Technology Metals Report (04.19.2024): Government Roles Escalate, Rinehart and the Market Go Bull on Copper

written by Tracy Weslosky | April 19, 2024

Welcome to the latest issue of the Technology Metals Report (TMR), brought to you by the Critical Minerals Institute (CMI). In this edition, we compile the most impactful stories shared by our CMI Directors over the past week, focusing on the significant shifts and investments in the critical minerals and technology metals industry. A notable development is the evolving dynamics of resource nationalism, particularly in Chile and Indonesia, where control over vital minerals like lithium and nickel is increasingly dominated by local governments. This shift challenges traditional Western dominance and marks a move towards a multipolar resource governance era. Adding to the market dynamics, Australia's wealthiest, Gina Rinehart, has made aggressive moves into the critical minerals sector with her $120 million investment in Ecuador's Linderos copper-gold project and significant stakes in rare earth companies, positioning her as a pivotal figure in global supply chains.

This week's TMR Report also highlights several significant developments aimed at enhancing the supply chain and infrastructure of critical minerals. The U.S. Department of Energy has released a pioneering roadmap to integrate clean energy projects more rapidly into the nation's electric grid, targeting a substantial reduction in project backlogs. In financial boosts, critical mineral projects in Queensland and South Australia have been pledged $585 million in government

loans, emphasizing the growing commitment to fostering local industries and reducing dependency on international suppliers. Additionally, the closure of the Cobre Panamá copper mine has sparked a surge in copper prices, underlining the critical role of stable mineral supplies in maintaining economic stability and supporting green energy transitions. Each story is presented in chronological order to provide a comprehensive view of the week's events, rather than by order of importance, ensuring readers receive a well-rounded perspective on the sector's latest developments.

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The Shifting Dynamics of Resource Nationalism as the Demand for Critical Minerals is Set to Soar: (April 18, 2024, Source) – As global demand for critical minerals like nickel, lithium, and rare earths surges, the dynamics of resource nationalism are evolving. Historically dominated by Western powers, control is shifting towards resource-rich countries asserting sovereignty over their natural assets. China's longstanding monopoly on rare earths exemplifies this trend, leveraging resources for economic and strategic autonomy—a strategy now mirrored by Chile and Indonesia in their respective lithium and nickel sectors. Chile's government, for instance, has moved to nationalize lithium extraction by partnering with SQM to form a national critical minerals company. Meanwhile, Indonesia mandates local processing for nickel, fostering a sustainable, self-sufficient industrial base. These strategic shifts are restructuring global supply chains, challenging traditional Western dominance and heralding a multipolar resource governance era. This realignment has profound implications for geopolitical dynamics and global power structures in resource management.

Billionaire Gina Rinehart Stakes Another Critical Minerals

Claim: (April 18, 2024, Source) – Gina Rinehart, Australia's richest person and head of Hancock Prospecting Pty Ltd., is diversifying her portfolio by targeting critical minerals, moving away from her traditional focus on iron ore. Her recent ventures include significant investments in South America and the rare earths market. Notably, she invested $120 million in Ecuador's Linderos copper-gold project through a deal with Titan Minerals Ltd. (ASX: TTM), aiming for up to an 80% ownership. Additionally, she acquired a 49% stake in an Ecuadorian state-owned mining company. Rinehart also increased her influence in the rare earths sector by purchasing stakes in Lynas Rare Earths Ltd. (ASX: LYC) and MP Materials Corp. (NYSE: MP). Furthermore, she supported Arafura Rare Earths Limited (ASX: ARU) in Australia, which received a substantial government backing of A$840 million in grants and loans last month. Rinehart's strategic investments mark her shift to a key player in the global market, enhancing supply chain security for technology and renewable energy resources.

DOE Releases First-Ever Roadmap to Accelerate Connecting More Clean Energy Projects to the Nation's Electric Grid: (April 17, 2024, Source) – The U.S. Department of Energy (DOE) has unveiled a roadmap aimed at speeding up the integration of clean energy sources like solar, wind, and batteries into the national transmission grid, addressing the existing backlog of nearly 12,000 projects. This comprehensive guide, developed by DOE's Interconnection Innovation e-Xchange (i2X), targets a variety of stakeholders, including transmission providers, state agencies, and equipment manufacturers. It proposes 35 solutions across four main areas: improving data access, enhancing the interconnection process, promoting economic efficiency, and ensuring grid reliability. The roadmap also sets forth ambitious goals for 2030 to facilitate the Biden-Harris Administration's objective of achieving 100% clean electricity by 2035. These

efforts are supported by DOE's Grid Deployment Office and various funding opportunities aimed at fostering grid resilience and interconnection efficiency.

Critical minerals projects in central Queensland and South Australia to receive $585 million in government loans: (April 16, 2024, Source) – Critical minerals projects in Queensland and South Australia are set to receive $585 million in federal government loans, marking a significant push by the Albanese government towards a "future made in Australia." A major portion, $400 million, will fund Australia's first high-purity alumina processing facility in Gladstone, central Queensland. This investment comes via the $4 billion Critical Minerals Facility, Northern Australia Infrastructure Facility, and Export Finance Australia. An additional $185 million is earmarked to accelerate Renascor Resources Limited's (ASX: RNU) Siviour Graphite Project in South Australia. These projects aim to bolster the production of minerals essential for lithium-ion batteries and renewable technologies. This initiative aligns with national strategies to enhance renewable technology capabilities and drive economic growth through local job creation and sustainable industrial development.

