

Government Response to the First Report of the Standing Committee on Natural Resources entitled: *From Mineral Exploration to Advanced Manufacturing: Developing Value Chains for Critical Minerals in Canada*

The Committee on Natural Resources undertook a study on ways the federal government could support the development of Canada's critical minerals industry and associated value chains. The motion to conduct the study adopted by the Committee was motivated by rising global demand for critical minerals as well as the Government of Canada's ambitious 2030 and 2050 climate change goals, whereby critical minerals provide an integral pathway toward achieving climate objectives in tandem with supporting Canada's economic recovery from the COVID-19 pandemic. Critical mineral supply chains currently lack diversification and are geographically concentrated, often in non like-minded states, leaving them exposed to economic, geopolitical, and other risks.

The Government of Canada concurs with the Committee's overall assessment of the opportunities and factors influencing the development of Canada's critical mineral production capacity and associated value-added products in sectors such as electric vehicles (EV), clean technologies, defence and advanced manufacturing in Canada. Further, the Government of Canada supports each of the five recommendations and sees significant alignment of this report with current federal initiatives and those under further assessment.

The government response addresses the Committee's recommendations below:

Recommendation 1: That the Government of Canada work with the provincial and territorial governments, Indigenous communities and governments, the mining industry and research and education institutions to develop a strategic vision for developing Canada's critical minerals industry.

The Government of Canada supports this recommendation, aligned with the Minister of Natural Resources and Minister of Innovation, Science and Industry's mandate letter commitment to develop and launch a Canadian Critical Minerals Strategy to position Canada at the forefront of critical mineral exploration, extraction, processing and manufacturing, improve critical minerals supply chain resiliency, and position Canada as a leading mining nation. The Government has begun laying the groundwork to develop Canada's critical minerals industry. In March 2021, the Government announced a list of 31 minerals considered critical for the sustainable economic success of Canada and our allies. The list was developed using a criteria-based approach and in consultation with other federal government departments, provinces and territories, and industry. The list provides greater certainty and predictability to industry, investors, provinces and territories, and Canada's international partners on Canada's mineral priorities; and enables policymakers to target and address key pressure points and opportunities in supply chains.

Further, Budget 2021 provided \$9.6 million over three years, starting in 2021–2022, to Natural Resources Canada (NRCan) to create the Critical Minerals Centre of Excellence, to be formally launched in 2022. As well, Budget 2022 proposes to provide \$10.6 million to renew the Critical Minerals Centre of Excellence for an additional three years. The centre coordinates federal policy and programs on critical minerals, works with provincial, territorial, and other partners and leads in the development of a Canadian Critical Minerals Strategy in coordination with provinces and territories, Indigenous communities and governments, industry, and academia.

The Centre of Excellence also coordinates collaboration on critical minerals on behalf of the Government of Canada, both domestically and internationally, including on the Canada-United States (US) Joint Action Plan on Critical Minerals Collaboration.

Budget 2022 proposes to provide up to \$3.8 billion over eight years, on a cash basis, starting 2022–2023, to implement Canada’s first Critical Minerals Strategy. This will help grow the production of critical minerals for Canada’s industrial base, supply our allies to support international mineral security and support the transition to a green and digital economy. This includes the following measures:

- \$79.3 million over five years on a cash basis, starting in 2022–2023, for Natural Resources Canada to provide public access to integrated data sets to inform critical mineral exploration and development;
- up to \$1.5 billion over seven years, starting in 2023–2024, for infrastructure investments that would support the development of the critical minerals supply chains, with a focus on priority deposits;
- \$1.5 billion will be invested by Innovation, Science and Economic Development Canada through the Strategic Innovation Fund (SIF) in critical minerals projects, with a priority focus on manufacturing, processing, and recycling applications
- up to \$144.4 million over five years, starting in 2022–2023, to Natural Resources Canada and the National Research Council to support research, development, and the deployment of technologies and materials to support critical mineral value chains;
- \$10.6 million over three years, starting in 2024–2025, to Natural Resources Canada to renew the Centre of Excellence on Critical Minerals, which works with provincial, territorial, and other partners, and that will provide direct assistance to help developers of critical minerals navigate regulatory processes and existing support measures;
- up to \$40 million over eight years, starting in 2022–2023, to Crown-Indigenous Relations and Northern Affairs Canada to support northern regulatory processes.
- \$103.4 million over five years, starting in 2022–2023, to Natural Resources Canada for the development of a National Benefits-Sharing Framework for natural resources and the expansion of the Indigenous Partnership Office and the Indigenous Natural Resource Partnerships program. At least \$25 million of this amount will be dedicated to early engagement and Indigenous communities’ capacity building to support their participation in the critical minerals strategy;
- \$70 million over eight years, starting in 2022–2023, to Natural Resources Canada to advance Canada’s global leadership on critical minerals; and
- the introduction of a new 30% Critical Mineral Exploration Tax Credit for specified mineral exploration expenses incurred in Canada and renounced to flow-through share investors, targeting 15 specified critical minerals, including nickel, copper, cobalt, rare earths and uranium.

