income streams and we are excited for the future as the High-Grade and Technology Leader in Canada’s Silver Cobalt Heartland.”

Battery Recycling Using the Re-2Ox Process

Earlier this month, CCW announced that it has begun studies at SGS Canada to use the Re-2Ox process to extract minerals from

old batteries. The Re-2Ox process is adaptable to recover rare earth metals from lithium-ion, nickel-hydride and nickel-cadmium batteries.

“We strongly considered this initiative a few years ago but initial research turned up a lack of feedstock at that time, but this has now changed. With feedstock currently available and coupled with the Re-2Ox process, the path is clear for the Company to develop what can be a robust and ever-increasing potential income stream by providing future tolling services for the treatment of used batteries,” remarked Frank Basa.

Acquiring EV Properties with the Potential for a Spin-out Battery Metals Company

Last month, CCW announced the acquisition of 39,200 hectares of EV properties in Quebec and Ontario.

The Company also reported that it was their intention to transfer the properties to another public company, in order to capitalize on the current EV market, and to dividend the shares to CCW’s existing shareholders.

Final Thoughts

CCW’s is focusing on becoming a producer of both silver, cobalt and other battery metals for the North American EV market. With its high-grade silver-cobalt mine and Re-2OX process, the Company is well positioned to become a Canadian leader in the production of silver, cobalt and other metals used in the EV industry.

CCW closed yesterday at C$0.46 with a market cap of C$56.0 million.