Strategic Plan 2024-2028

vte
Vallée de la Transition Énergétique

A society project

The community has the power to help us build the low-carbon future of a Quebec we can all dream of.

The energy transition is both a need and a desire, on the part of governments and the general public alike. A responsible social conscience on energy consumption, waste reduction and the use of recyÅ clable materials is essential to ensure a positive economic and environmental impact. With the creaÅ tion of the Innovation Zone of the Energy Transition Valley (ZI-VTE), the Quebec government is taking a concrete step towards the decarbonization of society. The ambition of the ZI-VTE is part of a societal project to reduce the environmental carbon footprint and increase Quebec's collective prosperity.

Quebec stands out for its key assets, such as green electricity and critical and strategic minerals (CSMs). It also boasts a dynamic entrepreneurial fabric, a wealth of research expertise and a university and college system that guarantees a highly qualified population. We have the opportunity to establish a low-carbon economy in Quebec, and to take a strong position internationally.

However, a sustainable energy transition requires us to rethink our modes of production and consumpÅ tion, in economic, social and energy terms. It requires us to rethink the way we operate and change our lifestyles. Individuals and companies will be called upon to adopt a collaborative approach and find sustainable solutions to today's challenges.

Energy is at the heart of our daily lives, and to meet the climate challenges we face, we need to embark on a profound transformation of our consumption patterns towards the use of more sustainable energies. Efforts to achieve carbon neutrality will give way to viable innovations that benefit local, regional and indigenous communities. The vitality of a responsible, sustainable economy depends on the actions we take today.

The development of the Energy Transition Valley (VTE) is a social project that must be carried out in respect and synergy with the local environment. This development model must be applied to the entire territory to encourage the emergence of dynamic, attractive and connected regional ecosystems. In this way, the VTE works in conjunction with local players to enhance and optimize the living environÅ ment, building on its assets and uniqueness. As the VTE is at the heart of this societal project, it must play a leading role in linking the ecosystem of enlightened businesses and innovators to make this transformation possible.

***Read the open letter published by the founding members of the VTE.**

Table of contents

Pierre Ducharme
Chairman of the board

Message from the chairman of the board

Recognition of the VTE as an innovation zone confirms the validity of a thought process that began several years ago.

At the time, as a private citizen with over forty years' experience working in heavy industry, which was often and even too often associated with the image of a major polluter, I was wondering what I could offer my grandchildren, my family, my friends and the community that had always supported me throughout my relatively long career. The idea of submitting an environmental decarbonation project came to life at that moment.

At the end of an evening when I had chosen to continue my presence at my workÅ place, after my entire team had left to rejoin their loved ones, I had written an initial text. In it, I raised the idea of a vision of a decarbonized world. Several iterations later, the VTE is now firmly in place, backed by a recently expanded team, dedicated and motivated to support the creation of inclusive and attractive living environments, accompanied by high-level technical knowledge and supported by entrepreneurs willing to rethink the practice of their trade.

We now have everything we need to reverse a worrying environmental trajectory. Together, we can confidently begin to build a sustainable society.

The future looks bright!

Driven by the impetus for change, the VTE aims to accelerate the energy transition by mobilizing local players and promoting innovative solutions for the benefit of the community, in a spirit of respect, openness, inclusion, responsibility and “doing it together”.

The innovation zone will have a regional base, as well as provincial, national and international reach.

Alain Lemieux
Chief executive officer

Message from the CEO

« Doing it together »

Against the backdrop of the environmental and geopolitical upheavals shaking our planet, we have reflected on our values and prioritized our desire to help Quebec society become more resilient, prosperous and sustainable.

VTE acts to leave future generations an ecosystem of innovation, value creation and wealth creation, while making a positive contribution to decarbonizing Quebec. The VTE is therefore called upon to play a central role in the battery industry, in the electrification of transport, in hydrogen and in the decarbonization of industry and heavy transport.

Our challenges are colossal. They will require major efforts that go far beyond the scope of our mission. Our strategic plan is therefore a roadmap that defines our directions and positions the VTE as a key player for change. We need to work “TO DOING IT TOGETHER” with all our stakeholders, so that Quebec's collective strength can seize the opportunity to become an essential leader in the energy transition. The scope of our development ambitions is international, and the VTE wishes to position itself as a world-class reference.

The VTE team and its founding members (see Appendix A) approach the future with equal parts humility, pride and determination. With our historic footprint in hydroeÅ lectricity and industry in mind, we now want to set the pace for a decarbonized future, through mobilization, collaboration, innovation and entrepreneurial drive. With our destiny in hand, we are helping to build a sustainable energy future, and acting as a catalyst for new possibilities for a society we are privileged to serve.

I would like to extend my sincere thanks to all those who took part in these groundÅ breaking exercises, opening up new avenues of reflection. It is not least because it is the result of an inclusive approach that I am particularly proud to present the “VTE Strategic Plan 2024-2028”.

Approach

01

A participatory and inclusive approach

The VTE 2024-2028 Strategic Plan is the result of a consulta�four process designed to mobilize our collective strength and leverage our assets (green energy, SCPs, talent).

Over the past year, we have called on a multitude of players from government, venture capital, industry, universities, research centers and organizations. These players have helped us to reflect on the energy transition, its challenges, but also the new opportunities that lie ahead.

Stakeholder consultation (studies)

Consulting partners, in the form of studies, when creating an innovation ecosystem is of paramount importance for several reasons.

First of all, partners are key players in the innovation ecosystem, with in-depth knowleẅdge of the market, customer needs, technology trends and collaboration opportunities. Their expertise and perspective can therefore provide invaluable information for guiding studies and defining innovation strategies.

Secondly, consulting partners fosters engagement and relationships with the various stakeholders in the ecosystem. Involving them in the process strengthens the bonds of trust and the sense of co-creation, leading to stronger, longer-lasting collaborations.

Partners also bring resources and skills that complement those of the organization conducting the studies. This enriches the approach and makes it possible to explore new perspectives and innovative solutions.

Finally, these consultations can help identify potential obstacles and collectively find ways of overcoming them, thus fostering the development of a more resilient and sustainable innovation ecosystem.

Key sucess factors

Several factors are driving the development of our innovation ecosystem.

Axes of development and research scientific

Three strong scientific axes of a knowledge-based environment in which structured scientific research is carried out. Promoting links between academia and private enterprise.

Collaborative innovations

Promoting a culture of collaborative innovation, by stimulating creativity, experimentation, risk-taking and continuous learning, is essential. This helps energize innovation and support the development of ideas.

Private investments

Encourage local and foreign private investment and facilitate access to capital for businesses.

Entrepreneurship and financing

It's important to fund and encourage entrepreneurship and the creation of innovative businesses within our ecosystem, by providing funding programs, coaching, shared workspaces, mentors, and so on.

Skilled work-force and attracting talent

It is essential to set up mechanisms that enable ecosystem players to develop and access the resources and skills required for their innovative projects.

Entrepreneurial diversity

Bringing together companies of different sizes, to be resilient, and sustainable.

Planning and infrastructure

Adequate infrastructure, including research facilities such as laboratories and pilot plants, is essential to foster the development and valorization of innovation.

Proximity and densification

Offer dense, accessible and dynamic living environments based on high standards of quality of life.

Sustainability

VTE's actions are implemented in a sustainable manner, optimizing circulaÅ rity.

Animation and mobilization

The success of the VTE depends first and foremost on leadership, ecosysÅ tem mobilization and communications.

Declaration of commitment

The VTE wants to act as a catalyst for positive change in Quebec's energy transition.

To achieve this, we're bringing our “DOING IT TOGETHER” impetus to the fore by highlighting the **VTE Declaration of Commitment**, a collective project aimed at propelling the energy transition forward for the benefit of Quebec and Canadian society, with the utmost respect for the environment and its communities.

02

Context

The energy transition

The significant impacts of climate change

The energy transition represents a crucial challenge for our society and our planet. **The Intergovernmental Panel on Climate Change (IPCC) 2023** indicates that more than a century of fossil fuel combustion and uneven, unsustainable use of energy and land has led to a temperature rise of 1.1°C compared with the pre-industrial period.

This warming has led to an increase in the frequency and intensity of extreme weather events, with increasingly dangerous consequences for natural environments and people in all regions of the world.