In terms of capitalizing on the strength and assets of key stakeholders as well as provinces and territories, the Government of Canada has been coordinating efforts to bring the sector actors together. NRCan’s Canadian Minerals and Metals Plan (CMMP), released in March 2019, is the primary vehicle for federal-provincial-territorial (FPT) engagement on minerals and metals. The CMMP seeks to improve the competitiveness of the entire minerals and metals industry and to position Canada to respond to emerging opportunities in a global, digital, evolving economy through a series of action plans to operationalize this pan-Canadian initiative. Complementary to the CMMP, in fall 2020, Canada’s Energy and Mines ministers agreed to establish a new FPT task team on critical minerals and battery value chains to ensure transparency and coordinated engagement on domestic and international initiatives related to critical minerals. The FPT task team is continuing to help to identify priority value chains, specify gaps and opportunities for collaboration; assess and analyze joint policies and tools to position Canada favourably in global value chains; and undertake a coordinated approach to international engagement, investment, and business-to-business opportunities, including with the US, the European Union (EU), and other like-minded partners. The work of the FPT task team will carry forward as referenced in the CMMP’s 2021 Action Plan.

The Government of Canada also supports collaboration with key international partners. The

Canada-US Joint Action Plan on Critical Minerals Collaboration has been advancing our shared interest in securing supply chains for the critical minerals needed for important manufacturing sectors, including communication technology, aerospace and defence, and clean technology. Since 2020, the Action Plan has achieved the following results:

- convened industry stakeholders from both sides of the border to share information on resiliency challenges in supply chains, including defence, and detailed our respective government programs; promoted greater private investment; and, enabled new business-to-business relationships;
- advanced geoscience through the Critical Minerals Mapping Initiative to support mineral discovery, including the release of an online portal in June, 2021, and to update a *North American Net Import Reliance Study* on critical minerals with the U.S. Geological Survey;
- promoted improved mineral governance and sustainable development through the U.S.-led Energy Resource Governance Initiative, of which Canada is a founding member;
- expanded the Trilateral EU-US-Japan Conference on Critical Materials to include Canada;
- created new researcher connections through virtual workshops to identify joint research and development opportunities such as waste reprocessing and life cycle-assessment; and
- coordinated approaches to critical mineral standardization efforts at the International Standards Organization, including rare earth elements and lithium as well as under the International Standards Organization's Strategic Advisory Group on critical minerals, and facilitated additional bilateral cooperation on uranium and civil nuclear markets.

In February 2021, Prime Minister Trudeau and President Biden released a roadmap for a renewed US-Canada Partnership. It includes a commitment to build the necessary supply chains to make Canada and the U.S. global leaders in all aspects of battery development and production. The leaders agreed to strengthen the Joint Action Plan to target a net-zero industrial transformation, batteries for zero-emission vehicles, and renewable energy storage. They also agreed to strengthen collaboration on multilateral efforts to improve mining sector governance abroad, including through the US-led Energy Resource Governance initiative.

The Government of Canada is working closely with other key international partners to improve minerals and metals supply chain resiliency through bilateral and multilateral engagements. In June 2021, at the Leader's Summit between Canada and the EU, the Canada-EU Strategic Partnership on Raw Materials was announced. The strategic partnership will see Canada and the EU work collaboratively to reduce supply chain risks for the minerals and metals that are critical to the transition to a climate-neutral and digitized economy. This partnership is established within the mandate of the Canada-EU Comprehensive Economic and Trade Agreement, notably the bilateral dialogue on raw materials (Art. 25.4).

The Trade Commissioner Service, through its global network of 44 investment officers, along with Invest in Canada, will continue to work with NRCan and Innovation, Science and Economic Development Canada (ISED) to develop and build Canada's critical mineral supply chain and support the development of key industries across the country by continuing to promote investment into key segments of critical mineral value chains here in Canada. Critical minerals play a large role within Canada's Foreign Direct Investment Attraction Strategy. This strategy identified 26 subsectors for the Government of Canada to focus on over the next three years, including EV battery and vehicle manufacturing, energy storage systems and mineral extraction, development and processing with critical minerals being a fundamental part of each of these.

