CRITICAL AND STRATEGIC MINERALS

A more electric future
More prosperous regions
An eco-friendly Québec

Votre gouvernement

Québec

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A CHANGING ECONOMY, PRIORITIES TO REVIEW

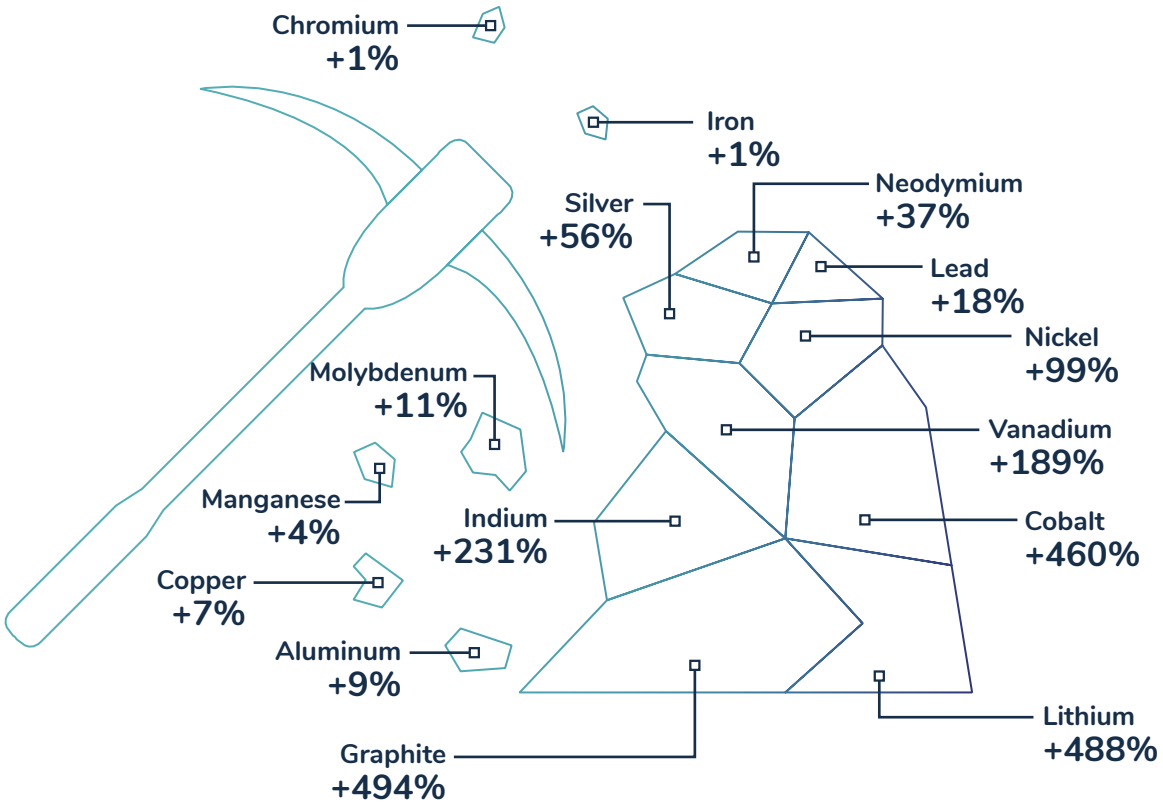
All over the planet, rapid technological change is leading to a sharp increase in the use of natural and energy resources. Telecommunications, cutting-edge technologies, such as those in the medical field, renewable energy production and transportation electrification, are creating a strong demand for raw materials, such as critical and strategic minerals (CSMs).

In the current context of economic upheavals exacerbated by climate change and the COVID-19 pandemic, many countries are seeking to secure their supplies of CSMs.

It is also predicted that the demand for CSMs will continue to increase: the supply of these materials thus becomes a global issue.

Like many other states, Québec has begun its transition to a greener economy. To meet its needs, it has chosen to bet on renewable energy and new technologies, which can combine wealth creation, quality of life and reduction of GHG emissions.

The figure below shows the anticipated change in demand[1] for the minerals necessary for the 2018-2050 energy transition.



