

2022 Annual Report

YUKON MINERALS ADVISORY BOARD



CHAIR'S MESSAGE

I am pleased to present the 2022 Yukon Minerals Advisory Board (YMAB) Annual Report. The Board is composed of senior industry professionals from the Yukon, Canadian and international organizations who, in addition to their own professional commitments, have donated considerable time working to provide constructive and relevant advice to our Minister over the past year. I thank them for their ongoing commitment.

After the upheaval of the COVID pandemic, many looked to 2022 to be a stabilizing year that would return us to “normal.” That was quickly dispelled with the invasion of Ukraine in February. In addition to the terrible human cost the war continues to have, the impact on the global economy was felt far beyond the war zone. Inflation and interest rates at generational highs presented significant challenges to our industry and to Yukoners, alike.

As fuel, vehicle, electricity, heating and food prices reached record or near-record levels in the last 12 months, there is a renewed focus on mineral development as the solution to these economic challenges. Critical Minerals, now a household term, will play a major part in the green energy transition with policy-makers moving to position their jurisdictions to capture the benefits of this social and economic opportunity.

In this year’s report, the YMAB notes parallels between the policy updates that are being driven by global demand for Critical Minerals and those which the YMAB has long recommended. Streamlining of approval processes, improving benefits to First Nations, collaboration between governments and industry to move projects forward; all of these approaches being touted by federal and provincial governments in their pursuit of Critical Minerals development have been discussed and recommended in previous YMAB annual reports.

The Yukon Minerals Advisory Board is supportive of these policy change discussions and the social and economic benefits they will bring to Yukoners. But in our report, we also caution that legislators and regulators must take care to not overlook the importance of metals and other mineral mining to our territory’s success. Critical Minerals may be the catchword of the day, but as our report reminds readers: mining of metals and non-Critical Minerals has long provided social and economic benefits to the Yukon.

The world is moving to electrification. The YMAB supports the Yukon achieving the positive social and economic outcomes that result from the responsible development of our resources. However, as readers go through this year’s report, the YMAB urges them to retain a “whole industry” lens to many of our recommendations that show improvements needed for Critical Minerals are equally applicable to the Yukon’s other metals and mineral projects. Critical Minerals are an excellent opportunity for the Yukon to grow its private sector economy, but should not overshadow the importance of other mining activities.

Respectfully submitted,



HEATHER BURRELL

Chair

PREAMBLE

The YMAB is established under Section 6 of the *Yukon Economic Development Act* and is charged with providing advice and recommendations to the Minister of Energy, Mines and Resources.

The YMAB focuses its advice in relation to the following terms of reference for the Board:

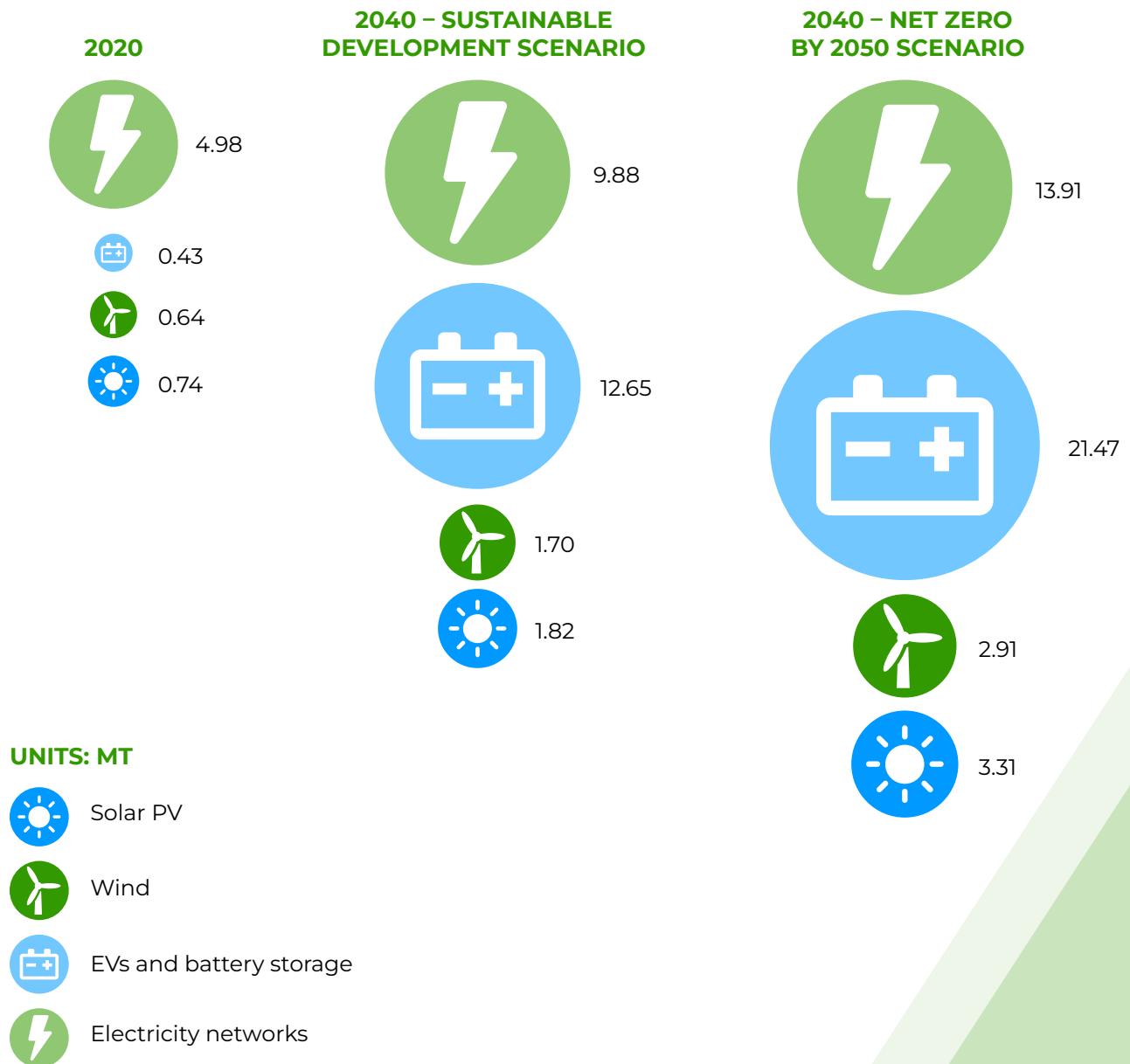
- increasing mineral exploration and development in the Yukon;
- attracting capital for the exploration and development of new mines;
- ensuring feasible and timely development of mines;
- improving the potential for producing mines to remain viable;
- participation by Yukon residents and businesses in mining;
- reducing constraints, including governmental constraints, on the development of minerals in the Yukon;
- outreach with First Nations to explore the opportunities and benefits of mineral exploration and development in the Yukon; and
- such other matters pertaining to mineral exploration and development in the Yukon as the Minister refers to the Board.

CRITICAL MINERALS: SOARING RHETORIC TO MATCH SOARING DEMAND

Critical Minerals, that basket of minerals essential to the economic security of a mineral-producing nation, are well-known to be those largely required for the transition away from hydrocarbon-powered energy sources. This has become a household term as governments evaluate how to harness their economic potential in the transition to green energy technologies.

As International Energy Agency (IEA) data shows, demand for these minerals is growing rapidly and will continue to grow for a generation. They forecast a fourfold increase in global production to meet 2040 carbon emissions targets identified in the Paris Accords, and a sixfold increase in production to meet the 2050 net-zero target set by many governments, including Canada and the Yukon.

TOTAL GLOBAL MINERAL DEMAND FOR CLEAN ENERGY TECHNOLOGIES BY SCENARIO, 2020 COMPARED TO 2040



Source: IEA. Licence: CC BY 4.0

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“Critical Minerals present a generational opportunity for Canada in many areas: exploration, extraction, processing, downstream product manufacturing and recycling.”