The impacts of current and future changes are too numerous to discuss exhaustively in this plan. Natural consequences, social, economic and territorial threats: these changes affect our societies in a multitude of ways, jeopardizing their very foundations and primarily affecting already vulnerable and marginalized populations..

Québec strategy for research and investment strategy (SQRI2)

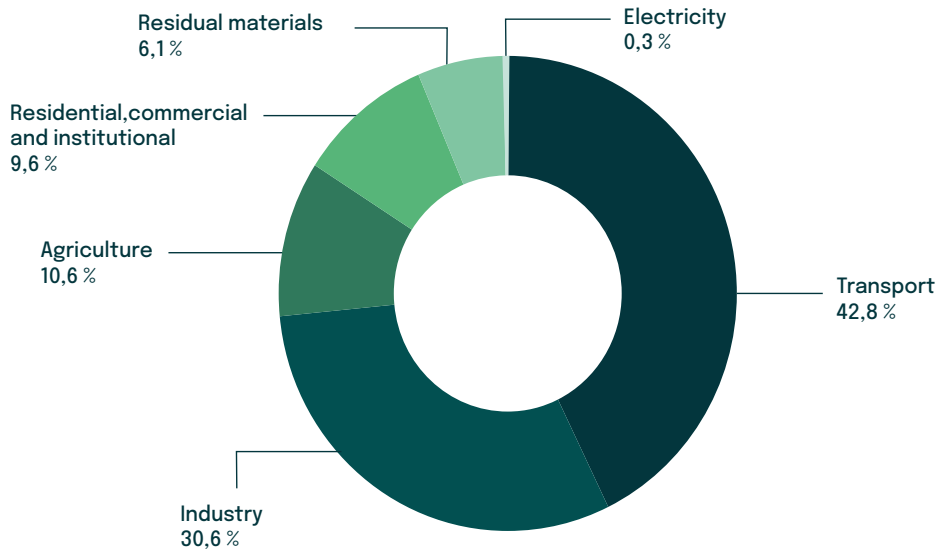
The SQRI 2022 is a strategic, structuring and integrating tool that, thanks to its translational vision, covers the various links in the innovation chain. With this strategy, the Quebec government aims to increase the transition from idea to market, attract private and foreign investment, and promote clean, sustainable economic growth, all for the benefit of the people of Quebec.

Decarbonizing the most polluting sectors

In Quebec, the transportation sector is responsible for around 43% of greenhouse gas emissions. The industrial sector is responsible for almost 30%.

It is therefore strategic to target these two sectors in particular, which account for almost three-quarters of Quebec's emissions.

Breakdown of GHG emissions in Quebec in 2020, by activity sector. Source : MELFP, 2022.



Innovation zones of Québec (ZIQ)

Definition

Québec Innovation Zones (ZIQ) aim to create and maximize synergies between players, thereby facilitating the development of innovations and accelerating their time-to-market.

ZIQs offer and facilitate access to a continuum of resources supporÅ ting the valorization of research as well as the industrialization of innovations, concepts and technologies. This includes shared infrastructures and services.

These ZIQs are part of attractive, sustainable living environments. By providing an environment conducive to creativity, entrepreneurship and well-being, they seek to attract and retain talent, thereby contriÅ buting to the sustainable growth of the economy in collaboration with local players.

ZIQs bring together, in a geographically defined area, key players from industry, entrepreneurship and academia in Quebec and elsewhere, according to niches linked to cutting-edge expertise in sectors of the future.

Unique proposition

Industrializing innovations
Gathering the winning conditions for accelerated time-to-market of innovations that meet the needs of industry and society.

Synergies between players
Leveraging local and international synergies and emulating to accelerate technological and social breakthroughs.

Pooling resources
Mobilizing the best talents and making available the infrastructures of research, industry, entrepreneurship and academia around competitive advantages to bring innovations to fruition.

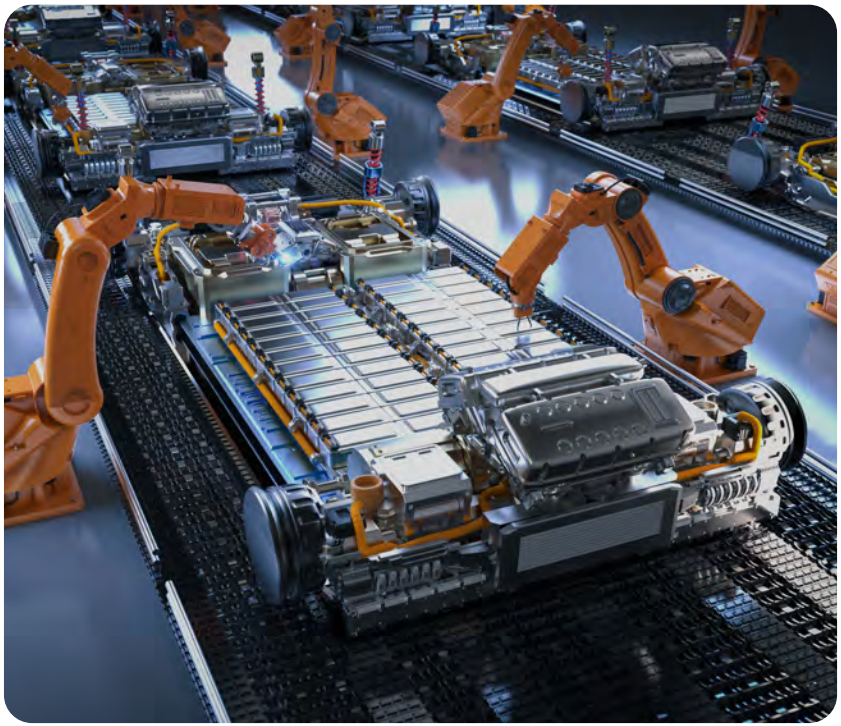
Attractive living environment
Offer a stimulating, sustainable living environment on a human scale to attract talent and industry.

Concentrate forces
Accelerate innovation
International excellence

ZONES D'INNOVATION QUÉBEC

VTE : an initiative at the heart of the energy transition

In line with Quebec's structuring vision on energy transition, **the ZI-VTE was announced by the Quebec government on May 29, 2023.** It will be deployed between Bécancour, Trois-Rivières and Shawinigan. The government is investing in infrastructure and research projects. These will accelerate the development of the battery industry and the electrification of transport, decarbonize the indusÅ trial and heavy transport sectors, and optimize the production and use of green hydrogen in the industrial chain. In this way, the VTE aims to become a global center for research and innovation in decarbonization and energy transition.



The VTE meets three major needs:

1

From idea to market

Enable the creation and growth of innovaÅ tive
companies and the conquest of new markets by promoting the development of innovative products and technologies.

2

Private investment, local and foreign

Attracting investment for growth and increased business productivity.

3

Clean and sustainable growth

Making the transition to an economy with a low environmental footprint.

About

03

Our mission

Bringing together players in the energy transition around three attractive, sustainable hubs, to offer a complete ecosystem for innovation in our strategic sectors: batteries, transport electrification, hydrogen and indusÅ trial and heavy transport decarbonization.

Our vision

To be Quebec's benchmark ecosystem contributing to the energy transition, by accelerating and promoting innovation, training and attracting talent and companies from here and abroad.

Our values

Mobilize

Act as a transmission belt to bring people together, stimuÅ late them and encourage them to take action.

Unite

Unite forces and interests to achieve common goals.

Innovate

Experiment with new ideas, technologies, practices or approaches.

Undertake

Take initiative with responsibility to create value.

VTE's strategic planning serves as a springboard for our development drive. Our orientations and strategies chart our course. Our business model will define our governance, operations and use of resources.

Business model

VTE's business model will be based on three organizational structures serving industry, the knowledge community and the financial ecosystem, with strong roots in the local community. Each structure will have its own strategic planning and action plan to support its respective development.

→ VTE : Non-profit organization (NPO)

The NPO brings together all the players in the ZI-VTE to catalyze synerÅ gies, accelerate and promote the energy transition by facilitating exchanges and the resolution of complex issues. It is becoming a must for all stakeholders in this ecosystem.

→ VALO-VTE : Profit-making organization

Its objective will be to promote wealth creation for Quebec, through the valorization of products and intellectual property resulting from innovation in energy transition. VALO-VTE will become the ideal organiÅ zational vehicle for the management of innovation centers and district, as well as the financing and support needed to achieve this.