1 United States Geological Survey, 2019, and World Bank, 2020.

Québec CSMs:
Our resources.
Our pride.
Our responsibility.

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CSMs: MINERALS FOR TODAY AND TOMORROW

PROGRESS IN DIGITAL AND ELECTRICAL MODE

What exactly are CSMs?

Critical minerals are mineral substances that have economic importance for key sectors of our economy today, that present a high supply risk and that have no commercially available substitutes.

Strategic minerals are substances necessary for the implementation of our policies, such as the upcoming Plan for a Green Economy.

Québec has established a list of 22 CSMs:

Critical

1. Antimony
2. Bismuth
3. Cadmium
4. Cesium
5. Copper
6. Tin
7. Gallium
8. Indium
9. Tellurium
10. Zinc

Strategic

11. Cobalt
12. Rare earth elements
13. Platinum group elements
14. Graphite
15. Lithium
16. Nickel
17. Magnesium
18. Niobium
19. Scandium
20. Tantalum
21. Titanium
22. Vanadium

Why do we need to be interested in CSMs?

Minerals such as graphite, lithium, cobalt, nickel and the rare earth elements are among the materials indispensable to the green energy transition. They are necessary for the production of electric vehicles and renewable energy (wind turbines, solar panels) that allow us to achieve our objectives in GHG reduction and the fight against climate change.

CSMs are also involved in manufacturing of military defence systems, medical equipment: medical imaging equipment, cardiac implants, lasers, etc., and consumer goods, such as cell phones, computers, rechargeable batteries and LED lighting. In short, new technologies are heavy CSM consumers!

Given the increase in demand in all these sectors, the supply of CSMs represents an issue. Difficulties in procuring these minerals on the global market are to be expected in the short, medium and long term: these minerals are rightly said to be critical and strategic!

Why develop CSMs in Québec instead of importing these materials?

To be able to meet the needs of the Québec population, it is in our interest to see to our business and assure our own CSM production, transformation and recycling.

It becomes a definite advantage to secure a domestic supply for these substances essential to the development of key sectors, such as telecommunications, energy storage, renewable energy production, transportation electrification, aerospace and healthcare.

Development of critical and strategic minerals is a future-oriented solution that will allow us to see to our supply of these materials essential to the achievement of our societal objectives: pursue the transition to a carbon-neutral economy, invest in sectors of the future, maintain quality of life for all Quebecers, and generate positive economic benefits for Québec's regions, the local populations and the Indigenous communities.

This is why the Gouvernement du Québec has adopted the Québec Plan for the Development of Critical and Strategic Minerals 2020-2025 (QPDCSM), developed following a review exercise that allowed collection of different points of view on Québec's role in CSMs deposit appraisal.

ELECTRIC VEHICLES AND BATTERIES: SECTORS TO PROPEL

Many states, such as Québec, are adopting ambitious electrification objectives, which have the effect of stimulating the demand for electric vehicles. The lithium-ion battery sector is evolving at phenomenal speed to support the marked growth of the global market for electrical vehicles.

The ministère de l'Économie et de l'Innovation has a budget of $55M to support the development of the electric vehicle and key EV components sectors and implementing a recycling industry.

DO THINGS CORRECTLY

Work according to our values

This is also a question of values and principles: we have the power, in our own territory, to govern CSMs development while respecting the local and Indigenous populations, ensure workers' health and safety and protect the environment. In short, to do things correctly, according to our priorities!