-Hon. Jonathan Wilkinson, Canada’s Minister of Natural Resources

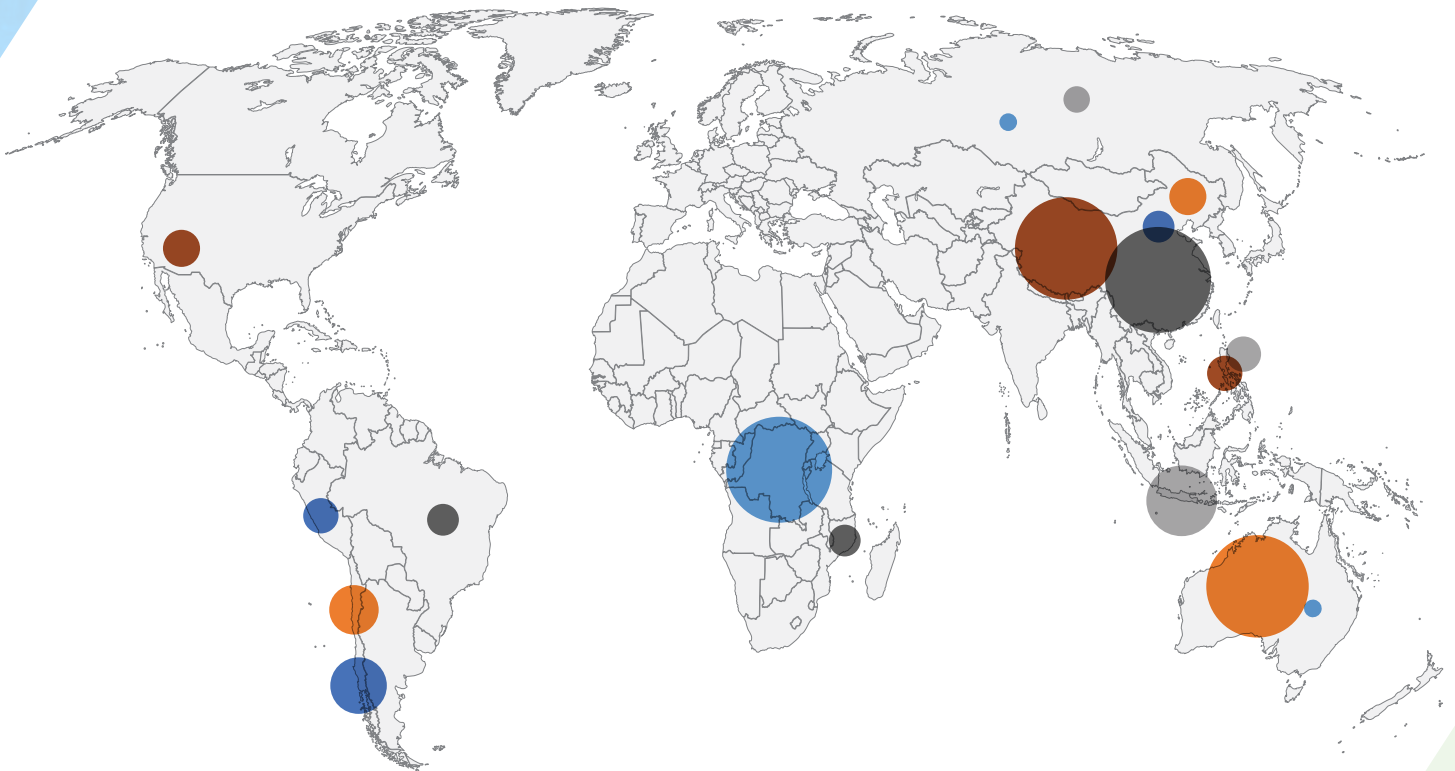
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“The global clean energy transition is underway, and it represents the largest economic transformation since the Industrial Revolution.”