Interest in pursuing collective action on critical minerals to support the global clean energy transition is growing within several key multilateral organizations, including at the Organisation for Economic Co-operation and Development; the G7/G20, International Energy Agency; the World Bank; International Renewable Energy Agency; the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development; and, Energy Resource and Governance Initiative. This growing attention on critical minerals in multilateral fora provides an opportunity for Canada to build

responsible collaboration among trusted partners and Canada is looking into options to support increased collective action within these key organizations.

International collaboration with Canada's trusted partners supplements Canada's own efforts to build critical mineral and battery value chains in Canada and improve overall resiliency in critical minerals.

The Committee has identified the establishment of a Canadian critical minerals strategic reserve recommendation to attract and meet the needs of Canadian value-added processing companies, as a possible initiative for consideration in the Government of Canada's approach to further develop its domestic critical minerals industry. The Critical Minerals Centre of Excellence will be responsible for conducting further policy analysis to support the Canadian critical minerals industry, including the policy approaches undertaken by allies such as the US and Japan who have established regimes for the stockpiling of critical minerals. Canada has also been participating in the International Energy Agency discussions for a voluntary global stockpiling initiative, brought forward by the United States. Further domestic engagement with key stakeholders would be needed to consider the potential of such an initiative in Canada.

Recommendation 2: That the Government of Canada renew its support for the Canadian mining sector so that it can take advantage of the many opportunities offered by developing critical minerals and recognize their unique contribution to advanced technologies and the energy transition.

NRCan's Geological Survey of Canada has worked with provinces and territories via the CMMP on a Pan-Canadian Geoscience Strategy, realized in February 2022 with five priority areas: to produce better data to find the mines of tomorrow, lower exploration risk, boost competitiveness, support land-use decisions, and enhance public safety by reducing risks from natural hazards and resource development.

NRCan delivers national-scale critical minerals geoscience research via the following programs:

- GEM-GeoNorth: descriptive mapping of mineral resources (including critical minerals) and alternative energy resources in Canada's North, in the context of a changing climate, and focusing on areas where economic and/or infrastructure development is likely to benefit Northern communities;
- Targeted Geoscience Initiative: improving mineral exploration models and strategies in existing mining areas, including online access to data and information;
- Critical Minerals Mapping Initiative (CMMI): a collaboration between Canada, Australia and the U.S. to secure supply for critical minerals resources and reduce mineral supply dependence on nations that may pose geopolitical, environmental or human rights risks. It is working to improve scientific ability to predict the type, location and quantity of critical minerals occurrences, as well as understand the geological, technological and logistical factors that affect the risks associated with mine development; and
- Geological Survey of Canada Environmental Geoscience Program: understanding the environmental impacts and human health risks associated with critical minerals.

Recent investments of \$135 million over seven years in GEM-GeoNorth and the Targeted Geoscience Initiative, starting in 2020–2021, provide industry with valuable knowledge to identify and develop future mines across the country, while supporting Northern, remote and Indigenous communities and organizations in decision-making on land-use planning. The renewed programs include a focus on critical minerals, such as battery metals, that are key to Canada achieving net-zero emissions by 2050. Budget 2022 proposed to provide \$79.3 million over five years on a cash basis, starting in 2022–2023, for NRCan to provide public access to integrated data sets to inform critical mineral exploration and development.

The Government of Canada has supported the recommendation to expand the scope of financial and tax measures. The 2018 Fall Economic Statement announced a five-year extension of the Mineral Exploration Tax Credit, an initiative that has been renewed numerous times since its introduction in 2000. This extension provides greater long-term certainty for investors and helps junior exploration companies raise the capital needed to undertake the search for new mineral resources, helping secure the future prosperity of Canada's minerals industry. Per Budget 2022, the Government of Canada will propose to introduce a new 30 per cent Critical Mineral Exploration Tax Credit for specified critical minerals: nickel, lithium, cobalt, graphite, copper, rare-earth elements, vanadium, tellurium, gallium, scandium, titanium, magnesium, zinc, platinum group metals and uranium.