A $10 billion Panamanian copper mine has been sitting idle since November – and it's part of why the metal's price is surging: (April 16, 2024, Source) – The Cobre Panamá mine, a major $10 billion copper-producing site, has been inactive since November, significantly contributing to the global copper shortage. This closure has led to an 11% increase in copper prices this year, reaching a peak not seen in over a year. Operated by Canada-based First Quantum Minerals Ltd. (TSX: FM), the mine previously supplied 1.5% of the world's copper, enough to build five million electric vehicles annually. The shutdown resulted from a tax dispute with the Panamanian government, which sought more favorable terms. This has exacerbated a copper supply crisis,

with the Bank of America declaring that the lack of new mining projects is now severely impacting refined copper production. This shortage coincides with increased demand for copper in green energy projects, further driving up prices.

SRC Expects to Produce 400 Tonnes of Rare Earth Metals Per Year Beginning in 2025: (April 15, 2024, Source) – The Saskatchewan Research Council (SRC) has entered into a five-year agreement with Vietnam's Hung Thinh Group to import up to 3,000 tonnes of rare earth carbonate annually starting in June 2025. This will enable SRC's Rare Earth Processing Facility in Saskatchewan to produce about 400 tonnes of rare earth metals per year. These metals are crucial for manufacturing modern technologies such as cellphones, electric vehicles, and green technologies. The deal, which stems from Saskatchewan's diplomatic efforts in Vietnam, positions SRC as a pioneer in North America with a fully integrated commercial rare earth processing facility. The Saskatchewan Government's $71 million investment in the facility aims to boost the local and national resource sectors by enhancing mid-stream supply chain capabilities. SRC, a major Canadian research entity, expects this initiative to catalyze industry investment and growth.

U.S. Department of State Minerals Security Partnership (MSP) Aims to Support Biden Policies on Critical Minerals: (April 15, 2024, Source) – The U.S. Department of State's Minerals Security Partnership (MSP) was established to advance President Biden's policies on critical minerals and enhance supply chain security. Led by Under Secretary Jose Fernandez, the MSP collaborates with various countries and the European Union to foster sustainable mineral supply chains, prioritizing environmental, social, and governance (ESG) standards. The partnership focuses on diversifying supply chains, boosting investments, promoting high ESG standards in mining, and increasing recycling. Companies involved must meet stringent ESG criteria, including responsible

environmental practices and ethical community engagement. Despite challenges such as varying international ESG standards, the MSP remains dedicated to “greening” economic activities and addressing climate change through global cooperation.

Tesla supplier Piedmont Lithium gets key North Carolina mining permit: (April 15, 2024, Source) – Piedmont Lithium (Nasdaq: PLL | ASX: PLL), a supplier to Tesla, has secured a crucial mining permit from North Carolina regulators to develop a significant U.S. lithium source near Charlotte. Despite the permit’s conditional approval, requiring a $1 million reclamation bond, the company faces ongoing financial challenges and local regulatory hurdles. The project, which could be a major U.S. lithium producer, is opposed by local residents due to environmental concerns. Additionally, Piedmont must obtain local zoning approval and substantial funding, estimated over $1 billion, potentially through U.S. Department of Energy loans. The state has imposed stringent conditions, including regular environmental monitoring and a modified waste storage protocol. The project’s progress hinges on overcoming local opposition and securing necessary permits and funding.

Glencore-backed nickel miner fails to secure financing after rising costs: (April 15, 2024, Source) – Horizonte Minerals PLC (TSX: HZM | AIM: HZM), backed by Glencore PLC (LSE: GLEN), is facing financial difficulties with its Araguaia nickel mine project in Brazil due to a significant increase in estimated costs, now exceeding $1 billion, and concerns about market oversupply from Indonesia. As a result, the company is considering options such as selling the mine, liquidation, or securing subsidiary-level financing, though none are expected to benefit shareholders significantly. Following the news, the company’s shares plummeted by 84%. This setback reflects broader challenges for nickel projects outside Indonesia, given the country’s dominant market position. Horizonte’s struggles

highlight investor reluctance to finance high-capital, early-stage projects amid unfavorable market conditions dominated by Indonesian supply, affecting not only Horizonte but also other nickel producers worldwide.

United States and United Kingdom Take Action to Reduce Russian Revenue from Metals: (April 12, 2024, Source) – The United States and the United Kingdom have jointly announced new prohibitions aimed at reducing Russia's income from metal exports, specifically aluminum, copper, and nickel. The U.S. Department of the Treasury, in coordination with the UK, issued measures to prohibit the importation of these metals into the U.S. and restrict their use on global metal exchanges and in derivatives trading. These actions are intended to follow through on commitments made in the G7 Leaders' Statement to cut off revenue streams that support Russia's ongoing military activities in Ukraine. Treasury Secretary Janet L. Yellen emphasized that the measures are targeted to undermine Russian revenue while minimizing negative impacts on allies. UK Chancellor Jeremy Hunt highlighted the collaborative nature of these efforts, stressing their importance in impeding Russia's war capabilities. As a result, major metal exchanges like the London Metal Exchange and Chicago Mercantile Exchange will no longer accept newly produced Russian metals from April 13, 2024.