*-Hon. François-Philippe Champagne,
Canada’s Minister of Innovation, Science and Industry*

SHARE OF TOP-PRODUCING COUNTRIES IN EXTRACTION OF SELECTED CRITICAL MINERALS, 2019, % GLOBAL PRODUCTION

● Lithium
 ● Rare earths
 ● Copper
 ● Nickel
 ● Cobalt
 ● Graphite



As global demand grows, Canadian governments, seeing that global Critical Minerals extraction and processing is currently dominated by a few countries, are undertaking their own efforts to bring these minerals to market. The federal government has been effusive in their enthusiasm for development of Critical Minerals and the opportunities green energy presents for the country.

It is hard to not be swept up in the enthusiasm Canada is expressing; meeting this demand will require a massive ramp-up in production of these minerals globally.

It is certain that economic opportunity exists for any jurisdiction that can increase production at existing mines or responsibly develop new ones in time to meet global demand.

TO GROW THE YUKON'S ECONOMY, ALL MINING IS CRITICAL

The Yukon's rich mineral and metal resources, be they Critical Minerals or otherwise, present a significant economic opportunity.

The Yukon possesses many of the Critical Minerals required for the world to transition to a new, greener future.

But as the Yukon embarks on its own evaluation of this opportunity, the YMAB cautions that it needs to be done within the context of our long-standing and well-established sector. We need to ensure that all areas of mining in our territory continue to grow in a responsible fashion, providing the social and economic benefits Yukoners have come to expect from our industry.

In the 10 years ending in 2021, mining contributed nearly \$2.64 billion to the Yukon's economy (topped only by construction, a sector immensely influenced by mining's success). Post-pandemic, it was the fastest to return to growth, and for six of the 10 years ending in 2021, it was the largest private sector contributor to the Yukon's GDP (all data from Statistics Canada's Table: [Gross domestic product \(GDP\) at basic prices, by industry, provinces and territories](#), March 2023).

Importantly, the economic benefits of mining are not concentrated to Whitehorse. Mining heavily influences economic development outside of the Yukon's largest centre to create significant social benefits through employment of local residents, including First Nations Citizens, and from the services that mining extends to those communities. The territory's three active quartz mines, all located outside of the Whitehorse area, collectively provide 685 mostly year-round jobs.

Support services for mining are significant enough to have provided about 7% of the Yukon's GDP in 2021 (Statistics Canada's Table: [Gross domestic product \(GDP\) at basic prices, by industry, provinces and territories](#), March 2023).

Placer mines, the Yukon's original mining industry, employ nearly 500 people annually, with just under 40% being Yukon-residents (most placer miners live in the Yukon for more than half the year, due to the season length but do not qualify as full-time Yukon residents). In 2020, placer mines contributed 45% of Dawson City's GDP (Yukon Bureau of Statistics, "Estimation of the Impact of Placer Mines on the Economy and Labour Market of Dawson City, Yukon," March 2023).

These statistics are provided to highlight that these benefits have been experienced without a single Critical Mineral project yet approved in the territory. Metals and other minerals have provided these benefits for generations. So, as the Yukon moves to explore opportunities with Critical Minerals, the YMAB sees that it is vital that metals and non-Critical Mineral development remains central to any legislative or regulatory updates driven by Critical Minerals.

A worker in a hard hat and safety vest is examining a sample in a laboratory setting. The background is a blurred industrial or laboratory environment. The image is overlaid with a blue and green gradient.

WHAT'S OLD IS NEW AGAIN: CRITICAL MINERALS POLICY APPROACH SOUNDS FAMILIAR

Common themes found amongst Canadian jurisdictions' Critical Minerals Strategies are largely those which the YMAB has previously recommended.

Much of the national conversation around Critical Minerals has been about how to develop an environment favourable to responsible development of these resources. The YMAB notes that the common themes found amongst Canadian jurisdictions' Critical Minerals Strategies are largely those the YMAB has recommended in recent annual reports to support not just Critical Minerals development, but all aspects of mining in the territory.