The Government of Canada also supports the investment in remote and Northern regions infrastructure's recommendation, and is exploring options to advance projects recognizing that these infrastructure gaps hamper mineral development at the exploration, development and operating stages. That is why, Budget 2021 provided \$1.9 billion over four years, to recapitalize the National Trade Corridors Fund (NTCF), led by Transport Canada. This funding could attract approximately \$2.7 billion from private and other public sector partners, resulting in total investments of \$4.6 billion, and spurring investments in roads, rail, and shipping routes. In addition, Budget 2022 proposes to provide \$450 million over five years, starting in 2022–2023, to support supply chain projects through the NTCF.

Under the NTCF, the Arctic and Northern stream builds on Budget 2019's investment of \$400 million to add another \$285 million in Budget 2021 for transportation infrastructure projects in Canada's Arctic and northern regions, which will support enabling transportation networks for the mining and mineral exploration industries. Since its creation in 2017, \$4.6 billion has been invested in the NTCF.

There is a gap in high-speed internet access for Canadians and Canadian businesses in some rural and remote communities, and this creates a barrier to equal participation in the economy. Building on the \$1.75 billion the federal government had made available through the Universal Broadband Fund (UBF), Budget 2021 provided an additional \$1 billion over six years, to the UBF to support a more rapid rollout of broadband projects in collaboration with provinces and territories and other partners. This would mean thousands more Canadians and small businesses will have faster, more reliable internet connections.

The Government of Canada also announced \$11.7 million over five years, via Infrastructure Canada to renew the Standards to Support Resilience in Infrastructure Program, so that the Standards Council of Canada can continue updating standards and guidance in priority areas such as flood mapping and building in the North. This will help communities to plan and build roads, buildings, and other infrastructure that is durable and resilient to a changing climate.

Given that the mining sector is the economic backbone of many Northern communities, investments to support transportation, power and broadband in the North will facilitate mineral exploration and improve socio-economic opportunities in Northern and Indigenous communities.

Recommendation 3: The Committee proposes that the Government of Canada promote responsible, sustainable and inclusive development of Canada's critical minerals sector.

The Government of Canada supports research and innovation through Budget 2021, which provided \$36.8 million to NRCan over 3 years, starting in 2021–2022, with \$10.9 million in remaining amortization, to support targeted research and development for upstream critical minerals processing and battery precursors and related materials engineering. This research will address key gaps impeding the production of critical minerals and will accelerate the opportunity to produce critical minerals from industrial mineral and post-consumer waste. Building on initial investments, Budget 2022 proposes to provide an additional \$144.4 million over five years, starting 2022–2023, to NRCan and the NRC, to support research, development, and the deployment of technologies and materials to

support critical mineral value chains. The Critical Minerals Centre of Excellence will lead the development of a three-year research and development plan to execute programming in critical mineral processing in collaboration with key partners, other levels of government, and industry. NRCan is exploring supplemental ways to accelerate innovation in the upstream and midstream of Canadian critical mineral value chains, to ensure a place for Canadian industries in producing clean minerals and materials for a low-carbon economy.

The SIF at Department of ISED helps businesses invest, grow, and innovate in Canada. Budget 2021 provided the SIF Net Zero Accelerator (NZA) with \$5 billion in new SIF funds, building on the \$3 billion provided in the December 2020 *Strengthened Climate Plan, A Healthy Environment and a Healthy Economy*, for a total of \$8 billion over seven years to support projects that will help reduce domestic greenhouse gas emissions across the Canadian economy. It is expected that NZA investments in innovation and development of clean technologies, including its support for innovative projects in the automotive, transportation and aerospace sectors, could incite demand for critical minerals.

In addition, Budget 2022 proposes to provide \$1 billion over six years on a cash basis, to Innovation, Science and Economic Development Canada for the SIF. Combined with \$500 million drawn from existing program funding, this will provide \$1.5 billion in targeted support towards critical minerals projects, with prioritization given to manufacturing, processing, and recycling applications. The government will also explore potential opportunities to support the growth of the solar panel industry through this envelope.

In July 2021, an investment of \$40 million was announced under the SIF for the Centre for Excellence in Mining Innovation. This investment supports the creation of the Mining Innovation Commercialization Accelerator (MICA) Network, a pan-Canadian initiative bringing together stakeholders from a wide range of fields to accelerate the development and commercialization of innovative technologies to make the mining sector more productive and sustainable. It is expected that the MICA Network will fund approximately 30 R&D and commercialization projects over the work phase, at least one third of which will directly contribute to the improvement of Canada's competitiveness in the critical mineral space.