Investor.News Critical Minerals Media Coverage:

- April 18, 2024 – The Shifting Dynamics of Resource Nationalism as the Demand for Critical Minerals is Set to Soar https://bit.ly/3W63V28
- April 18, 2024 – Billionaire Gina Rinehart Stakes Another Critical Minerals Claim https://bit.ly/3U2G0xU

- April 17, 2024 – InvestorNews.com Offers Real Time Access through the Revolutionary IR Mobile App, Now Offered Through Stock Marketing Inc. https://bit.ly/3TYrwPz
- April 16, 2024 – Tuan Tran Joins the Critical Minerals Institute (CMI) as the Newest Board Member https://bit.ly/49DlucM
- April 15, 2024 – U.S. Department of State Minerals Security Partnership (MSP) Aims to Support Biden Policies on Critical Minerals https://bit.ly/3Ji332z

Investor.News Critical Minerals Videos:

- April 19, 2024 – Terry Lynch on Power Nickel's 'New Crown Jewel Discovered on its NISK Project' https://bit.ly/3JrQT7k
- April 17, 2024 – Critical Metals' Russell Fryer on the Rising Tide for Copper and Cobalt in Africa https://bit.ly/4aFoWFa

Critical Minerals IN8.Pro Member News Releases:

- April 17, 2024 – Gary Stanley, Former Director of the Office of Critical Minerals and Metals at the U.S. Department of Commerce, Joins the First Phosphate Advisory Board https://bit.ly/3UkxbAL
- April 17, 2024 – Successful completion of Institutional Placement to raise A$15M; Entitlement Offer to be undertaken https://bit.ly/3W2SKHl

- April 16, 2024 – Appia Files NI 43-101 Technical Report on Maiden Indicated and Inferred Mineral Resource Estimate for the PCH Ionic Adsorption Clay Project in Goias, Brazil https://bit.ly/3xAahwd
- April 16, 2024 – NEO Battery Materials Appoints Renowned Battery Industry Pioneer Mr. Ricky Lee as Lead Managerial Advisor https://bit.ly/3UikF4C
- April 16, 2024 – Fathom Intersects Rottenstone-Like Nickel Tenor in Drillhole AL24077 at the Albert Lake Project https://bit.ly/3JlIfY8
- April 16, 2024 – Appia Engages Generation IACP to Provide Market Making Services https://bit.ly/43XNEhv
- April 16, 2024 – F3 Intersects Radioactivity Across Multiple Zones https://bit.ly/442U0fv
- April 15, 2024 – Power Nickel Releases Initial Assay on New Crown Jewel Discovered on its NISK Project https://bit.ly/4bdvD1h

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Australia updates their Critical Minerals List and Adds a second, introducing the Australian Strategic Materials List

written by Tracy Weslosky | April 19, 2024

The Albanese Government of Australia has recently undertaken a

notable revision of its critical minerals policies, underscoring the nation's focus on energy, job creation, and national defense. These revisions include updating the Critical Minerals List and introducing a new Strategic Materials List, an integral part of a larger strategy to establish Strategic Critical Minerals Hubs across the country.

Significant changes to the Critical Minerals List have been made, notably adding fluorine, molybdenum, arsenic, selenium, and tellurium, while removing helium. This update brings Australia's list into closer alignment with those of its international strategic partners. These minerals play a vital role in the energy transition and are heavily utilized in the defense and technology sectors.

Alastair Neill, Director of the Critical Minerals Institute (CMI), offered an expert perspective on these additions. He remarked, "It was interesting to see some of the additions. Arsenic is involved pretty well in Europe and the US, but again China, has 40% of the world's production, I think the next largest is Peru. So there is lots of arsenic in North America. But just because of the environmental hoops that you have to go through to deal with that I think has prevented sort of domestic production. They also added molybdenum, which is an interesting choice, and tellurium, and selenium, which are very small markets by themselves." Neill's insights highlight the strategic considerations and complexities in the global supply chain of these minerals.

Additionally, the new Strategic Materials List complements the Critical Minerals List by identifying essential commodities for the energy transition that are not at risk of supply chain disruptions. This list includes copper, nickel, aluminum, phosphorous, tin, and zinc, notable for their established industries and stable supply chains.

A key component of this initiative is the feasibility study for Strategic Critical Minerals Hubs, aimed at identifying potential locations for critical minerals infrastructure precincts, especially for commodities that might face supply chain disruptions. This study is informed by the Government's Critical Minerals Strategy and input from industry and state and territory resources ministers.

Minister for Resources and Northern Australia, Madeleine King, has emphasized that these changes are the culmination of extensive consultations with industry, the public, and state and territory governments. The updates are poised to enhance Australia's stature as a significant exporter of clean energy materials, reflecting the critical role of these minerals in the greening of Australia's economy and its national defense.

The Critical Minerals List and the Strategic Materials List will be updated regularly to reflect changing economic and geostrategic dynamics. The inclusion of minerals like copper, nickel, aluminum, phosphorous, tin, and zinc on the Strategic Materials List highlights their economic and strategic importance, especially in light of the global energy transition.

The Australian Government maintains both the Critical Minerals List and the Strategic Materials List to identify minerals crucial for the nation's modern technologies, economy, and national security. These lists are subject to review at least every three years and may be adjusted in response to global strategic, technological, economic, and policy changes. The Critical Minerals List comprises minerals essential for modern technologies and national security, while the Strategic Materials List includes those important for the global transition to net zero and other strategic applications, but with currently stable supply chains. The government's ongoing support for the extraction and processing of these minerals is a

critical aspect of monitoring their market developments.

Europe’s Strategic Transformation in Critical Raw Material Management

written by Tracy Weslosky | April 19, 2024

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

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National Security Trumps Globalization & Free Trade in the Critical Minerals Race

written by Jack Lifton | April 19, 2024

Do national security trump globalization and free trade? Apparently so. The **CMI Table of Comparative Critical Minerals' Lists** below tells the story. But, first, some background.

The surface and near-surface distribution and accumulation of the minerals, from which modern mechanical and chemical engineering extract useful chemical elements, is a result of billions of years of the geological evolution of the earth's crust. Most recently some mineral deposits (accessible and economically workable concentrations) have also been created by volcanic activity and "weathering," the breakdown and sometimes dissolution of minerals by the periodic freezing and heating, we call the seasons and by thousands, perhaps millions, of centuries of rain.