→ FONDS-VTE : Investment funds

The Fonds-VTE is an independent venture capital structure that will finance innovative energy transition projects and companies in Quebec.

Four strong pillars, anchored in the heart of the living environment

VTE rests on four essential pillars: industry, entrepreneurship, the knowledge community and the financial ecosystem, all of which are rooted in the living environment.

- Industry is the economic engine, providing expertise, resources and the ability to transform ideas into tangible products.
- Entrepreneurship stimulates the potential for wealth creation, innovation and employment at the heart of companies.
- The knowledge community, which includes universities, research centers and incubators, nurtures innovation through research and training, encouraging the emergence of new ideas and technologies.
- The financial ecosystem is positioned to support the development and growth of innovations and businesses.
- Finally, the living environment is conducive to creativity and collaboration. With its collaborative workspaces, modern infrastructure quality of life, it attracts talent and facilitates exchanges between innovation players.

Together, these four pillars form a solid, synergistic foundation on a human scale, which will stimulate innovation, foster sustainable economic growth and improve citizens' quality of life.

Three strategic sectors

The VTE intends to become a national and global benchÅ mark in research, development, industrialization and commercialization of innovation from its strategic sectors. The aim is to clearly position Quebec and its strengths in an emerging market. It will be deployed through three strategic poles.

With the support of the various players in this regional innovation ecosystem, the VTE will set up strategic infrastructures (research and innovation sites, incubaÅ tors, pilot plant, school) to facilitate communication and networking between companies, researchers, profesÅ sors, students, business people, support organizations, professionals and investors. At the heart of VTE's activiÅ ties is the promotion of collaborative networks between research, entrepreneurship and community players.

1

The battery sector

Its objective is the eco-design and optimization of future new-generation batteries, their reconditioning and recycling, and the recovery of SCMs and by-products. The arrival of the battery industry in several regions of Quebec offers significant econoÅ mic spin-off opportunities for local businesses.

2

The electrification of transport

It covers all economic and industrial activities linked to the development, production, distribution and use of electric technologies in the transport sector. This sector encompasses the research and development of new technologies to improve the energy efficiency of electric vehicles, extend their range, reduce their cost and minimize their environmental impact. The fields of expertise involved include electriÅ cal engineering, batteries, energy storage, power electronics, innovative materials and management and control systems.

3

Decarbonization of industrial activities and heavy transport

It operates in the low-carbon hydrogen, biofuels, solar and wind renewable energies, clean technologies and sustainable and circular development sectors. More specifiÅ cally, its expertise covers technologies for the production, storage, distribution, use and upgrading of clean energies. Carbon capture, recovery and sequestration technologies are also an important theme in this sector.

Orientations and strategies

04

In light of the current context and our consultations, we present a strategic plan that :

- Responds to the challenges identified by our analyses and approaches;
- Sets the course for our energy transition efforts and positions VTE for the coming years;
- Focuses on our core mission and proposes an evolving vision through targeted orientations and strategies;
- Seeks to increase our contribution to Quebec's prosperity and resilience, in an era of societal awareness that drives us to act differently for a healthy enviẨ ronment;
- Recognizes that our successes will depend on the strength of our community, reflecting the priority actions recommended by our employees, partners partners, our cities and the public.

We carried out a SWOT* analysis (strengths, weaknesses, opportunities and threats) presenting the main impacting factors to be considered for VTE in order to propel our development appropriately.

We also carried out a comparative analysis* of our competitors to understand to understand our strategic positioning in Quebec, Canada and internationally.

The strategic positioning is based on an analysis of existing literature on the subject and a comparison of innovation centers and technology parks around the world.

The analysis of innovation hubs comparable to VTE, both nationally and internationally, is based on the success factors of companies partners of a technology park. Attractiveness is developed on the basis of companies' expectations, motivations to locate and incentives.

*These analyses are available in Appendix B.

Issues

At the end of our analyses, four issues were identified:

Issue 1 : Stakeholder cohesion, acceptability and participation

→ With a view to providing the best possible support to those involved in the energy transition, the VTE has positioned itself as a benchmark player for project vectors, whether industrialists, researchers or investors. In order to anticipate any obstacles that might prevent the realization and acceptability of an impact project, the VTE must communicate its positioning, actions and objectives clearly. The involvement of our partners is crucial to the lasting success of our mission, as they bring unique resources, whether in terms of skills, financing or networks. By combining these strengths and getting partners to actively contribute to the energy transition, we maximize our impact and achieve our goals more effectively.

Issue 2: Developing a world-class integrated offering to attract talent, stimulate innovation and enhance value

→ Innovation is the key to developing a high-value-added, knowledge-based economy. We act as a convenor, bringing together the expertise and tools needed to move ideas from the drawing board to the marketplace. Driven by the desire to promote Québec innovation, the VTE must develop a world-class integrated offering that effectively meets the needs of industry. We want to put forward a mechanism that will ensure that not only will a product's final market value be generated in Québec, but that the intellectual property underpinning the innovation will also be Québec-based. By offering a complete and coherent environment, we are creating an ecosystem conducive to the emergence of innovative ideas and technology start-ups. This integrated framework, essential to strengthening competitiveness, accelerating project development and positioning us as a leader in the energy transition, must be underpinned by exemplary, attractive living environments. The foundations of a ZI value modern lifestyles and the development of high-density, mixed-use spaces to create open, inclusive innovation. The VTE development process is all the more mobilizing if it recognizes and consolidates existing local strengths.

Issue 3 : Visibility and awareness in Quebec and internationally

→ In the national and global competition to build the energy transition industry, outreach is fundamental to attracting and retaining the best talent. By becoming actively involved on an international scale, the VTE aims to put its ecosystem forward in order to attract strategic partnerships, access additional funding and influence policy, thereby strengthening our leadership role in the energy transition. This also enables us to share and acquire cutting-edge knowledge, and create the global synergies essential to accelerating the adoption of sustainable technologies.

Issue 4 : Providing the means to achieve our ambitions and ensure sustainable financing

→ Through its vision of promoting innovation and enterprise, the VTE aims to play an active role in increasing Quebec's collective prosperity. Our involvement contributes to improving the quality of life of citizens and stimulating innovation and competitiveness on national and international markets. They also generate wealth and opportunities, such as business and job creation, and reduce social inequalities. They also give rise to greater autonomy and sovereignty, meaning a greater ability to make decisions that correspond to the interests of our people, and to give ourselves the means to realize our ambitions.

Orientations

Nine orientations have been identified to meet the challenges presented:

Issue 1

Orientation 1.1

→ Communicating our positioning to our various stakeholders

Orientation 1.2

→ Bringing together and engaging our partners in achieving our mission

Issue 2

Orientation 2.1

→ Mobilize and support cross-sector expertise in energy transition research and innovation

Orientation 2.2

→ Promote synergies between players for open innovation and its valorization

Orientation 2.3

→ Provide a continuum of cutting-edge services, equipment and infrastructure

Orientation 2.4

→ Promote the development of attractive, sustainable living environments

Issue 3

Orientation 3.1

→ Enhance our reputation as a world-class benchmark innovation ecosystem

Orientation 3.2

→ Strengthen our presence on all stages and mobilize international networks

Issues 4

Orientation 4.1

→ Support, coach and develop the potential of entrepreneurs and innovations in energy transition

Issue 1 : Stakeholder cohesion, acceptability and participation

Communicate our positioning to our various stakeholders

Strategies

1

Increase awareness and understanding of the the role of the VTE, its hubs and living environments to the various stakeholders

Making ourselves known is crucial to establishing our credibility and influence with our various stakeholders. By being visible and clearly communicating our role, we can better mobilize resources and foster strategic partnerships with our employees, local communities and decision-makers. In this way, we will also ensure that energy transition initiatives are aligned and concerted among all stakeholders, which is essential for the long-term success of our mission.

2

Promote social acceptability, with municipalities, RCMs and companies building on the principles of developing attractive, sustainable living environments

Social acceptability is essential to the success and sustainability of development projects at the heart of the VTE. By working together, we can integrate planning principles aimed at creating attractive, sustainable living environments that meet the needs and aspirations of local communities. An inclusive and concerted approach strengthens public confidence and encourages broader support for projects, while ensuring harmonious deve- lopment that respects the environment.