The Committee suggested that the Government of Canada encourage initiatives to develop mining and mineral processing activities that reduce the sector's environmental impact. NRCan recently selected a winner for the *Crush It! Challenge*, a prize-based challenge that will award a \$5 million grant to the applicant that made the most viable significant energy reductions in crushing and grinding rocks. The *Crush It! Challenge* actively incentivized innovation in Canada's mining sector to advance research and development that will transform how energy is used for crushing and grinding rocks in the mining industry.

Through Budget 2021, the Government of Canada announced its partnership with the Government of British Columbia, providing up to \$35 million to establish the Centre for Innovation and Clean Energy to advance the scale-up and commercialization of clean technologies in B.C. and across Canada. The Centre, a component of the CleanBC plan, will coordinate research, development and demonstration of clean technologies, including carbon capture, utilization, and storage, and clean fuels, facilitating a federal and provincial government working relationship to decarbonize operations in the mining sector.

Under the Mining Value from Waste program, the Government of Canada is accelerating the remediation and reprocessing of historic legacy mine waste, reducing environmental impacts and liabilities and generating value for Canadians by transforming these waste materials into valuable mineral-based products. Budget 2021 provided \$36.8 million, over three years, starting in 2021–2022, with \$10.9 million in remaining amortization, to NRCan to enhance Canada's supply of critical minerals through R&D programming focused on extracting minerals from ore and from mineral-bearing waste streams in Canada, such as mine tailings, coal ash, slag, and sludge or other mining residuals, as

well as extracting minerals from post-consumer waste such as used batteries.

In 2020, the Government of Canada introduced the *Canadian Net-Zero Emissions Accountability Act* to legislate Canada's goal of net-zero emissions by 2050. To support its work to fight climate change and chart a course for a prosperous clean growth future, Budget 2021 provided \$94.4 million to Environment and Climate Change Canada to increase domestic and international capacity to address climate change, enhance clean tech policy capacity, and to fund reporting requirements under the *Canadian Net-Zero Emissions Accountability Act*.

Moreover, Canada is looking into additional measures to improve supply chain resiliency and sustainability with its key partners, including through multilateral fora. As a leading mining nation with one of the highest environmental, social and governance (ESG) standards in mining and resource development, Canada has a unique opportunity to lead efforts on sustainable critical mineral security for the energy transition and successful climate outcomes.

The Government of Canada also supports the recommendation to launch a roadmap for the integration of renewable and low-greenhouse gas energy into off-grid mine energy systems in remote and Northern regions, recognizing that many communities in the North rely on diesel or other emissions-intensive sources of energy. To help these communities transition to clean energy and make the air cleaner and healthier Budget 2021 committed \$40.4 million to support feasibility and planning of hydroelectricity and grid interconnection projects in the North. This funding could advance projects, such as the Atlin Hydro Expansion Project in BC under ECC's Low Carbon Economy Fund, that will support Yukon's clean energy needs (which Budget 2022 proposed to provide further support) and the Kivalliq Hydro-Fibre Link Project in Nunavut. Projects will provide clean power to northern communities and help reduce emissions from mining projects. Budget 2022 proposes to provide \$600 million over seven years, starting in 2022–2023, to NRCan for the Smart Renewables and Electrification Pathways Program to support additional renewable electricity and grid modernization projects.

Canada is fostering the implementation of best practices for electrifying mining operations. Under NRCan's Clean Growth Program, aimed at helping Canada's natural resource industries to develop and commercialize the clean technologies needed to minimize environmental impacts, Goldcorp received \$5 million from the federal government to transform its Borden mine into the "mine of the future." The investment aimed to replace all diesel-powered equipment required for the mine with battery-powered vehicles to reduce greenhouse gas emissions. It is anticipated that additional mining operations will move towards electrification under the low-carbon economy. NRCan researchers are also currently working on projects to gain a better understanding of electric mines and their energy demand.

The Government of Canada also supports the recommendation to offer critical minerals training programs and supporting initiatives to diversify the mining sector's workforce. NRCan is currently evaluating its policies, programs and research through an Equity, Diversity and Inclusion lens to address challenges in the mining industry, connecting the minerals and metals sector with talent and empowering a diverse range of highly skilled, globally competitive and digitally prepared Canadians needed for the future resource economy.

Canada's mining industry has undertaken initial steps to address issues of discrimination, harassment, and violence at mine sites for the safety of its current employees and to attract underrepresented groups to work in the sector. For example, some companies have implemented initiatives at the site level to support more inclusive working environments, including cultural awareness and diversity training, specific supports for female employees, new workplace policies and services, regional consultations, and targeted investments in local communities. However, there remains significant variability in the scale and scope of these initiatives at the company level. Ultimately, improving outcomes for underrepresented groups at mine sites will depend on sustained efforts from industry.