The only effect that humans have had upon the distribution of

the minerals containing the metallic chemical elements is to have removed them to places of human habitation as technologies became available to recover them, extract the desired chemical elements from them, and process the chemicals thus obtained into metals deemed necessary for survival.

Metals, the first known of which either copper or gold, which can both be found in “native” (metallic) forms, and then, after that, probably tin and iron were “discovered” some 6 to 8 thousand years ago. The ancient world knew less than 10 metals and just a very few alloys of them (bronze, brass, electrum, tin, iron, mercury). All of the rest of them were “discovered” only in the last 250 years.

The “Birth” of Technology Metals

In fact, it is only during and after World War II that a new class of metals, which I have called the “technology metals” were prepared in commercial quantities and have now enabled the age of miniaturized solid-state electronics, alternate energy storage, and nuclear generation of electricity to flourish and transform our society.

Those minerals, which were critical up to World War II were pretty much the same ones that the Romans and the British needed to establish and maintain their empires: iron and copper.

There is a disconnect between the identification of the metals they deem to require sourcing critical minerals by individual nations and national groupings, and why they are in particular, critical.

Comparative List of Countries' "Critical Minerals"

There are different emphases and priorities used by different nations in choosing critical minerals. But, it seems that all such selection agendas have one overriding theme, national self-interest. Most of the world's nations consider the most critical minerals to be those that support their domestic economy first and their export economy second. For the two current "great economic powers", the USA and China, we have so far only the USGS list, which is contained in the **CMI Table of Comparative Critical Minerals' Lists** below. I have not seen a comparable list for the PRC.

In any case, the American USGS list is an "official" compilation that includes the needs of the world's largest military, that of the United States. And, quite frankly, although it is the US military's needs that get the most media coverage, that usage is just a fraction of the critical minerals contained in products for the American consumer economy. For example, I estimate that although the military may use 20% of all of the rare earths consumed annually in the USA, by far the biggest user of them is the OEM transportation (cars, trucks, passenger planes, railroad rolling stock, and civilian ships and boats, etc.) industry followed by the manufacturers of industrial motors and civilian appliances and infotainment devices.

In the table below, the elements in the solid blue lines are those that all of the shown national or regional (EU) critical minerals list agree upon. Those in the lighter blue background are chosen by some but not all of the nations/groups, and those with no background represent the choice of individual nations alone.

The perspective of most of the lists is either (almost) all-encompassing or ridiculously narrow.

The key metal of our age of technology, copper, does not appear on anyone's list!

The structural metals for both the peacetime and war economies, iron, aluminum, and copper do not appear at all!

China is Winning the "Critical Minerals" War

More than 50% of the production of end-user forms of all of these metals (copper, iron, and aluminum) are today produced in China, for which we have not yet found a critical minerals list, but I suggest that we simply look at the relative proportions of any metal today processed and produced in China to reason out the Chinese critical minerals' list. In fact, China has a monopoly on all of the critical war minerals and metals processing.

This is the result of the first successful industrial policy in history.

Talking doesn't produce structural or technology minerals and metals. Only action does.

Critical Minerals INSTITUTE

Critical Minerals List

USA	CANADA	AUSTRALIA	UK	EUROPE
2022	2021	2022	2022	2020
Aluminum	Aluminum	High purity Alumina		
Antimony	Antimony	Antimony	Antimony	Antimony
Arsenic				
Barite				Barite
				Bauxite
Beryllium		Beryllium		Beryllium
Bismuth	Bismuth	Bismuth	Bismuth	Bismuth
				Borate
Cesium	Cesium			
Chromium	Chromium	Chromium		
Cobalt	Cobalt	Cobalt	Cobalt	Cobalt
				Coking coal
	Copper			
Fluorspar	Fluorspar			Fluorspar
Gallium	Gallium	Gallium	Gallium	Gallium
Germanium	Germanium	Germanium		Germanium
Graphite	Graphite	Graphite	Graphite	Graphite (natural)
Hafnium		Hafnium		Hafnium
	Helium	Helium		
Indium	Indium	Indium	Indium	Indium
Iridium				
Lithium	Lithium	Lithium	Lithium	Lithium
Magnesium	Magnesium	Magnesium	Magnesium	Magnesium
Manganese	Manganese	Manganese		
	Molybdenum			
Nickel	Nickel			
Niobium	Niobium	Niobium	Niobium	Niobium
Platinum group metals	Platinum group metals	Platinum group metals	Platinum group metals	Platinum group metals
				Phosphate rock
				Phosphorous
	Potash			
Rare earth elements	Rare earth elements	Rare earth elements	Rare earth elements	Rare earth elements
		Rhenium		
Rubidium				
				Rubber (Natural)
Scandium	Scandium	Scandium		Scandium
		Silicon	Silicon	Silicon metal
				Strontium
Tantalum	Tantalum	Tantalum	Tantalum	Tantalum
Tellurium	Tellurium		Tellurium	
Tin	Tin		Tin	
Titanium	Titanium	Titanium		Titanium
Tungsten	Tungsten	Tungsten	Tungsten	Tungsten
	Uranium			
Vanadium	Vanadium	Vanadium	Vanadium	Vanadium
Zinc	Zinc			
Zirconium		Zirconium		

Source:

https://criticalmineralsinstitute.com/wp-content/uploads/2023/01/Critical_Minerals_List.pdf

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Net Zero Carbon and other "planning dilemmas" Part 2

written by Steve Mackowski | April 19, 2024

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.