Issue 1 : Stakeholder cohesion, acceptability and participation

Bring together and engage our partners in achieving our mission

Strategies

1 Promote networking and synergies between partners and project drivers

The “DOING IT TOGETHER” embodied by the VTE creates a climate of trust with the major players in the energy transition. Directly linked to the knowledge ecosystem, VTE experts facilitate connections and provide relevant solutions to the challenges facing industry. As the gateway to the energy transition on a provincial scale, we keep a close eye on the key players in our ecosystem. We identify the best technological partnerships and stimulate synergies by bringing together the major players in Québec inc. Growing local players and facilitating the landing of industrial champions will solidify the energy transition value chain for the benefit of all.

2 Consult with community and socio-economic groups, including Native communities

VTE recognizes the importance of consulting Native communities, as well as community and socio-economic groups to build effective relationships and collaborations and ensure cohesion between local players.

3 Make the most of those involved in sustainable and circular development

The VTE plays a mobilizing role with local and national organizations, while encouraging companies to adopt innovative practices and environmental, social and community solutions aimed at achieving circularity and protecting the environment in all its facets. VTE aims to integrate the principles of sustainable development into its strategic plan and at the heart of its activities.

4 Working with governments and policy-makers

We work with governments and policy-makers to support the long-term energy transition by introducing policies and regulations that encourage the use of renewable energies and the reduction of carbon emissions.

Issue 2 : Developing a world-class integrated offering to attract talent, stimulate innovation and enhance value

Mobilize and support cross-sector expertise in energy transition research and innovation

Strategies

1

Increase collaborative research in line with our priority development areas

We have set up a scientific committee representing most of the relevant players in decarbonation research in Quebec, including universities, research centers (CCTT), networks of researchers and public and private laboratories. The role of this committee is to consolidate the research ecosystem and mobilize the brightest minds to meet the scientific and technical challenges of our industries through structuring scientific programming. The ultimate aim is to build the future on the needs of industry, while mobilizing collaborative inter-order research directly within our ecosystem.

2

Support collaborations with pan-Canadian and international research

In addition to the Quebec ecosystem, we're looking to partner with international leaders. Their contribution in the form of investment or expertise, and their varied perspectives from different parts of the world, will strengthen existing capacities for research centers and projects.

3

Maximize and enhance the supply of funding to support research and innovation, from idea to market

In line with our scientific programming, we want to provide specific financial resources to support research and innovation projects. We are following the example of successful models such as the Fraunhofer model in Germany, with one-third public investment in fundamental research, one-third public-private partnership in collaborative research and one-third private investment. In this way, we want to be able to support research at all levels of maturity in an innovative and effective way, in order to maximize the benefits for society. This support must be flexible, efficient and innovative to respond rapidly to a constantly evolving ecosystem.

Issue 2 : Developing a world-class integrated offering to attract talent, stimulate innovation and enhance value

Promote synergies between players for open innovation and its valorization

Strategies

1 Develop a model for the commercialization of innovations, with the collaboration stakeholders, notably Axelys and the Regroupements sectoriels de recherche industrielle (RSRI)

Stimulating investment and the development of disruptive innovations by ensuring that technologies reach local and international markets is an integral part of our ambition. To achieve this, we need to work with existing organizations in Quebec to maximize efficiency and sources of funding.

2 Supporting entrepreneurs and taking into account recognized organizations in Québec

To help entrepreneurs realize their ambitions, we collaborate with front-line players in economic development and recognized specialist coaches in Quebec. The aim is to promote emerging innovations in our three clusters and support high-potential companies developing energy transition products. It's important to reduce the risks associated with innovative projects in order to create tangible, sustainable wealth in Quebec. The right support and financing can make a big difference.

3 Involving major industrial players

The judicious deployment of showcases and technology pilots helps catalyze the successful adoption and integration of innovations. The VTE aims to present the latest technological advances to companies and stakeholders in a tangible way, encouraging them to experiment with them, explore new opportunities and strategic alliances. The VTE positions itself as a dynamic hub for technological innovation, fostering innovation and competitiveness.

Issue 2 : Developing a world-class integrated offering to attract talent, stimulate innovation and enhance value

Provide a continuum of cutting-edge services, equipment and infrastructure

Strategies

1 Consolidate local workforce and enhance the contribution of those outside the ZI

In order to enrich the external contribution to our ZI, it is essential to optimize and mutualize the territorial assets already present. The aim is to strengthen the resources, infrastructures and institutions already dedicated to innovation in the area, by maximizing their efficiency, interconnection and contribution to the economic and technological development of the VTE. In addition, we will focus on leveraging resources and expertise located outside our territory to support and enrich innovative activities and projects, and promote access to the knowledge ecosystem for industry. This includes collaboration with external entities as well as knowledge transfer and the sharing of additional resources and equipment.

2 Enhance the availability of infrastructure and shared equipment

VTE wants to set up sustainable operations at the heart of infrastructures that encourage sharing and the emergence of innovations.

- Establish the elements that will ensure the future success of each center: infrastructure ownership, governance, management, control, use of premises and business model (opex guarantees, revenue and cost model).
- The commitment of customers and key partners is essential in order to base the next steps on tangible elements and determine the space and equipment required for each of the innovation centers.
- With official commitments in hand, technical and functional analyses will specify architectural and engineering elements, as well as construction and equipment purchase budgets.
- Financing must be agreed with key partners to realize our implementation and commissioning ambitions.

Issue 2 : Developing a world-class integrated offering to attract talent, stimulate innovation and enhance value

Promote the development of attractive, sustainable living environments

Strategie

1

Mobilize municipalities, RCMs, industry and organizations to optimize the development of attractive and sustainable living environments

The VTE plays a unifying role and acts as a conduit with local, regional and provincial organizations to guide municipalities and partner companies towards best practices. Numerous governmental and municipal players, as well as stakeholders in the fields of knowledge, economic and social development, are called upon to reflect on solutions and formulate concrete recommendations.

The VTE considers the following projects:

- **Housing,** which faces challenges in terms of available units and local services to attract workers to the area.
- **The workforce**, in terms of attractiveness, training and skills development, based on the recommendations of the study we carried out.
- **The development of attractiveness,** through a vision of mobility, infrastructure and community development focused on the needs of citizens and businesses.
- **Social innovation** can take many forms, such as an innovative platform or solution to a social or environmental problem, or an improvement on an existing solution.

Issue 3 : Visibility and awareness in Quebec and internationally

Enhance our reputation as a world-class benchmark innovation ecosystem

Strategies

1

Promoting Québec innovations in line with our development priorities

To ensure the economic success of start-ups proposing Québec innovations, we need to look beyond the national market very quickly. This means building privileged access to key markets, particularly with France and the French-speaking world in general. To this end, VTE is working to establish a climate of mutual trust with strategic partners. In addition, we aim to mobilize expertise and support resources to maximize opportunities.

2

Rely on our champions, researchers, innovations and entrepreneurs as communication drivers

These champions, influential and respected figures in their respective fields, play a key role in enhancing the visibility and attractiveness of the VTE. By sharing their positive experiences and successes, and illustrating the benefits of this ecosystem, they become true ambassadors. Their mission is to tell success stories, participate in key events and contribute to the creation of a powerful brand image. Thanks to their credibility and extensive network, these champions attract new talent, investors and partners, while consolidating the VTE's reputation as a dynamic and prosperous IZ.

3

Be a key player in inter-ecosystem relations and innovation zones

The VTE shares best practices, know-how, ideas and concepts with other IZs, as well as seeing to the potential integration of cross-disciplinary technological elements that fuel wealth creation for Quebec. The VTE is also keen to forge links with other innovation centers in Quebec that complement its sectors.

Issue 3 : Visibility and awareness in Quebec and internationally

Strengthen our presence on all stages and mobilize international networks

Strategies

1

Attracting foreign investments, talent and international organizations

The VTE supports the various initiatives launched by partner organizations such as Investissement Québec and economic development organizations, to strengthen and promote the attractiveness of the IZ to multinationals of interest.

2

Increase our presence and participation in events and relevant activities

Intensifying the VTE's involvement in forums, conferences, exhibitions and other global events will position us as a key player on the international scene. By strengthening our global network and highlighting our assets, projects and collaboration opportunities, the VTE attracts talent, partners and investors who can further energize the local innovation ecosystem. Participating in these events not only enables us to forge strategic partnerships, but also to keep abreast of the latest trends in innovation and exchange ideas with world leaders and experts.