The Mining Association of Canada's Towards Sustainable Mining protocol helps mining companies in Canada operate in a socially, economically and environmentally responsible way. The protocol has been replicated by countries all over the world. As part of the protocol, the Mining Association of Canada has recently adopted a new Indigenous and Communities Relations Protocol, which features new indicators on effective Indigenous engagement and dialogue.

To support capacity building in Indigenous communities and the participation of Indigenous Peoples (especially women) in the workforce, including the mining sector. Employment and Social Development Canada has also invested in sector-agnostic programming to support Indigenous job training and skills development, including the Indigenous Skills and Employment Training Program and Skills and Partnership Fund.

The Government of Canada will continue to support meaningful consultations and partnerships with Indigenous communities in developing critical mineral projects. In 2019, the Impact Assessment Agency of Canada announced \$18.3 million over 5 years for the Indigenous Capacity Support Program, which provides funding to Indigenous communities and organizations to support capacity building in Indigenous communities so they can better participate in anticipated assessments, outside the context of specific project reviews. Similarly, created in 2018, Crown-Indigenous Relations and Northern Affairs Canada's Northern Participant Funding Program supports Indigenous governments and organizations, and northerners, to participate meaningfully in environmental and socio-economic impact assessments of major development and infrastructure projects in the territories under the treaty-based co-management regimes.

Budget 2022 proposes to provide \$103.4 million over five years, starting in 2022-2023, to NRCan for the development of a National Benefits-Sharing Framework for natural resources and the expansion of the Indigenous Partnership Office and the Indigenous Natural Resource Partnerships program. At least \$25 million of this amount will be dedicated to early engagement and Indigenous communities' capacity building to support their participation in the Critical Minerals Strategy. These investments will increase Indigenous capacity to benefit from all types of natural resources projects, including critical minerals.

The North contains an abundance of undeveloped critical minerals deposits as well as the Cheetah Resources' Nechalacho Rare Earths Demonstration project, the first project in Canada to produce rare earth elements. CanNor has invested \$1.26 million toward greener extraction technologies for this project. Nechalacho is a proof-of-concept initiative, and an example of reconciliation, as it is the first mineral project in Canada for which ground operations have been entirely contracted out to the First Nation on whose traditional territory the project lies. CanNor has supported the development of infrastructure in the North, including roads, digital connectivity, and electricity generation. Investments in the pre-construction readiness of major projects have included:

- \$1.28 million to advance planning for the road that will connect the NWT's Slave Geological Province to the Kitikmeot region of Nunavut;
- more than \$875,000 toward an all-season Mackenzie Valley Highway;
- \$480,000 to support the planning of the proposed Taltson Hydroelectric Expansion project; and
- \$3 million to support a Tłıchǫ Government project, together with the GNWT, to improve internet access for the community of Whatì, through engineering, construction, and commissioning of a fibre-optic cable.

In Canada's territories, where the Impact Assessment Act does not entirely apply, CanNor's Northern Projects Management Office supports timely and transparent impact assessment processes for resource and infrastructure development proposals and coordinates federal input into the territorial environmental assessment processes, monitors and assesses the Crown's duty to consult, and plays a convening role to assist industry in understanding and navigating the northern regulatory systems.

The Government's priorities also include creating new opportunities for high-quality employment and regional economic development and increasing diversity in the mining sector. Canada is investing in growing a diverse skilled workforce necessary to support its critical minerals ambition, with increased opportunities for equity groups, including women, Indigenous peoples, Black Canadians, people with disabilities, LGBTQ2+ individuals and other racialized minorities.

Recommendation 4: That the Government of Canada support the development of value-added processing in Canada in order to increase the number of markets for critical minerals in the country and build a domestic industry and domestic expertise by providing support for demonstration facilities that could produce promising value-added products and by reviewing the suite of federal financial and tax measures available to support value added processing. The Government of Canada supports this recommendation by positioning Canada to take advantage of the growing demand for clean technologies and advanced manufacturing.