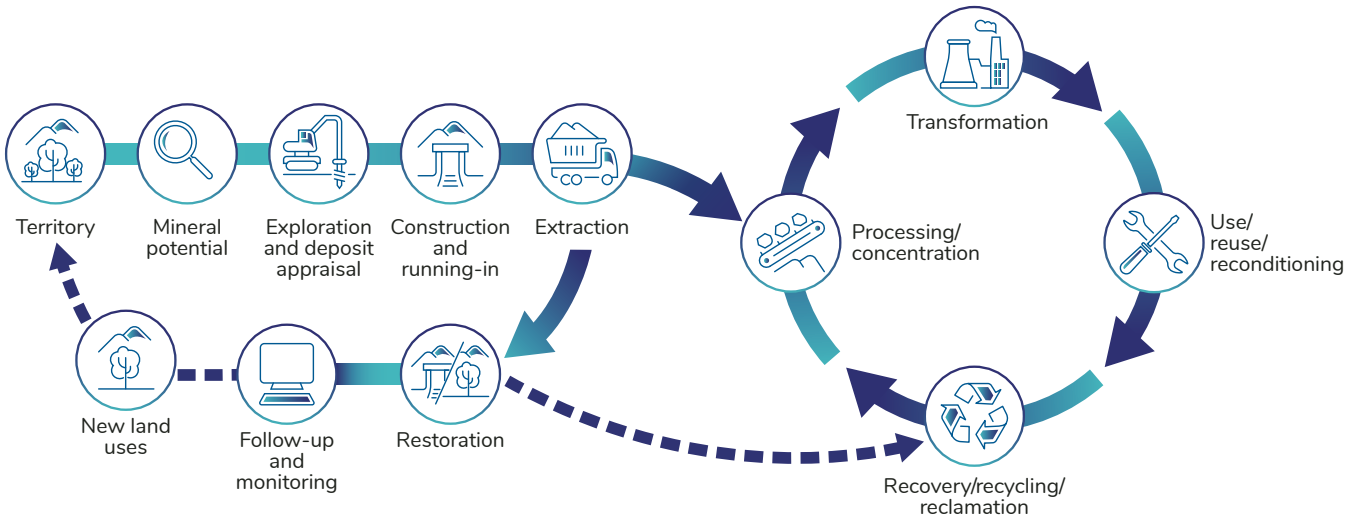
Our high social and environmental standards and our guidance tools for businesses on social acceptability favour the development of winning projects for all.

Reduce our environmental footprint

Given that these minerals are not renewable, we must think about strategies for optimum use of the available resources, particularly by betting on recirculation of extracted material. The circular economy, at the core of the QPDCSM, depends on ecodesign, recycling and reuse of mineral resources.

This future-oriented approach will allow us to reduce our environmental footprint and satisfy the demand for CSMs.

Let us see how CSM development fits into a social economy context:



CSM RECYCLING: CREATE SUSTAINABLE WEALTH DIFFERENTLY

Recycling of metals and minerals makes it possible to draw on resources in “urban mines”, that is, recover the available metals in an urban environment and reintroduce them into production of goods. Here are two examples of financial support granted recently in this perspective:

+ In 2019, the Gouvernement du Québec granted financial assistance of $4.8M to Lithion Recycling Inc. for its Lion project, which seeks to develop a recycling technology for lithium-ion batteries.
+ In 2020, Geomega Resources Inc. received a loan totalling $3M in support of its project to recycle rare earth elements from magnets. Geomega could become the leading recycler of rare earth elements in North America.