Issue 4 : Providing the means to achieve our ambitions and ensure sustainable financing

Support, coach and develop the potential of entrepreneurs and innovations in energy transition

Strategies

1

Develop a business model that identifies potential sources of income and long-term viability

The VTE will initiate the launch of VALO-VTE, which, through its development plan, intends to play a key role in the management of innovation centers and districts, and in the promotion and financing of innovation and business projects. To this end, the following elements will be considered:

- Establishing partnerships with Axelys and other specialized support providers;
- Maximizing the use of funding sources;
- Creation of a philanthropic fund dedicated to supporting innovative start-ups and encouraging philanthropic investors to invest;
- Taking a position on patents in order to enhance their value;
- Matching investments and actions to market needs;
- Ensuring that VALO-VTE's financial gains can always be reinvested to create wealth in Quebec, in addition to sustaining VTE's operations;
- VALO-VTE will help reduce the risk of innovation and business projects before they are presented to the investment fund.

Strategies (next)

2

Building partnerships

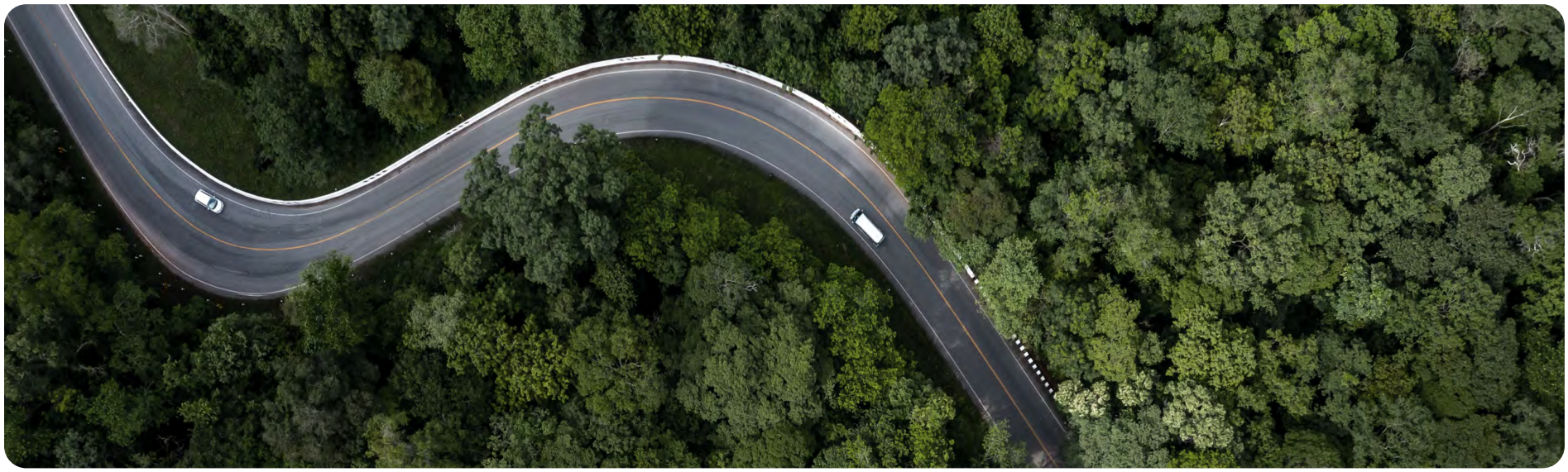
Forging sustainable strategic partnerships with companies, research institutions, governments and other key players fosters the development and adoption of sustainable technologies and practices as part of the energy transition. These collaborations aim to accelerate the shift to cleaner, more efficient energy sources, encourage technological innovation and create a collaborative ecosystem supporting sustainability goals. This can include sharing resources, co-developing projects, or exchanging knowledge to meet our challenges and those associated with the energy transition.
These partnerships are a powerful lever for strengthening our position and ensuring our long-term development.

3

Specialized financing tools for companies (investment funds)

With its strong innovation ecosystem, the VTE and VALO-VTE will see the emergence of companies with high development potential. We recognize how difficult it is for entrepreneurs to find the right sources of financing at every stage of their company's life cycle (launch, incubation, acceleration, growth).

→ The VTE would like to influence the establishment of an independent investment fund (venture capital, loan, convertible debenture, etc.) dedicated to Quebec's energy transition, to support companies in their development and commercialization.



VTE developments

05

Infrastructures that encourage the sharing and emergence of innovations

Innovation centers and district

Based on our development plan approved in September 2023, we present our potential infrastructure projects, which are currently undergoing feasibility studies. The formal commitment of our partners is essential to bring these innovation centers and district to fruition, and their realization will take place in several phases.

To fulfill its mission, the VTE relies on three hubs to foster innovation through a shared, creative, stimulating, synergistic and attractive environment for research, investment, growth and internationalization.

In concrete terms, our ambitions can be realized through the establishment of innovation hubs covering these three sectors within our territory, as follows:

- The Center of Innovation and Training in Energy Transition (CIFTE-VTE) on industrializing and optimizing energy transition processes and valorization of outputs in Bécancour;
- The Center of Innovation in Battery and Transportation Electrification (CIBÉT-VTE) in Shawinigan;
- District of Innovation Trois-Rivières in hydrogen and industrial decarbonation (DI3R-VTE).

The potential areas of research and intervention for each cluster are detailed in their respective strategic development and implementation studies, carried out by the VTE. The following diagram shows examples of the technological subjects covered by the three innovation centers and according to our sectors:

LEGEND :

Innovation centers and district

(CIFTE-VTE) (CIBÉT-VTE) (DI3R-VTE)

VTE's sectors

TRANSPORT ELECTRIFICATION BATTERY HYDROGEN, DECARBONATION AND HEAVY TRANSPORT

The VTE's studies of ecosystem needs and opportunities have identified high-potential training and research areas for the various innovation centers:

Becancour hub CIFTE-VTE

- Optimization of mineral and materials processing, pilot plant;
- Valorization of industrial emissions, effluents, outputs and by-products;
- Experimentation and validation of methods for producing, storing and transporting renewable, low-carbon hydrogen;
- Skills development and training

Trois-Rivières hub DI3R-VTE

- Development, optimization and implementation of decarbonization solutions in an industrial context;
- Accelerating the deployment of renewable, low-carbon hydrogen;
- Development, adaptation and research into the application of decarbonization logistical and technological solutions in a port and heavy transport context.

Shawinigan hub CIBET-VTE

Transportation electrification section

- Advanced recharging infrastructures and intelligent energy management;
- Embedded technologies, system integration, data analysis and processing;
- Speed and reliability of the electric vehicle development cycle

Battery section

- Eco-design and optimization of future new-generation batteries;
- SCM purification and processing, advanced materials, battery qualification and assembly;
- Battery safety, performance and quality control;
- Battery reconditioning and recycling;
- SCM recovery and optimization of electrochemical processes.

Battery and hydrogen testing and certification

Development of a position as a one-stop shop for transportation electrification, capable of supporting innovation across the entire technological maturity spectrum. Enhance Québec's offering in terms of testing infrastructures and certification support, and gain international recognition for this expertise.

Action plan

The VTE team bears important responsibilities for ensuring that our actions are in sync with each other, and that we achieve convincing results in meeting our objectives. We have five main directions:

- General Management;
- Business development ;
- Living environment development ;
- Knowledge and innovation ecosystem development;
- Special projects.

Action plans will therefore be introduced in support of the VTE Strategic Planning 2024-2028 for several key reasons:

Strategy implementation

The VTE Strategic Plan 2024-2028 sets out the major directions for our organization. The resulting action plans will break down these strategic objectives into specific, achievable actions, thereby facilitating their concrete implementation.

Assigning responsibility

By detailing the actions to be taken, action plans will assign clear responsibilities to the organization's various stakeholders. This will help to clarify the roles of those involved, and thus promote accountability.

Timeline and prioritization

The action plans will define timeframes for each action, enabling us to plan the efforts and resources required. In addition, by prioritizing actions according to their importance and impact on strategic objectives, VTE will be able to ensure that our efforts remain focused where they have the greatest effect.