Russia’s War, Supply Chain Turmoil and What It Means to You

written by InvestorNews | April 19, 2024

What a week! Last Thursday, Russia invaded Ukraine. Then this week global supply chains went crazy, with skyrocketing price moves and a global-scale sense of worry about where it all leads.

I won’t dwell on war news, meaning stories and imagery from front lines. It’s tragic and painful to witness, and no doubt you follow events.

But definitely, it’s worth discussing the economic impacts of the war. In particular, consider the almost immediate commercial isolation of Russia that’s now taking shape with a wide array of sanctions on Russia’s government, her banks, businesses and people.

This is an entirely new page for the world economy. And what’s happening is not as easy as just saying, “Russia is bad so let’s punish her.” Sad to say, though, that’s where much thinking across the world is focused. Do something. Make it fast. Think about it later.

Another way to say it is that Russia is a major, global-scale source of key energy and industrial resources. These range from products straight from the well like crude oil and natural gas, to refined hydrocarbons like gasoline, diesel and chemicals. Plus, Russia produces a vast array of industrially critical elements, again ranging from ores and concentrates to highly refined and processed alloys.

For example, as Russian sanctions kicked into play over the past few days the price of oil pulled up into a strong climb, with Brent Crude hitting $114 per barrel at one point. This reflects market uncertainty over future access to Russian exports. Meanwhile, one sees stories of tanker-loads of Russian oil going “no bid” because traders are uncertain about the legality of even making an offer. It’ll sort out, more or less. But for now, it’s a serious mess.

Other important commodities with a Russia-trade angle are also rising in price. Wheat futures are soaring to two-decade highs, according to market tracking services. And lumber futures are up

sharply as well, reflecting concern over diminishing Russian supply.

Other materials rising in price include aerospace-grade aluminum, now at record levels according to a market follower with whom I spoke earlier. Meanwhile, a significant fraction of the world's aerospace grade titanium – about 60% by some calculations – comes from Russia.

Or consider spot prices for other widely used, critical industrial elements like copper, nickel and uranium. All have a strong Russia supply angle, and all are at 10-year highs, per trading data.

You get the picture, right? Literally, overnight, anti-Russia sanctions have created uncertainty over future supplies of key energy resources and metals.

Meanwhile, share prices for important Russian producers have collapsed. Consider just two key companies in the Russian investment space, gas producer **Gazprom (OTC: OGZPY)** and metals producer **Norilsk Nickel (OTC: NILSY)**. Both companies' share prices have tumbled in recent days, as you can see here:

Is there an investment angle? Well, the possibilities are many and depend on your risk tolerance.

For the truly bold, the collapse of Russian share prices creates a contrarian setup. If you are aggressive, and perhaps a bit crazy, feel free to wade into the selloff and buy shares of Norilsk and Gazprom. Of course, we don't yet know what will happen as events unfold, so the "buy low" idea could also lead to even more losses, of not a complete wipeout. You've been warned.

Or frame it this way: Russia now has a very significant level of what's called "war risk" in everything that has to do with its investment climate. Perhaps there's an upside in the not-too-distant future, but for now the entire space is a very dangerous place to be for most investors.

The safer investment idea is to focus on U.S. and Canadian names that work in the resource space that's affected by Russian sanctions. Of course, there are many names out there ranging from small exploration plays to large and mighty companies.

For example, let's look at nickel. Large nickel producers include Brazilian play **Vale (NYSE: VALE)**, as well as Swiss-based **Glencore (OTC: GLNCY)** and Australia's **BHP Group Ltd. (NYSE: BHP)**. These names have global operations and everything you would want in a major player. If customers need nickel and cannot obtain it from Russia and Norilsk, they can buy it from these other guys.

On the much smaller, exploration side, though, my strongest play is a Canadian junior operating in Montana, called **Group Ten Metals Inc. (TSXV: PGE | OTCQB: PGEZF)**. This company is relatively early stage in its efforts, but with significant progress on the books. The play is focused within the well-regarded Stillwater District, where the company holds a massive land package. Exploration has already revealed extensive mineralization in copper, nickel, platinum, palladium, rhodium, gold, silver and even chrome. It's a superb asset (I've visited the site and seen the mineralization), with strong technical and management talent.

It's also worth noting that Group Ten holds lands directly adjacent to Sibanye-Stillwater, Ltd. (NYSE: SBSW), currently producing minerals in the region. This situation makes it more likely that Group Ten can eventually obtain necessary mining

permits and move towards development and production.

To sum up, we can’t do anything about the tragic war in Ukraine. Meanwhile, the anti-Russia sanctions are a massive, international phenomenon, again out of our hands. But already these dynamics have set up severe supply chain issues, all based on just a few days of history being made. And more disruptions are, no doubt, in the pipeline as events unfold and politics play out.

Finally, looking ahead the world is not simply on a glide path to a new version of the Cold War. No, Western nations are on the path to a “Commodity War” scenario, firmly embedded inside the looming political, economic and perhaps military confrontations. In this sense, holding real assets – including ores in the ground – is critical to your investment future.

On that note, I rest my case.

That’s all for now… Thank you for reading.

Best wishes…

Byron W. King

Putin attacks Ukraine, what are the consequences for investors?

written by InvestorNews | April 19, 2024

Like a lot of people around the world, I’m royally pissed off

about what is happening in Ukraine. My email inbox exploded yesterday with questions on what this means from a trading perspective, and no one seemed to like my answer, which is – it meant very little to me (but please don't mistake that for my personal outrage with respect to this issue). Frankly, when all was said and done not a whole lot happened in the market, and depending on how the continued sanction saga goes, we'll see if it has much impact at all. I targeted a few buying opportunities of anything that got yard-saled, but my guess is that this is a simple speed bump, and the market will have forgotten about it in a week or two.