These can be summarized as:

1. advancing reconciliation with Indigenous Peoples through meaningful consultation and development of economic opportunities;
2. creating social and economic opportunity through responsible development;
3. updating and improving regulatory frameworks;
4. enhancements to public geoscience to ensure full potential of the jurisdictions where Critical Minerals supply is known;
5. promoting development of a skilled workforce to grow labour supply; and
6. supporting innovation and technology development to improve processes within the value chain that grows industry within the jurisdiction.

YMAB 2022 RECOMMENDATIONS







1: Create the Environment for Consultation Success

To advance reconciliation with Indigenous peoples through meaningful consultation and development of economic opportunities, the YMAB recommends a blueprint for First Nations consultations on mining projects.

This blueprint should build off the goals of the Yukon Mineral Development Strategy so that all parties may see a path forward on attaining the social and economic benefits mining development can provide to the territory.

Every active or prospective quartz mine in the territory with a serious business model is engaged with the local First Nation. All have impact benefit agreements (IBAs), or documents of similar intent, in place that are providing meaningful benefits to First Nations Citizens, supporting the pursuit of reconciliation through the ongoing development of robust socio-economic relationships.

As environmental, social and governance (ESG) concerns in many other countries shift global capital to projects that demonstrate strong ESG performance, these agreements allow the Yukon to be uniquely positioned as a model to the country – and the world – on ESG matters.

While a blueprint should recommend pathways towards an IBA, IBA content cannot be regulated. Impact benefit agreements are business agreements between two parties and should not be governed by blanket regulation that may not meet the unique needs of a particular negotiation. This process must be led by the Yukon's First Nations governments and supported by the Minister.





2: Invest in What Benefits Yukoners

To create social and economic opportunity through responsible development, the YMAB recommends substantial investment in infrastructure and preservation of mineral endowments to the benefit of future generations of Yukoners.

Infrastructure:

The Yukon has long benefited from the direct and indirect benefits of mining for residents. In addition to the social benefits that local employment brings to our communities, major infrastructure provides benefits to all sectors of the economy and Yukoners as a whole. Continued investment in infrastructure such as roads and bridges that connect communities (or, in the case of the Carmacks Bypass, that directs heavy vehicle traffic safely away from them) or powerlines to communities and mine sites that create an electrical grid to power large portions of the territory will ensure that these benefits continue to accrue to our territory.

The Canadian Critical Minerals Strategy identifies funding to support the development

of sustainable infrastructure in support of Critical Minerals projects. The YMAB urges the Yukon to develop a priority list of infrastructure projects in consultation with industry, governments and stakeholders in order to leverage the opportunity the Federal fund provides.

Preservation of Mineral Endowment:

Mineral endowment within the Yukon is finite and belongs to all Yukoners, present and future. There is a clear obligation to ensure that Yukon Land Use Planning does not accidentally or unintentionally sterilize metal and mineral endowment, thereby preventing future generations from enjoying their birthright.

Attracting the necessary capital to undertake successful, lifelong resource development businesses requires land use planning that recognizes the strategic importance of in situ critical and other minerals to the Yukon's future social and economic security.

The YMAB recommends that the Government of Yukon reviews territorial land use planning processes within the context of preserving metal and mineral endowment for potential future development. It is further recommended that land use planning processes include a mandated obligation to avoid “sterilizing” metal and mineral resources by not properly acknowledging or including them in land use plans and that metal and mineral endowment should not be subservient to any other consideration in land use planning.

3: Make Regulations Efficient

To update and improve regulatory frameworks, the YMAB recommends utilizing the current successor mining legislation process to develop an efficient regulatory structure that supports timely project reviews while achieving the necessary oversight to support responsible resource development.

- promoting efficiency of the regulatory environment by the removal or streamlining of unnecessary bureaucratic process;
- developing regulations and legislation that is outcome-based, rather than process-based, allowing the industry to determine the best process to meet their legislative and regulatory obligations; and
- accessing funding support available through The Canadian Critical Minerals Strategy in reviewing and permitting Critical Minerals projects.