Aligning resources

Our action plans will help align human, financial and material resources with our strategic objectives. By establishing resource requirements for each action, VTE will be able to efficiently allocate its limited resources where they are most needed.

Monitoring and evaluation

Our action plans will provide a basis for monitoring and evaluating the implementation of our strategies. By measuring progress against planned actions, VTE will be able to identify gaps and adjust its efforts accordingly, ensuring agile and adaptive management.

Our key performance indicators

Equipped with robust governance and management structures, VTE recognizes that it is committed to achieving its objectives, as well as those of the Quebec government. To this end, ten success objectives aligned with the SQRI2 have been defined. In addition to being in line with our fundamentals, these objectives also address economic, social and scientific considerations.

From these ten objectives flow more than thirty Critical Performance Indicators (KPIs), defined by the VTE in conjunction with the government to guide us in achieving our goals (see Appendix D for more details). It should be noted that some KPIs will be provided by the Quebec government and certain partners, and that the nature of the KPIs is evolving. The government will also provide us with collection files and data sheets for each indicator, to facilitate the data collection process.

Targets will then be set in the light of the results obtained in the first year of VTE's operation, and broken down by innovation center and district according to their technological vocations. The KPIs will eventually be used to assess the relevance of initiatives and the achievement of objectives, and to review certain strategies and the action plan.

06 Conclusion

vte Vallée de la Transition Énergétique

This VTE strategic plan sets out a solid roadmap for fostering innovation, entrepreneurship and the valorization of collaborative research. Our focus is on public-private collaboration, talent development, investment in research and development, and social innovation. The VTE is strategically positioned to create a dynamic and prosperous ecosystem.

This plan builds on the existing strengths of the Mauricie, Centre-du-Québec and Québec regions, such as their culture of innovation (through multiple universities and research centers), their infrastructure (current and future) and their commitment to education and research. As such, it aims to catalyze opportunities for VTE growth.

By cultivating an environment conducive to entrepreneurship and innovation, we aim to attract the best talent, investment and strategic partnerships. In this way, we are building our place as a leading player in technologies associated with the energy transition.

vte Vallée de la Transition Énergétique

Our analysis and our vision have enabled us to define the crucial orientations that respond to our major challenges and guide our actions in the creation of our dynamic ecosystem:

1. Communicate our positionning to our various stakeholders
2. Bring together and engage our partners in achieving our mission
3. Mobilize and support cross-sector expertise in energy transition research and innovation
4. Promote synergies between players for open innovation and its valorization
5. Provide a continuum of cutting-edge services, equipment and infrastructures
6. Promote the development of attractive, sustainable living environments
7. Enhance our reputation as a world-class benchmark innovation ecosystem
8. Strengthen our presence on all stages and mobilize international networks
9. Support, coach and develop the potential of entrepreneurs and innovations in energy transition

Through effective execution of our orientations and strategies, we are determined to create an ecosystem where innovative ideas can flourish, where companies can grow and succeed, and where the benefits of innovation reverberate positively throughout society. We look forward to seeing this vision become a reality, and making a significant contribution to the economic, social and sustainable development of our regions, of Quebec and beyond.

APPENDIX A
Founding members

Founding members

Bécancour

Bécancour is a town of close to 15,000 inhabitants, located in the heart of a landscape that combines rural and urban living, and stands out for its dynamic, welcoming character. Comprising several villages amalgamated in 1965, it is also home to the Wôlinak Abenaki reserve. Bécancour's position on the major Montreal-Quebec-Northeastern U.S. routes, its proximity to the St. Lawrence River, the presence of industrial parks covering a total surface area of 434 km2, the richness of its agricultural and forestry lands, the diversity of its living environments, and the multitude of recreational and tourism facilities and heritage sites have all shaped the growth of this multi-faceted agglomeration. The town of Bécancour was the birthplace of one of the first industrial symbiosis clusters in Quebec, and continues to be home to companies that are integrated into their surroundings, providing a favorable environment for entrepreneurship and innovation.

The Société du Parc Industriel et Portuaire de Bécancour (SPIPB) is an essential partner of the Ville de Bécancour and the VTE. With 70 km2 of land and numerous companies contributing to the economic vitality of Quebec and Canada, the SPIPB contributes to Bécancour's reputation as one of the largest industrial parks in Canada.

Following **Investissement Québec's** successful international development efforts, Bécancour is now becoming a hub for the deployment of the battery industry. This is reflected in the establishment in Bécancour of major projects by well-known private companies involved in the production of lithium hydroxide, cathode active materials and anode active materials, along with several other plants creating a strategic value chain.

Bécancour

Founding members

Shawinigan

Designated a Cité de l'énergie after making its mark on the province's hydroelectric history, Shawinigan continues to build on its expertise in electrochemistry and transportation electrification. Thanks to its innovation in this sector, supported by the **Centre national en électrochimie et technologies environnementales (CNETE)** and **Hydro-Québec's Centre d'excellence en électrification des transports et en stockage d'énergie,** Shawinigan has already established itself as an essential pillar in the next steps in the development of Quebec's battery industry.

Boasting an innovative ecosystem of companies employing over 1,000 people in the transportation electrification sector, Shawinigan stands out for its diversification in this business sector. From research and development to the assembly of electric vehicles and the production of electronic and mechatronic components, Shawinigan has all the expertise needed to serve projects in this promising field.

The City of Shawinigan can also count **Concordia University** among its partners. A collaboration agreement has been signed between Concordia University, CNETE and the City of Shawinigan to establish a thematic campus dedicated to energy storage, transportation electrification, applied artificial intelligence, software engineering and cybersecurity. This campus will enable the development of expertise in lithium-ion batteries, next-generation batteries and energy systems.

Shawinigan's contribution is also reflected in its entrepreneurial culture, which has taken root for over ten years through its incubation facilities. These include the **Centre d'entrepreneuriat Alphonse-Desjardins Shawinigan (CEADS)** and **DigiHub**, a training, work and start-up space that fosters the emergence of young companies.

VILLE DE SHAWINIGAN

Founding members

Trois-Rivières

Founded in 1934, the City of Trois-Rivières is located on the banks of the St. Lawrence River, at the mouth of the Saint-Maurice River. Rich in history, the city has a population of over 140,000 and covers an area of 334 km2.

The City of Trois-Rivières is one of the region's economic pillars, with its manufacturing industry, agriculture and commerce, as well as its port activities. In fact, the **Port of Trois-Rivières** combines rail, road and sea transport for both Canadian and international markets. **The Centre d'expertise en logistique portuaire** is an independent non-profit organization and an initiative of the Trois-Rivières Port Authority. I t collaborates with some twenty others located along the St. Lawrence River and in the Saguenay region, as well as with stevedores, scrap merchants, terminal operators and various members of the Quebec port ecosystem. The primary mission of the Centre d'expertise is to carry out applied research projects in this sector of Quebec industry, in order to develop a competitive, intelligent and sustainable supply chain, and to contribute to efforts to decarbonize maritime and port activities.

In addition to the university on its territory, Trois-Rivières can count on three college technology transfer centers. These centers, **Innofibre**, the **Centre de métallurgie du Québec (CMQ)** and **the Centre Collégial de Transfert de Technologie en Télécommunications (C2T3)**, play an important role in the economic, scientific and environmental development of Trois-Rivières, making the city a place of excellence in bioproducts, metallic materials and metallurgical processes.

trois-rivières

Founding members

University of Québec at Trois-Rivières (UQTR)

Right in the heart of Trois-Rivières, UQTR boasts numerous programs that contribute to enriching the collective intelligence on the themes of the energy transition. In 2023, UQTR will begin construction of a new pavilion in downtown Trois-Rivières, dedicated to research into green and sustainable technologies. This pavilion will stand alongside **l'Ouvrage, a future building that will house the Centre d'innovation agroalimentaire, a hub of agri-food expertise** in three areas: processing, experimentation and marketing. The planned surface area will accommodate around ten companies whose activities range from food production to exhibition.

UQTR founded **the Institut de recherche sur l'hydrogène** (IRH) in 1994. It is one of Canada's leading research institutes in this field. Its mission is to promote science and technology for the implementation of a sustainable energy system using hydrogen, particularly in the fields of storage, safety and utilization. The IRH is a multidisciplinary, well-instrumented team specializing in the characterization and synthesis of nanoporous materials and hydrides, and in the evaluation of fuel cells, combustion engines and renewable energy systems.