The Committee has identified a gap in the Government of Canada's approach to developing a domestic critical minerals industry; setting up demonstration facilities for promising value-added product manufacturing, ensuring no duplication with provincial facilities. The Critical Minerals Centre of Excellence established at NRCan is responsible for ongoing policy analysis and program coordination to support the development of Canadian critical mineral value chains and is well positioned to further assess this area in collaboration with other federal partners including ISED, Regional Development Agencies and the National Research Council. The Centre also plays a role in assisting upstream and mid-stream firms to path-find their way through federal programming. Per Budget 2021, \$36.8 million over three years, starting in 2021–2022, with \$10.9 million in remaining amortization to NRCan supports targeted R&D for upstream critical minerals processing and battery precursors as well as related materials engineering. For example, one of the areas that the R&D funding targets is ways to produce economically viable minerals from waste streams in Canada, such as mine tailings.

An additional \$700 million for the Jobs and Growth Fund, a federal program, was announced in August 2021. The Regional Development Agencies will support the green energy transition through business financing and positioning local economies for long-term growth and enhancing competitiveness, and further enhancing the investments made through core programming. The federal government, along with provincial and territorial partners, have increased their support for Canadian industries positioning themselves in the critical supply chains. For example, the Government of Canada and Government of Ontario announced joint funding of \$10 million for First Cobalt (now Electra) to accelerate domestic production of battery-grade cobalt sulfate through recommissioning its refinery in Ontario.

As more countries commit to achieving net-zero emissions by 2050, the demand for zero-emission technology will only grow. With a highly educated and motivated workforce, Canada is well positioned to take advantage of this opportunity. Budget 2021 announced a reduction by 50 per cent of the general corporate and small business income tax rates for businesses that manufacture zero-emission technologies, which will be gradually phased out by 2032. This initiative aims to enhance competitiveness in attracting investment in zero-emission technology manufacturing, while also supporting existing businesses in the sector.

In February 2022, the federal government announced \$150 million to support investments in the development and supply of semiconductors. This investment builds on the \$90 million allocated in Budget 2021 to retool and modernize the National Research Council's Canadian Photonics Fabrication Centre. Budget 2022 proposes an additional \$45 million over four years, on a cash basis, starting in 2022-2023 for ISED to engage with stakeholders, conduct market analysis, and support projects that will strengthen Canada's semiconductor industry.

The Government has also committed to undertaking an analysis to ensure that Canada keeps pace with the U.S. and other jurisdictions in providing the appropriate tax structures and incentives to encourage clean economy businesses to invest, grow, and deploy solutions here in Canada.

Recommendation 5: That the Government of Canada support industries that help decarbonize the Canadian economy.

This recommendation aligns with the Government's federal '*Mines to Mobility*' battery initiative, launched in 2019 following extensive consultations with battery value chain stakeholders. These consultations culminated in the report *From Mines to Mobility: Seizing Opportunities for Canada in the Global Battery Value Chain (What We Heard)*, published in October 2020. Building on the *What We Heard* report, the Government's *Mines to Mobility* initiative aims to create and/or strengthen all segments of Canada's battery value chain. This includes sustainable and responsible exploration and mining; increasing Canada's mineral processing and precursors capacity; building new battery manufacturing and assembly (e.g. anodes, cathodes, cells) facilities; expanding stationary energy storage; attracting EV mandates; building a battery circular economy through recycling and re-use; and continuing to develop battery-related innovation that supports commercialization.

Canada's critical minerals list, released in March 2021, further supports the *Mines to Mobility* initiative. Aimed at focusing policy development and public/private resources on critical minerals that are essential to Canada's economy, the list includes the minerals needed to manufacture advanced batteries such as cobalt, graphite, lithium, nickel, manganese, and vanadium. This will help to ensure that resources are directed towards ensuring an adequate domestic supply of the critical minerals needed to build a Canadian electric-vehicle battery industry.

Since 2017, the SIF has provided funding for large projects, including those that promote the long-term competitiveness of Canadian industries, clean growth, and the advancement of Canada's strategic technological advantage. In particular, the SIF Net Zero Accelerator (NZA), announced in December 2020, aims to rapidly expedite decarbonisation projects with large emitters, scale-up clean technology, and accelerate Canada's industrial transformation across all sectors, in support of Canada's 2030 decarbonization and 2050 net-zero goals. The government is investing up to \$8 billion over seven years through the NZA.

Budget 2022 proposes \$15 billion for the creation of a Canada Growth Fund to support private capital investments that advance national economic policy goals such as to diversify our economy and bolster our exports by investing in the growth of low-carbon industries, new technologies and restructuring critical supply chains in areas important to Canada's future prosperity, including natural resources sectors.