PROSPEROUS REGIONS, A RESILIENT QUÉBEC

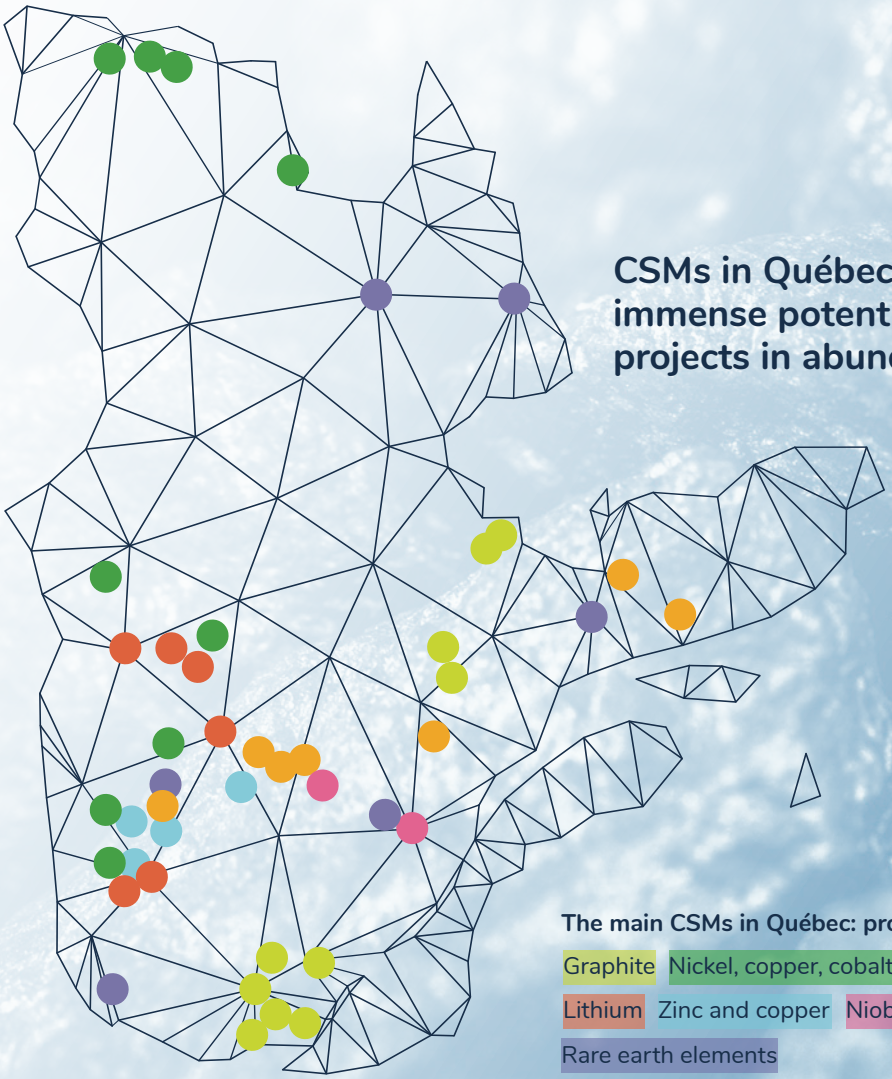
Who will benefit from CSM development activities in Québec?

Our government intends to revitalize Québec's economy by prioritizing the initiatives that generate the most positive benefits here at home: secure supplies of indispensable materials, well-paid quality jobs, development of national expertise and Québec companies that prosper both here and internationally.

Mining development will be done with and for the regions, in collaboration with the local and Indigenous populations, for the benefit of Québec as a whole.

Indeed, since the QPDCSM offers solutions geared to the green energy and technological transition, all Quebecers will be the winners, both in urban areas and in the regions.

In these times, which call for collaboration and confidence, we want to solidify our regional economies with our regional, municipal, Indigenous and national partners. We can achieve this by betting on our strengths, our competitive advantages and the development of our expertise to achieve new successes here at home.



CSMs in Québec: immense potential, projects in abundance!

The main CSMs in Québec: projects and mines

Graphite | Nickel, copper, cobalt and platinum group elements | Lithium | Zinc and copper | Niobium | Titanium or vanadium | Rare earth elements

IT IS TIME TO OPEN A NEW CHAPTER OF ECONOMIC DEVELOPMENT

We are lucky to count on numerous advantages! With promising mineral potential, expertise recognized worldwide, clean and renewable energy at a competitive price, high social and environmental standards as well as an ability to create wealth in our territory, this is more than a matter of intentions: we have the responsibility to move on to action.

Québec wants to be recognized on the global economic stage for its priorities: greening of the economy, responsible development of natural resources and the technological transition of companies and communities.

In short, CSM development here means working according to our standards, in our interest, and reducing global GHG emissions. Our natural resources are a collective heritage, creating wealth for current and future generations. The Gouvernement du Québec intends to enhance this heritage in the context of ethical and sustainable development, while promoting the socioeconomic vitality of our regions.