In addition, the **Institut d'innovations en éco matériaux, éco produits, éco énergies** (I2E3), a research unit at UQTR, is dedicated to developing research and training graduate students in a multidisciplinary context. To this end, methodologies and experimental approaches specific to several disciplines are put to good use in the pursuit of collective objectives defined according to skills, available resources and scientific discoveries.

In addition, a **Joint Research Unit (UMR INRS-UQTR)** has been set up, focusing on the development of advanced materials and technologies for the energy transition and a low-carbon economy. It brings together over fifty graduate specializing in the fundamental development of materials and technologies for energy storage and conversion. It also works to reduce greenhouse gas emissions through C02 capture, process optimization and green fuel porduction.

UQTR

Université du Québec à Trois-Rivières

APPENDIX B
Positioning and expected competitive advantages

SWOT analysis

STRENGTHS

- Innovative local, national and international ecosystems: industry, knowledge, finance
- Access to several key resources on our territory: M.C.S., hydroelectricity, hydrogen, wind power, solar energy, geology for carbon storage, biomass
- Synergies and collaborations with Quebec's leading industrial sectors: quantum, nanotechnology, aerospace, aluminum and mining
- Geostrategic positioning at the heart of North American and international markets
- Collaboration between our key players fosters competitiveness, exports and international reach
- Presence of world-class prime contractors
- Presence of companies in emerging sectors of innovative green technologies
- Diverse industrial parks and turnkey sites
- Multimodal logistics hub: road, rail, sea and air
- Commitment of key players to sustainable development best practices
- Priority support for industrial zones from the Québec government
- Contributing to the quality and dynamism of living environments
- Cross-disciplinary mobilization of researchers in technological and social innovation in our sectors
- Call for projects from the Fonds de Recherche du Québec (FRQ) and the MEIE in support of VTE
- Vision of innovation support aligned with the recommendations of the Quebec Innovation Council

WEAKNESSES

- Insufficient resources to meet our ambitions, given our size, the multitude of themes covered and the number of players involved
- Heavy dependence on government funding, making us vulnerable to political change
- Lack of resources to meet the needs and pace of the industry
- Predominance of the battery sector to the detriment of our other sectors
- No dedicated funding tool to carry out our mission
- Delay in setting us up creates doubts about our realization potential
- No established communication plan
- Appropriation of our brand image by a multitude of organizations

SWOT analysis (more)

OPPORTUNITIES

- Creation of well-paid jobs linked to the energy transition to attract labor and talent
- Regulations and carbon pricing to encourage decarbonization of the economy
- A vibrant energy transition ecosystem encourages investment that can lead to the emergence of local industrial champions
- High-frequency train (TGF) project to connect the VTE to other major urban centers
- Recommendations of the Innovation Council report to support innovation, from idea to market
- Mobilization of various ministries to promote a coherent, cohesive energy transition strategy
- Availability of CSMs to create a complete circular value chain
- Quebec's non-existent industrial certification of ESG, battery and hydrogen technologies, which favors the development of a certification and support center.
- Emergence of start-ups to create a rich and dynamic entrepreneurial ecosystem in the region
- Multiple free trade agreements to facilitate access to global markets
- Political and economic stability that de-risks private investment and enhances our attractiveness.
- Québec's international green energy reputation to attract energy transition projects

THREATS

- Diversity of players and strategies, making it difficult to link up
- Competing international hubs with colossal resources
- Limited availability of energy blocks, hampering the development and implementation of promising technologies
- Social acceptability of energy transition projects and technologies
- Migration of jobs from SMEs to large corporations, which could undermine the growth potential of our industrial ecosystem
- Shortage of skilled workforce
- Difficult immigration and integration of foreign workforce
- Difficult access to affordable housing and housing units
- Lack of efficient public transportation within the territory and to major urban centers
- Limited time to secure capital investments in government budgets and develop innovation centers
- Cumbersome regulations and lack of services that make it difficult for companies to set up and implement projects
- Internal competition in Quebec between the many parapublic players
- Lack of protectionism on the part of the Canadian government
- Lack of government programs and structured incentives (such as the IRA)

Competitive innovation hubs

We have analyzed the competitive positioning of VTE by taking into account the following eight factors:

1

Equipment and facilities

E.g : Access to laboratories, space, cutting-edge equipÃ ment, etc.

2

Qualified human resources

E.g : technicians, engineers, support resources

3

Financial support and incentives

E.g : incentives and benefits, competitive pricing, financial partners

4

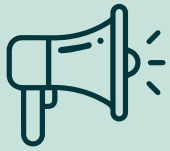
Geographical location

E.g : distance from major cities, labor pool, mobility, land costs

5

The technology park's reputation

Based on a particular distinction or specialization



6

Specific players

E.g : government agencies, universities, innovation networks

7

Support by the park

E.g : implementation of structuring projects, IP-reÃ lated
assistance, networking

8

Business implication

E.g : needs assessment, commitments, strategic planning

These eight factors were evaluated for five organizations worldwide, namely :

- Greenlab Skive Danemark
- Energy Lab 2.0 from the l'Institut Karlsruhe Institute of Technology
- HyNet North WEST in United Kingdom
- Green Tech Valley in Austria
- Renewable Energy Hub from l'Université the University of British Columbia in Canada

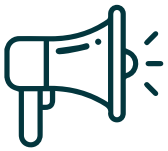
Chosen for their similarity to the components affected by VTE (e.g. renewable energies, Power-to-X, hydrogen), these hubs were evaluated on a scale of 0 to 3, as illustrated in the following table:

Factor	VTE	Greenlab Skive	Energy Lab 2.0	HyNet North West	Green Tech Valley	Renewable Energy Hub
1 	2	3	2	1	2	2
2 	3	3	3	2	3	2
3 	2	3	2	3	3	2
4 	2	1	3	3	3	3
5 	2	3	3	2	3	1
6 	3	2	1	2	3	1
7 	3	2	0	0	3	0
8 	3	N/A	N/A	N/A	N/A	N/A

0	Does not response to the factor
1	Low response
2	Moderate response
3	Satisfactory response

The analysis led to the following findings:

Aligning a hub's strategy with that of its government gives it access to substantial funding and incentives, making the area attractive to internationally recognized players. For example, companies setting up in Denmark's GreenLab benefit from exemptions from regulations governing the use of electricity in the area. According to the government's Power-to-X strategy, in May 2021 the Danish Energy Agency granted the park the status of “Regulatory Test Area”, exempting it from certain regulations in order to gain practical experience that could be useful in improving legislation in the energy field.



The reputation of technology parks often translates into recognition from international bodies (e.g. the United Nations), as well as the receipt of awards for the development of an innovative technology. Austria's Green Tech Valley, for example, is recognized by the European Union as a mecca for innovative energy and environmental technologies, as well as having the highest concentration of companies in the climate and circular solutions industry. The hub also enjoys recognition in a number of international rankings, receiving top marks in rankings such as VDI/VDE Innovation, Global Cleantech Directory, Cleantech Group. The Energy Lab 2.0 at the Karlsruhe Institute of Technology (KIT) in Germany has also won the 2021 Green Good Design® award from the European Centre for Architecture, Art Design and Urban Studies and the Chicago Athenaeum.

The organizations that stand out in the study are those that specify, among other things, the role of a dedicated team in supporting the park with companies. Through the joint development of a vision with players, networking and development facilitation, these entities are helping these innovation hubs to flourish. The success of this support is illustrated by the number of sales, the employment rate, and the reduction in greenhouse gas emissions by companies established in the park.

Compared to its peers, VTE is well positioned in terms of skilled human resources, the presence of specific players and ecosysÅ tem support.
It also has the potential to stand out in terms of corporate involvement, by virtue of the importance it attaches to corporate commitment in its strategic planning.

APPENDIX C
New paradigms

The energy transition involves profound changes, and we can present the main paradigms that underpin our strategic planning.

The VTE is geolocated, and is based above all on the combined strengths of local players from the municipal, research, innovation, industry and entrepreneurial sectors. In this way, this geolocalized VTE is more closely aligned with the strengths of the regional technological and industrial ecosystem, and with emerÅ ging, high-potential, growing and strategically important technological and inÅ dustrial sectors, in order to pursue the objectives of the economic vision of a low-carbon Quebec.