To help decarbonize its economy, Canada is also looking into accelerating upstream and midstream new critical minerals projects beyond batteries, to attract investment and connect with downstream manufacturing, for industries such as semi-conductors and other digital technologies. For example, , Budget 2022 proposes to provide \$45 million over four years, on a cash basis, for the Government of Canada to engage with stakeholders, conduct market analysis, and support projects that will strengthen Canada's semiconductor industry.

In 2020, Export Development Canada provided \$38.5 million in business assistance to at least 11 companies in Canada's battery value chain through its trade finance solutions, enabling the export of Canadian batteries with applications across multiple industries. The Business Development Bank of Canada has invested a total of \$51 million to date to support battery related innovation. The federal government has also invested significantly to stimulate domestic manufacturing of EVs that will supply both domestic and global demand, and to build mineral processing capacity in Canada, as well as other key priority supply chains. This includes:

- a \$295 million investment in EV production at Ford's Oakville plant;
- a \$50 million investment in a battery pack assembly plant for Lion Electric, and;
- a \$5 million investment to recommission and expand Electra Battery Minerals cobalt refinery in Northern Ontario;
- \$4.1 million in funding for Polar Sapphire to improve the quality and purity of its high-purity alumina being produced for use in lithium-ion batteries; and
- federal investment in LG Energy Solutions and Stellantis' new EV battery plant in Windsor, Ontario.

End-of-life management of EV batteries is being analyzed at NRCan's Office of Energy Research and Development, which is actively working on strategies through its Electric Vehicle Infrastructure Demonstration (EVID) Program and Energy Innovation Program. Further, NRCan, in collaboration with the Natural Sciences and Engineering Research Council of Canada (NSERC) and the NRC, is also supporting the development and commercialization of new technologies that improve battery safety, performance, cost, reuse/recyclability and sustainability.

In terms of policy signals, the Government announced in June, 2021, that it has accelerated the timeline for 100% of light duty vehicle sales to be zero-emission by 2035. This target is complemented by federal investments to increase domestic demand for EVs, including \$2.75 billion over five years, starting in 2021, through the Zero Emission Transit Fund to support public transit and school bus operator's plans for electrification, support the purchase of 5,000 zero emission buses and build supporting infrastructure, including charging infrastructure and facility upgrades. These will require increased amounts of critical minerals and materials.

Budget 2021 provided \$56.1 million over five years and \$13 million per year ongoing, to Measurement Canada to develop and implement, in coordination with international partners, a set of codes and standards for retail ZEV charging and fueling stations. This includes accreditation and inspection frameworks needed to ensure the standards are adhered to at Canada's network of charging and refueling stations. This will provide the regulatory certainty to facilitate the development of the charging network and give Canadians more confidence to purchase and drive ZEVs. This initiative contributes to supporting an environment in which a battery ecosystem and EV manufacturing can prosper in Canada.

The 2020 Throne Speech committed to creating one million new jobs by the end of 2021 through environmentally focused measures and incentives for companies to hire and train workers. To support this commitment, Budget 2021 provided \$470 million to Employment and Social Development Canada to establish a new Apprenticeship Service. The Apprenticeship Service will help up to 55,000 first year apprentices in construction and manufacturing Red Seal trades connect with employment opportunities at small and medium-sized enterprises. Budget 2021 also committed to invest \$298 million over three years, beginning in 2021-22, through Employment and Social Development Canada, in a new 'Skills for Success' program that aims to help Canadians at all skill levels improve their foundational and transferable skills. Budget 2021 announced \$960 million over three years, beginning in 2021-22 for the Sectoral Workforce Solutions Program (SWSP) to help key sectors of the economy implement solutions such as training and reskilling workers as well as helping employers retain and attract a skilled and diverse workforce. SWSP includes a focus on Building Talent for the Clean Economy. These initiatives support Canadians wishing to train, retrain or reskill which could bolster the mining and manufacturing workforce of the future.

Conclusion

The Government of Canada extends its gratitude to the members of the Standing Committee, and all the witnesses who appeared before it, for their work to identify ways to address challenges and opportunities facing the Canadian critical minerals sector.

The report's recommendations align with the Government of Canada's vision on critical minerals: to

support the development of the critical minerals industry and its associated value chains, and to ensure Canada is positioned to benefit from economic opportunities as global demand for these minerals grows. Critical minerals are the essential building blocks for the green transition, and the Government of Canada will continue to assess ways to develop a value-added critical minerals strategy for Canada; support the development of intermediate processing capacity; focus on industries that help reduce greenhouse gas emissions; and build expertise and train a skilled and inclusive workforce to ensure those objectives are met.