A GRAND ALLIANCE BETWEEN THE GOUVERNEMENT DU QUÉBEC AND THE CREE NATION

On February 17, 2020, the Premier of Québec, François Legault, and the Grand Chief of the Grand Council of the Crees and Chairperson of the Cree Nation Government, Abel Bosum, signed a socioeconomic cooperation agreement between the Cree and Québec Nations, with the goal of developing and protecting the Eeyou Istchee-James Bay region. In addition to offering predictability and stability of investment in mining development, this agreement provides for the creation of a grand alliance which, in particular, will allow extension of the railway system, electrification of certain industrial projects, sharing of the territory's infrastructures, training of the local workforce and designation of new protected areas. This concretizes a common commitment to deepen the collaboration between the Crees and Québec for the benefit of all.

QUÉBEC PLAN FOR THE DEVELOPMENT OF CRITICAL AND STRATEGIC MINERALS 2020-2025

The Gouvernement du Québec is investing $90M in the new economy linked to CSMs in order to continue Québec's renewable energy transition and contribute to the greening of the national and international economy.

Vision

Recognized as a reliable, ethical and sustainable partner, Québec contributes actively to the global green energy and technological transitions worldwide, as well as to wealth creation in a greener economy by production, transformation and recycling of quality CSMs.

Objective

Encourage the development and sustainability of CSM value chains, benefiting from Québec's competitive advantages and knowhow, while contributing to the government green energy transition and technological directions, in a perspective of sustainable development, social acceptability and wealth creation for the regions, including the local and Indigenous communities.

Guiding Principles

While relying on its exemplarity regarding the environment, protection of the land and cultural heritage preservation, the QPDCSM will be deployed according to five principles intended to

- meet Québec's CSM needs to contribute to the implementation of its strategies and policies;
- preserve Québec's economic interests;
- integrate the circular economy principles into the analysis of CSM projects throughout their value chain;
- act in partnership with the regional and Indigenous communities by engaging all stakeholders for CSM deposit appraisal;
- foster development conditions that respect the environment and the local and Indigenous communities.

EXPLORE

Reveal Québec's full CSM potential while accelerating investments

- Québec intends to map Québec's CSM potential to ensure deposit appraisal.
- It also plans to acquire geoscientific knowledge and benefit from the digital innovations in data processing that arise from it.
- The creation of a national R&D network will bring together all the stakeholders in the field, encourage synergy and optimize investments in innovation.

SUPPORT

Develop value chains creating benefits in Québec

- We will provide financial support to structuring projects in exploration, transformation, recycling, artificial intelligence and R&D.

DEVELOP

Consolidate the infrastructure networks and make them development levers

- The strategic transportation, energy and telecommunications infrastructures will be improved. This work will favour access to Québec's territory and serve not only for the development of projects related to the CSM sectors, but also for many other users and local and Indigenous communities.

RECYCLE

Maximize the CSM development, transformation and recycling initiatives in Québec in a circular economy perspective

- We will encourage the deployment of a high-performance CSM recycling industry in Québec by enhancing the value of products and diversifying the CSM sources of supply.
- We will carry out a pilot project for the deployment of a traceability system for the minerals necessary for battery manufacturing, so as to respect the will of Quebecers to develop natural resources responsibly.

PROPEL

Promote Québec internationally as a responsible partner for the supply of CSMs and attract investments to Québec

- The Gouvernement du Québec will continue to provide personalized guidance to companies at every stage of their project and reduce the administrative delays for greater efficiency.
- Additional efforts will be granted to extend Québec's mineral potential and CSM sectors on the international markets.

EXPLAIN

Raise public awareness about the importance of CSMs

- Regular communication with the local and Indigenous communities will be encouraged to promote the social acceptability of the projects and harmonization of land uses.

To learn more about all of the projected actions, you may consult the summary table in the appendix or the complete Québec Plan for the Development of Critical and Strategic Materials 2020-2025.

This ambitious plan can be achieved thanks to the cooperation of all our regional, municipal, Indigenous, national and international partners.

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Québec is doing everything necessary to create sustainable wealth and position itself on the global economic stage.