With the Yukon currently undertaking the development of successor mining legislation, the YMAB sees a unique once-in-a-lifetime opportunity to align regulatory frameworks by:

- working with Canada and First Nations to achieve the “one project, one assessment” approach touted in The Canadian Critical Minerals Strategy, but for all projects, be they Critical Minerals, metals or other minerals;
- providing a full weighting to the matter of Critical Minerals, metals and the mineral security of Canada when assessing projects;
- requiring that processes developed around project reviews do not inhibit the ability to meet the timelines mandated by the governing body (be it the Legislature or Parliament);





4: Keep Building Our Knowledge Base

To enhance public geoscience and ensure the full potential of the territory's metals and mineral supply is known, the YMAB recommends the Yukon Geological Survey (YGS) is fully funded and supported to continue the important work it does in helping Yukoners understand the mineral potential of their territory.

There is a generational opportunity for the YGS to help the Yukon achieve its resource development potential by:

- mapping all of the Yukon's Critical Minerals, metals and other mineral potential as has started with the YGS's Critical Minerals inventory;
- utilizing YGS data as a strategic resource for land use and economic development planning;
- engaging in public education regarding the Yukon's Critical Minerals, metals and other mineral potential; and
- accessing funding through The Canadian Critical Minerals Strategy to ensure YGS programs have all the financial resources needed to achieve these recommendations.





5: Grow a Skilled Workforce

To promote development of a skilled workforce to grow labour supply, the YMAB urges the Yukon to work with industry, municipal and First Nations governments to develop resource industry skills and job readiness training that will directly improve employment opportunities for residents of the Yukon's communities.

The Yukon continues to be a government-driven economy. In January 2023, 44.3% of all employed persons were public sector employees.¹ With roughly 87% of those public sector jobs in Whitehorse, despite it only having 81% of the participating labour force,² it is important to establish opportunities for the Yukon's communities. As discussed earlier in this report, development of a skilled workforce to support the exploration, development and operational phases of any mine – Critical Minerals or otherwise – will have a direct social and economic benefit for the communities in which those mines operate.



¹[Yukon Employment January 2023](#), Yukon Bureau of Statistics, February 2023

²[Labour Force by Industry \(2021\)](#), Yukon Bureau of Statistics, December 2022



6: Improve the Value Chain

To support innovation and technology development that improves processes within the industry's value chain, the YMAB acknowledges that if the Yukon is to harness the benefits of an expanding mining sector, this includes seeking solutions that increase the recycling and reuse of already-mined minerals.

The Yukon's distance to major markets and small workforce limits the opportunity to establish secondary or tertiary processing facilities in the territory, making it an unlikely contender for downstream processing or manufacturing such as an electric vehicle battery plant.

However, that same isolation could and should provide incentive to drive innovations on extraction and transport of raw materials and, equally important, the efficient recycling or reuse of processed materials that come into the territory. The transition to an alternative energy economy is already bringing in large quantities of materials that contain Critical Minerals (electric vehicle batteries and solar panels).

The YMAB cautions, however, that the Yukon must recognize the limits our remote location places on the market's ability to absorb additional fees that may be involved in regulating the recycling and reuse of these materials. New legislation and regulation cannot place an undue burden on Yukon businesses either, through additional administration or fees that will simply be passed onto consumers during a period where costs are already escalating.





7: Gain the Required Social Licence

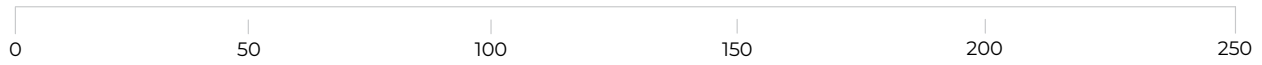
All of these recommendations cannot be successful without a broad social licence in support of mining. The YMAB sees the efforts to reduce greenhouse gas (GHG) emissions in our territory as the opportunity to gain that social licence. To get there, the YMAB recommends that the Minister launch an educational campaign on how Yukoners will participate in the green energy transition.