In my opinion, the bigger market impact will be how it affects the U.S. Federal Reserve actions. The potential for increased commodity inflation (due to sanctions) could slow the economy. A slowing economy is not a great background for gung-ho interest rate increases. So, this conflict/war/assault on humanity may actually temper interest rate increases which could be bullish tech and gold. A perceived less aggressive interest rate path may partially explain the slap upside the head that most North American financials took, although there may also be some ramifications from all the banking sanctions announced. But, by day's end, all I had done was to buy some Facebook/Meta (NASDAQ: FB) and sell some out of the money covered calls on Cameco Corp. (TSX: CCO | NYSE: CCJ), and that's it. There was a lot of uranium interest for sure, but we saw bigger intraday moves when everyone was all cranked up by the activity of the Sprott Physical Uranium Trust (TSX: U. UN). Nevertheless, I will often find some way to trade around a 10% single day move in an equity.

Now don't get me wrong. I'm definitely paying attention to the obvious sectors that may be impacted as one could argue that Russia is a global commodities superstore – you know, oil, natural gas, wheat, corn, palladium, platinum, aluminum, potash

and phosphate, to name a few. But let’s be frank, a lot of these commodities will see limited impacts for various reasons.

The current global supply/demand picture for both oil and natural gas, the largest contributor to Russian GDP, is such that no country has enough spare capacity or political will to completely shut off Russian imports. It seems like every speech made by President Biden on this topic always has some reference to keeping U.S. gasoline prices below $4/gallon. And in Germany, they made the symbolic gesture of halting certification for the Nord Stream 2 pipeline but that wasn’t shipping any product yet anyway. There’s still the original Nord Stream pipeline and its total annual capacity of 1.9 trillion cubic feet (55 billion m^3) of gas that hasn’t been discussed in any press releases I’ve seen so far. Likely because it’s still winter and Germany isn’t about to let its citizens freeze, and realistically it doesn’t have any other quickly available, viable options. If those united against Mr. Putin actually grow a spine and put a hard stop to all Russian oil and gas purchases, Russia could simply sell most, if not all, of it to China and current Chinese supply will redistribute to other parts of the world. This could certainly create some interim price volatility but it’s highly improbable (in my opinion) that actual Russian oil and/or natural gas production will be cut and thus there will be no dramatic swings in supply.

In fact, I believe China probably has the most sway over how this whole situation unfolds. Mr. Putin obviously doesn’t care about sanctions from the rest of the world given those sanctions were signaled well in advance and it doesn’t appear to have dissuaded him in any way, shape or form. China can likely absorb a lot of the commodities that Russia is currently selling to the rest of the world, should sanctions actually start to have an impact, but I’m pretty sure Mr. Putin isn’t that trusting of his

giant neighbor who happens to have an even larger economy and army. But if China decided that enough is enough and threw its weight behind the opposition of the rest of the world then this incursion ends immediately. If China is on board with sanctioning Russia along with everyone else, Russia no longer has an economy to speak of. But I suspect China plays along for a while, at least until they have Chinese troops on the ground in Taiwan, but we can hope that's not a story for another time.

Ultimately, I have no idea what Mr. Putin's end game is. Why has he manufactured some alternate reality regarding Ukraine that supposedly required Russia to invade? We may never know. To quote Winston Churchill from 1939 when he defined Russia as "a riddle, wrapped in a mystery, inside an enigma," it would appear Mr. Putin has taken this description to heart. In the meantime, it might be time to start nibbling away at North American commodity producers and explorers of just about everything because this event has taken security of supply to another level. It should also reshape the perspective of any ESG funds and investors as I'm pretty sure an unwarranted invasion of a neighboring country violates both Social and Governance mandates, and if it doesn't then it should. With that said, let's be clear, these are the actions of Mr. Putin and his political and financial supporters and not necessarily the Russian people. Regardless, I'm glad I don't own any Russian equities or companies with Russian backing right now.

Asset Class Winners and Losers

if Russia Invades Ukraine

written by InvestorNews | April 19, 2024

As Russian troops gather at the Ukraine border a war looks imminent. U.S intelligence has warned that Russia is likely to invade Ukraine as early as this week. Investors can look at ways to protect and position their portfolio if the Russian invasion goes ahead, as is widely expected.

Based on the February 27, 2014, Russian invasion that took control of the Crimean Peninsula from Ukraine, any invasion may meet with limited resistance. The 2014 invasion and takeover of Crimea was completed in only a month. Of course, on this occasion the whole of Ukraine is at risk and the Ukrainian military response should be a lot greater.

Russia and Ukraine look to be on the brink of war

Russia – Ukraine War

Source: iStock

Sanctions on Russia will likely be the key response from the West

If Russia invades then the most likely outcome is that very heavy sanctions will be imposed on Russia by at least the U.S, UK, and the European Union. Goods and services likely to be sanctioned could be the import of any military hardware & software, semiconductors, smartphones, critical metals etc. There would also likely be financial sanctions that act to block western finance to Russia and Russian companies as well as US dollar transactions. Russian exports (with gas and perhaps oil excluded) may also be sanctioned, which could lead to price

spikes in key commodities and metals (palladium, iron ore, nickel, aluminum, or uranium) that Russia exports. For example, the Russian company Norilsk Nickel is the world's leading palladium and nickel producer; the Russian company Rusal is a large global aluminum producer; and much of the world's uranium comes from Russia, and Russian controlled companies such as those operating in Kazakhstan.