AN EXCELLENCE PLAN FOR A GREENER ECONOMY

The Québec Plan for the Development of Critical and Strategic Minerals has the ambition of making promising sectors emerge for the Québec economy. With the collaboration of industry partners and the Québec mining sector, as well as the scientific, local and Indigenous communities, the government is determined to make Québec a fertile ground for CSM value enhancement.

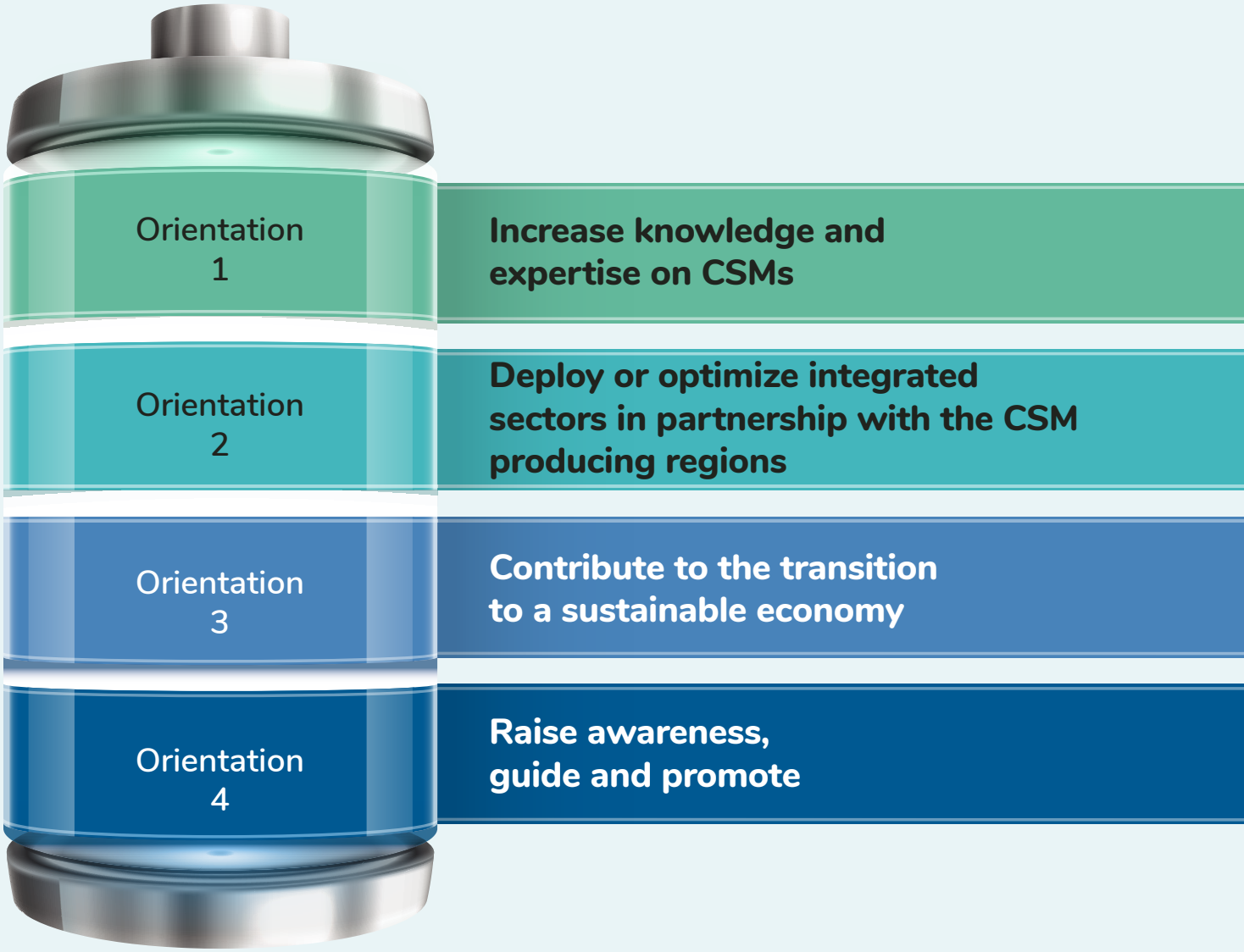
Accelerating knowledge acquisition, establishing an environment conducive to the development of these emerging sectors on the national and international scale, encouraging the development of new mining and CSM transformation sites and ecosystems based on the circular economy, all in a sustainable development perspective: this is the roadmap we intend to follow so that Québec can attain a prime position in the growing CSM industry.

