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The Critical Minerals Geoscience and Data (CMGD) Initiative of the Geological Survey of Canada

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The Geological Survey of Canada's (GSC) Critical Minerals Geoscience and Data (CMGD) initiative is one component of the Government of Canada's \$3.8B Critical Minerals Strategy that is supporting the transition to a green economy and strengthening supply chains. While CMGD funding is primarily for federal government-led research, the initiative also includes funding opportunities for Canadian provincial and territorial surveys over the four-year lifespan of the program. CMGD research is focused on six priority minerals from Canada's critical minerals list: cobalt, copper, graphite, lithium, nickel, and rare earth elements. These minerals are essential for sustainable economic development yet face global supply risks, limited and/or declining domestic production. To address these challenges, CMGD is structured around four integrated solution streams: 1) knowledge base; 2) ore system studies; 3) advanced predictive geoscience; and 4) market assessments.

The critical minerals knowledge base is a national sampling and analytical program to characterize critical mineral contents and associations in mineral deposits and derivative materials (e.g., ores, concentrates, tailings, and waste). Critical mineral ore system studies involve thematic geoscience research targeting both conventional and emerging sources of critical minerals, developing models and knowledge to support exploration. The advanced predictive geoscience solution builds on solutions 1 and 2, using advanced analytics to accelerate and guide responsible exploration. This includes creation of national mineral potential maps that consider not only geological data, but environmental, social and governance (ESG) factors to streamline exploration and reduce project development delays. Finally, the market assessments solution is examining critical mineral supply and demand to inform Canada's position in global markets and support our domestic critical mineral value chains. Together, these solution streams aim to de-risk mineral exploration and development in Canada by delivering high-quality, public geoscience data and knowledge to guide responsible resource development, land use decisions, and policymaking.