Ukraine would also be heavily impacted by a Russian invasion, which would interrupt Ukrainian businesses. Ukraine is well known for its fuel and non-fuel resources production and mining industry, including natural gas, oil, coal, iron ore, chalk, limestone, and manganese ore. Manufacturing is also a major business in Ukraine and includes automotive, shipbuilding, aircraft & aerospace. Ukraine is also a strong agricultural producer that helps to feed Europe. Key Ukrainian agricultural products include corn, wheat, sunflower oil, sugar, dairy, meats, honey, and nuts.

Ways to protect your portfolio

Some of the safe havens in times of conflict include:

- Cash (U.S dollar, Japanese Yen, Swiss Franc).
- U.S Government bonds.
- Physical Gold, and quality gold producing mining companies.
- Rotating some money out of risky assets.
- Reducing exposure to Europe.

Possible winners if Russia invades Ukraine

- Global energy companies due to increased price of oil and gas. Leading non-Russian gas and oil companies include Exxon Mobil Corporation (NYSE: XOM), BP plc (NYSE: BP), and Chevron Corporation (NYSE: CVX).

- Global metal companies (palladium, iron ore, nickel, aluminum, uranium). For palladium consider South African Sibanye Stillwater Limited (NYSE: SBSW). For iron ore and nickel consider Brazil's Vale S.A. (NYSE: VALE), or Australia's BHP Group Limited (NYSE: BHP). For aluminum consider China's Chalco (SHA: 601600) or America's Alcoa Corp. (NYSE: AA). For uranium consider Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR) or Ur-Energy Inc. (NYSE American: URG | TSX: URE).
- Military related stocks as the West supports Ukraine and other parts of Europe with access to the latest weapons as a counter to Russian expansion in Europe. Consider the iShares U.S. Aerospace & Defense ETF (ITA) or the more aggressive Direxion Daily Aerospace & Defense 3X Shares ETF (DFEN). More details on the top defense stocks in my recent InvestorIntel article are here.
- Agricultural stocks. Given Ukraine is a food bowl of Europe, then any significant disruption to the Ukraine agricultural sector could force up prices for grains such as corn, wheat, and sunflower oil.
- Cybersecurity stocks may be a winner if Russia responds to the West with cyber-attacks. Consider buying the ETFMG Prime Cyber Security ETF (HACK).
- Inverse or Bear ETFs that short the market or the currency. As there is no current Russia short ETF (Direxion Daily Russia Bear 3x Shares (RUSS) ETF closed in 2020) or short Russian ruble ETF to my knowledge, one option would be ProShares Short Euro (EUFX) or ProShares UltraShort Euro (EUO) for shorting the Euro currency. These are only suited to day trading and sophisticated investors.
- Shorting individual Russian stocks.

Possible losers if Russia invades Ukraine

- Russian ruble currency, Ukrainian currency (the hryvnia).
- Russian stocks and the Russian stock market index (eg: iShares MSCI Russia (ERUS)).
- Companies that have significant exports to, or revenues from, Russia as Russia may impose countersanctions or suffer a sharp slowdown. Examples include Veon (NASDAQ: VEON), Mobile TeleSystems (NYSE: MBT), EPAM Systems (NYSE: EPAM), Playtika (NASDAQ: PLTK), QIWI (NASDAQ: QIWI), and Ozon Holdings (NASDAQ: OZON).

Closing remarks

When Russia invaded Ukraine in 2014 the immediate impact saw the Russian stock market index fall ~11%, European stock indexes fell (Germany fell 3.3%), and the Russian ruble fell to a record low. US shares fell about 1.3% and money flowed into US bonds, gold and safe haven currencies. Rotating some funds from risky assets into safe havens right now looks to be a good idea.

Apart from what's mentioned in the article, investors should also consider using any significant dip in global share markets as an opportunity to buy, as any contained Russia/Ukraine conflict should not have a lasting impact on the world. I will most likely use any market dip to top up on some of my favorites such as Alphabet Inc. (NASDAQ: GOOG) and Tesla Inc. (NASDAQ: TSLA), as well as some well valued EV metal miners.

Finally, there is also the risk that Russia backs down or de-escalates and we get no Ukraine invasion. In that case, most of the stocks and ETFs in this article are likely to fall back after a recent run up as invasion risks have been an issue for some months now.

At the rate of escalation, we should know what the outcome is probably within the next month or two. Feel free to post your thoughts and idea in the comments section below.

Demand for scandium set to rise and Imperial Mining offers an early stage high grade project

written by InvestorNews | April 19, 2024

Scandium is the key to lightweight electric vehicle boom

With the electric vehicle boom set to take off this decade, expect a surge in demand for the 'lightweighting' of key materials. An essential part of reducing the weight of electric vehicles (EVs) is scandium, which mixed with aluminum creates lighter and stronger alloys for EVs. Lighter weight means extending battery range in EVs and improving fuel efficiency and reducing greenhouse gases in combustion engines.

The current scandium market size is estimated to be about 35 tonnes per year, however Bloomberg forecasts this could grow to reach 1,800 tonnes pa by 2035 – a 51 times increase in demand. However, if the sales of electric vehicles surge as some forecast and reach 30 million by 2030, the demand for scandium would jump to a staggering 5,250 tonnes pa – a 150-fold increase on today's demand based on just a 0.2% scandium oxide-aluminum alloy in each EV.

This exponential increase in demand for scandium does not include its additional consumption by key industries such as

solid oxide fuel cells, aerospace & defense, aviation, electronics, sporting goods, and ceramics.

Building 30 million new electric cars a year by 2030 will require an additional 5,250 tonnes of scandium oxide every year to achieve 100% lightweighting

Source: Imperial Mining Group investor presentation

Imperial Mining Group Ltd. (TSXV: IPG) owns a diverse portfolio of high-grade assets including gold, base metals and scandium-rare earth projects. The company's focus is on development of its high-quality scandium-rare earth Crater Lake property in northeastern Quebec, Canada. The property has a large 6km diameter complex that is host to high-grade scandium and niobium deposits.