Critical and strategic minerals: essential to digital and electrical progress!

APPENDIX
SUMMARY TABLE OF ORIENTATIONS, OBJECTIVES AND ACTIONS OF THE QPDCSM

Based on the four chosen orientations, the government has adopted objectives and targeted a set of actions, the implementation of which it announces.

This plan is based on a financial framework of $90M for the 2020-2025 period.



Orientation 1
Increase knowledge and expertise on CSMs ($31.6M)

Objectives	Actions	Responsibility
1.1. Appraise the potential of CSM deposits in Québec	1.1.1 Acquire new geoscientific knowledge	MERN
	1.1.2 Integrate digital innovations into geoscientific data processing and mineral potential assessment	MERN
1.2. Improve knowledge of CSMs by encouraging synergies in research and development and innovation	1.2.1 Sustain the creation of a CSM-specific scientific network	MERN, MEI
	1.2.2 Develop environmental and social management tools for CSM projects	MELCC

Orientation 2
Deploy or optimize integrated sectors in partnership with the CSM producing regions ($43M)

Objectives	Actions	Responsibility
2.1. Foster sustainable CSM exploration and development	2.1.1 Protect the CSM resources of interest for Québec	MERN
	2.1.2 Improve support for basic CSM exploration	SOQUEM, IQ
	2.1.3 Analyze the market trends of the CSM sectors	MERN
2.2. Support the transformation and creation of value-added products associated with the CSM sectors	2.2.1 Produce a profile of the current and future Québec value chains using CSMs	MEI
	2.2.2 Support R&D on CSM extraction, transformation and recycling	MERN, MEI
	2.2.3 Fund research on solid electrolyte batteries	MERN
	2.2.4 Promote and improve the instruments supporting the development of CSM value chains close to the resource	IQ, SPN
2.3. Improve multi-user infrastructures and access corridors to CSM resources	2.3.1 Develop an integrated vision for implementation of a northern transportation, renewable energy and telecommunications network	SPN
2.4. Stimulate the implementation of structuring artificial intelligence initiatives in Québec mining companies	2.4.1 Support Missions Mines Autonomes 2030 for a transition to Mining 4.0	MERN

Orientation 3
Contribute to the transition to a sustainable economy ($9.4M)

Objectives	Actions	Responsibility
3.1. Foster integration of the circular economy into the CSM value chains	3.1.1 Support the circular economy projects applied to the CSM sectors	MEI
	3.1.2 Encourage the deployment of a business environment favourable to circular economy projects applied to CSMs	MEI
	3.1.3 Innovate to claim tailings	MERN
3.2. Promote the deployment of a CSM recycling industry in Québec	3.2.1 Develop mining by-products and recycle more CSMs;	MERN
	3.2.2 Assess the possibility of extending the scope of regulations on extended producer responsibiility to new products that may contain CSMs	MELCC
3.3. Stimulate the implementation of initiatives in view of reduction of the environmental impacts of CSM mining and reclamation projects	3.3.1 Support energy efficiency and the supply of renewable energy for CSM mining and reclamation projects	TEQ

Orientation 4
Raise awareness, guide and promote ($6M)

Objectives	Actions	Responsibility
4.1. Raise the awareness of the population and the local and Indigenousstakeholders about the issues, impacts and implications related to CSM development for Québec and its regions	4.1.1 Develop and implement a communications strategy	MERN
4.2. Promote the CSM sectors	4.2.1 Promote Québec's mineral potential and attract more foreign investment in the different phases of the CSM value chain	IQ, MERN
	4.2.2 Carry out a pilot project for the implementation of a traceability system for the minerals necessary for battery manufacturing	MERN

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