MINERALS USED IN ELECTRIC CARS COMPARED TO CONVENTIONAL CARS

CONVENTIONAL



ELECTRIC



UNITS: KG/VEHICLE

- Copper
- Lithium
- Nickel
- Manganese
- Cobalt
- Graphite
- Zinc
- Rare earths
- Others

Source: IEA. Licence: CC BY 4.0



“

“There is no energy transition without Critical Minerals: no batteries, no electric cars, no wind turbines and no solar panels.”

*–Hon. Jonathan Wilkinson, Canada’s Minister of Natural Resources,
The Canadian Critical Minerals Strategy*

Launching an educational campaign will provide Yukoners with the full picture of our energy transition; not just emissions reductions, but complete disclosure of the role Critical Minerals have in the new technologies needed to achieve the Yukon’s climate goals and how the Yukon can leverage global demand for the benefit of current and future generations through responsible development of its Critical Minerals resources.

Through its Our Clean Future document, the Yukon has set a target of net-zero carbon emissions by 2050. By its own admission, reduction measures noted in the document will only get the Yukon 75% of the way towards it needed goals. Even to achieve 75% of the target, there are difficult decisions to be made and challenging timelines to be met.

The YMAB is concerned that the Yukon has not yet done the work to obtain the social licence from Yukoners that’s required to achieve these emissions reduction targets. Four of the six greenhouse gas reduction measures identified in the document – increasing use of zero-emissions vehicles, improving building efficiency, switching to renewable heat and using clean energy – cannot be implemented without one or more Critical Minerals. These exclude the Critical Minerals needed to build the electrical distribution infrastructure that will be required to support these GHG reduction measures.

The average timelines for assessment to licensing of Yukon projects has increased significantly over the last 10 years. Current timelines for delivering mine approvals from

the date of ore body discovery average greater than 15 years. So, the YMAB asks the Minister: are Critical Minerals the leverage the Yukon needs to achieve the social licence to shorten these timelines for all types of projects and bring increased economic opportunity to our communities?

If the Yukon is to achieve the targets set in Our Clean Future, the YMAB believes the only answer is yes.

The YMAB suggests that part of the increasing timeline for approvals may rest in the general public’s lack of knowledge of the important role mining plays in the Yukon’s social and economic wellbeing and, therefore, a lack of support for moving Yukon mines from exploration to production. When it comes to participating in the opportunities the green energy transition presents and how that transition will take place in our territory, this knowledge gap may be even more extreme.

Take, for example, the opportunities presented by the surge in Critical Minerals demand created from an auto industry mandated to increase electric car sales, a key policy plank to reducing emissions. These vehicles use 240% more copper than a conventional car. The Yukon, with its abundant copper reserves, should be a supplier to this market. The Yukon must do more to increase Yukoners’ understanding of mining’s *vital* role in achieving the territory’s emissions reduction targets by supplying key minerals – like copper – that are required for the electric vehicles we will drive.

BUILD ON OUR SUCCESS TO GROW THE YUKON'S ECONOMY

It is clear there is opportunity for the Yukon to meaningfully participate in the transition away from hydrocarbon energy sources.

But, the Yukon must approach this opportunity while keeping in mind that existing metals and minerals projects in the territory – both active and those in the assessment phase – require the same regulatory and operating environment improvements being touted as the means to implement Critical Minerals development.

It has been pointed out that Critical Minerals present a generational opportunity for Canada's mining and manufacturing industries. The YMAB tends to agree, but only to the extent that the entirety of the industry is allowed to participate in that opportunity.





BOARD MEMBERS

YMAB BOARD MEMBER	TERM EXPIRY
Heather Burrell (Chair)	November 2022
Brad Thrall	February 2024
Mark Ayranto	December 2022
Paul West-Sells	February 2024
Scott Donaldson	November 2022
Mike Burke	March 2023
Neil Loveless	March 2023
Wendy Tayler	February 2024
Delmar Washington	February 2024
Sebastien Tolgyesi	November 2022







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