The Crater Lake scandium rare earth project

The 100% owned Crater Lake Project is located 200km northeast of Schefferville, Québec, 95 km from the end of the Trans-Labrador Highway. The property consists of 57 contiguous claims covering 27.8km^2.

Crater Lake location map

Source: Imperial Mining Group investor presentation

Imperial Mining Group is currently working to expand the resource. Previous drilling has defined a mineralised zone over 250 meters in strike and 170 meters in depth. Scandium oxide grades ranged from 0.0235% to 0.0319% (235-319g/t), which is pretty good. Scandium is not rare, however finding commercially

viable grades (>200-300g/t) of scandium is very rare. More recent drill results have included 528g/t scandium oxide over 8.8 meters, showing the high grade potential of the Crater Lake Project.

The company expects the Crater Lake Project to be a small open-pit operation with an on-site magnetic concentrator and/or sensor-based sorting. This should reject 50-60% of mined material, resulting in high scandium recoveries and lessening transportation risks and costs. It is anticipated that the project will be low CapEx, OpEx due to the higher grades and expected simple process recovery methods.

Future catalysts will include planned further metallurgical work, a PEA expected by Q1 2021, permitting, and an anticipated FS by Q3 2023, subject to financing.

Multiple market opportunities ahead as the demand for scandium increases dramatically

Source

Closing remarks

I have no doubt that the EV boom will take off, which means lightweighting will become essential for electric cars to boost performance, especially range. In the meantime there are plenty of other areas that demand scandium, so I expect the scandium sector to perform well this decade.

Imperial Mining Group has an exciting early stage high grade scandium-niobium project in northeastern Quebec. Also of interest is their 100%-owned Opawica Gold Project in the Abitibi region of northwestern Québec where recent drilling discovered 1.21 g/t gold (Au) over a 13.3 meter length.

Risks are always high with junior mining stocks at the early stages and in this case the scandium market is another risk as it is yet to be fully developed. Of course with high risk comes the chance for high reward. Imperial Mining Group trades on a current market cap of just C$9 million. One to follow closely, especially since securing a source of North American scandium could soon be very much in demand.

International Council on Mining and Metals' COO on the four big trends in 2018

written by InvestorNews | April 19, 2024

March 26, 2018 – "There's a lot of those macro metals that are going to very well through that increased focus on the transition to a low carbon future. Cobalt, lithium, these are going to be huge as well, as is nickel." – states Aidan Davy, COO and Director of the International Council on Mining and Metals (ICMM), in an interview with InvestorIntel's Jeff Wareham.

Jeff Wareham: What are you seeing at PDAC this year?

Aidan Davy: It has been a real interesting PDAC. I have been coming to PDAC for about 6-7 years now. I lived with PDAC through the best of times and the worst of times.

Jeff Wareham: Especially the worst.

Aidan Davy: It has been fascinating because I think even when

the industry was going through the toughest times, and particularly we are thinking about 2015 still going into 2016, PDAC has remained resolutely kind of optimistic throughout that whole cycle. It still has been very, very different and I think very gratifying to see that there has been much more optimism here than we have had for a couple of years now.

Jeff Wareham: From what I understand you have quite a background in the critical metals and in sustainability. What themes do you see in 2018?

Aidan Davy: Interesting, for 2018, and my background is I am a sustainability professional. I have worked in this space for about 30 years. The organization I represent we work with 25 companies. They work across continents, across commodities and collectively they represent something like 30% to 50% of global production of major metals. When I look at the trends that I see for the industry there is four big trends that I am seeing as being really important in 2018. One is climate change. It is critically important, both in terms of the risk and the opportunity space. A second one is around the whole issue of contested ownership of resources. Some call it resource nationalism. I tend to avoid that term. That I think is a big, big issue for the sector. The third has got to be the rise in ethical consumer facing companies. The fourth is probably around gender, which is an issue that has been coming for this industry for a while and it is very much here.

Jeff Wareham: Wow. Those are some pretty broad subjects. Let us pick one. What do you think of those trends is going to matter the most in 2018?

Aidan Davy: I think they are all going to be critically important. Let us take the climate trend because that connects to the consumer facing company trend as well. I think

historically this industry has been slow to engage on climate change, but in the past decade has really started to engage in a much, much more proactive way. Again, I think the initial entry point around this was very much looking at it through a risk lens. It has been around to, what extent are we contributing to carbon emissions? To what extent can we limit our impact in that space? But, also, to what extent can we make our operations more climate resilient? I think that has been a primary focus. What is changing now is the conversation increasingly is one around, what is the role of this industry in looking at the transition to a low-carbon future? That is very different for the mining and metals industry than oil and gas. Oil and gas is arguably faced with an existential crisis by the increasing attention around climate change, whereas for this industry there's a huge opportunity.

Jeff Wareham: And what sort of companies do you see benefiting from those opportunities?:

Aidan Davy: There are a whole range of commodities that are going to be critically important in making that transition to a low carbon future. Whether you are talking about the critical metals and some of the rare earth metals. That's essential, fundamental. Then some of the macro metals, for example, copper is a critical part of the solution here. Iron ore is a critical part because if you are building large scale infrastructure around low carbon economy then that's an incredibly important commodity. Things like aluminum, fundamentally important. There's a lot of those macro metals that are going to very well through that increased focus on the transition to a low carbon future. Cobalt, lithium, these are going to be huge as well, as is nickel…to access the complete interview, click here