What is a paradigm shift?

It is the profound modification of a vision or model that determines a way of thinking, and therefore of acting. A paradigm shift can apply to an individual, a company, an industry or an entire society.

Paradigm 1 - Anchorage and partnership

Living environment

Current situation

The Mauricie and Centre-Du-Québec regions offer a range of attractions that enrich their living environment. These include stimulating jobs, diversity and accessibility of activities, entertainment and green spaces, as well as the presence of public infrastructures and local businesses.

However, both regions face major challenges, including labor scarcity, access to housing, limited unrestricted land availability, access to public transit and an overburdened healthcare system. In the context of VTE implementation, these challenges are amplified, coupled with specific issues related to sustainable land use planning and accesÅ sibility to services, as well as the need for manpower and specialized training in the battery, hydrogen and transporÅ tation electrification sectors.

What inspires us

Live, Work and Play" is a concept central to innovation zones, and translates into the development of an urban living environment that reconciles living, working and playing, while fostering innovation, creativity and economic development. The living environment must take into account the main aspects of an individual's or community's quality of life, social, cultural and physical experience. The notion of a living environment within an innovation zone therefore implies encouraging and facilitaÅ ting, through third places, synergistic exchanges, collaboration, attraction, retention and developÅ ment of talent at the very heart of the innovation zone.

Thus, a living environment within a district or innovation zone incorporates a number of key compoÅ nents that will enable its residents to flourish. The movement and desire for growth of this critical mass of value-creating entrepreneurs justifies the mobilization of the community in the active dynamics of a regional innovation ecosystem, leading to the creation of the zone. Project governance and management are designed to be participatory and representative of the wealth of players in the regional innovation ecosystem.

Driven by major economic and demographic trends, cities around the world are witnessing the emergence of innovation districts. According to the **Global Institute on Innovation Districts**, the ability of these districts to organize themselves effectively may be the decisive factor explain why one district fails while another succeeds and evolves powerfully.

Things to remember

To realize the full potential of the innovation zone, we need to make the living environment more inclusive, user-friendly, attractive, prosperous and sustainable, by creating a collaborative network of public and private sectors undertaking collective projects. Within this collaborative network, the major challenge is to build the mutual trust necessary for all players in the community to be willing to commit to pooling resources, knowledge and skills. We therefore need to establish a culture of partnership and collaboration between the various local and regional VTE bodies. It's essential to create fertile ground for sharing information and best practices, so that the living environment can develop synergistically. The integration of an information and consultation approach with the population to foster social acceptability is also important.

Collaboration between stakeholders requires a clear, well-defined communication and collaboration plan, so that all players understand their role in the ecosystem. The multi-dimensional challenge of creating welcoming and inclusive innovation spaces requires a thoughtful and strategic approach to VTE. Understanding stakeholders' issues and challenges, and what they need to deploy, is key to supporting them effectively. The VTE also needs to gain broad support and develop new sources of funding in order to be able to experiment and grow. To achieve this, the creation of a living environment committee is a wise move, as it plays a catalytic role between the various players. Innovation will be at the heart of our reflections and actions.

Sustainable development

Current situation

The government is asking the public and businesses to get involved in the fight against global warming by taking the path of energy transition and sustainable development. The Government Sustainable Development Strategy (GSDS) 2023-2028 commits the province and the State to taking action in the three spheres of sustainable development (environmental, social and green economy) and to setting an example in the transition to a greener, more prosperous and more responsible Quebec. One of the orientations of this strategy is to make Quebec a center of innovation and excellence in the green and responsible economy. This means supporting the transition to sustainable business models by increasing the proportion of companies that base their business strategy on sustainable development, and by accelerating the development of the circular economy, green industries and clean technologies.

Energy transition and sustainable development are two closely linked concepts whose issues are intertwined. Energy transition meets current human needs while preserving the environment for future generations. It is directly in line with the objective of sustainable development.

What inspires us

In Quebec, the Université de Sherbrooke (UdeS) achieved first place worldwide in sustainable development (SD) in the international STARS ranking (overall score of 92.73 points), enabling it to maintain its platinum-level certification. In addition, over 90% of UdeS departments offer courses that address sustainable development issues. Over the next few years, all programs will have integrated learning related to the United Nations (UN) Sustainable Development Goals (SDGs).

Many innovation districts around the world now include sustainability and circularity in their business models. Notably, the 400-acre Cambridge Science Park North project in the UK aspires to become entirely carbon-negative. This means it will remove more carbon from the environment than it will produce, with half of the property dedicated to green space and increased biodiversity. As well as emphasizing public transport and cycling, the complex will feature on-site water recycling and integrated district solar power generation and storage.

The Tonsley Innovation District is home to Australia's first green hydrogen electrolysis and distribution facility. The district includes a university, several research institutes and industrial partners, and represents a collaborative testbed for decarbonization technologies for buildings. It focuses on renewable energy generation and storage, material circularity, future mobility solutions and Industry 4.0 manufacturing technologies to demonstrate a sustainable mixed-use environment. Tonsley currently meets 80% of its total electricity needs from renewables at the district site, and is aiming for 100%.

Models like these help to inspire us as we roll out VTE. In addition, involving local communities in sustainable development initiatives and building capacity through education and training will help maximize the impact of VTE beyond geographical boundaries.

Things to remember

In Quebec, research is actively underway to transform our cities into sustainable places to live. However, we need to step up the pace and invest more in promising sustainable development initiatives if we are to become a national and international benchmark. Finding methods, tools and processes to develop resources and use them in a sustainable and circular way is a priority issue for the VTE.

The VTE's development takes into account the economic, environmental, social and cultural needs of its geographical area. The Sustainable, Circular and Territorial Development Committee is mandated to make recommendations to the Board of Directors and to current and future partners in the area, and to guide their actions. The VTE has the potential to be at the forefront of the fight against climate change. Its deployment depends on our ability to collaborate, innovate, finance and implement the solutions needed for sustainable transition.

Paradigm 2 - Innovation

Current situation

According to work by the University of Ottawa ("Does National Culture Affect Corporate Innovation? International Evidence"), Canada has an innovation-friendly culture. Since a culture is durable and slow to evolve, this is a major competitive advantage for the country. What's more, Canada boasts top-quality post-secondary institutions, including McGill University, which consistently ranks highly in the world's most prestigious rankings. Last but not least, Canada and Quebec in particular stand out for their strong entrepreneurial culture. A solid foundation therefore exists that should position Canada as a world leader in innovation.

Yet, despite a decade of innovation policy, Canada consistently finds itself at the bottom of world rankings (Bloomberg, Global Innovation Ranking, etc.). In plain English, this means that compared with leaders such as Korea, Switzerland, the United States and Scandinavia, the Canadian economy relies far too little on innovation for growth. In particular, Canada has great difficulty in valorizing its innovation, a fact particularly apparent in the Global Innovation Index. Within Canada, Ontario remains at the top of the class, and Quebec has even fallen back in recent years.

One explanation lies in the lack of investment, both public - with a relatively small portion of gross domestic product (GDP) devoted to innovation - and private. Indeed, on average. For the Organisation for Economic Co-operation and Development (OECD), private investment accounts for 71% of R&D spending, compared with just 52% in Canada. What's more, according to Bloomberg, Canada has a significant deficit in post-secondary training. Talent is critical to building a knowledge-based economy.

What inspires us

To build a knowledge-based economy for the energy transition and reposition Quebec and Canada as leaders in innovation, the paradigm has to change.

While there are no simple solutions, examples of successful innovation ecosystems do exist, and their success factors are analyzed. The experts' recommendations, including the Bouchard report, focus on the following points:

- Increase innovation spending;
- Build sustainable research infrastructures;
- Create a favorable business climate;
- Link research to innovation;
- Support the talent continuum.

Things to remember

VTE's Strategic Plan 2024-2026 and business model position VTE as Quebec's response to these challenges and expert recommendations. By proposing a new paradigm for managing innovation, from idea to market, including all public and private stakeholders, this model lays the foundations for our ability to compete on the world stage.

Paradigm 3 - International

Current situation

The internationalization of value chains in recent decades showed its limits during the COVID-19 crisis. The disruption of world trade in goods revealed the consequences of the de-industrialization of the West, which had been underway for many years. At the same time, awareness of the need to build a new industry to decarbonize our economies launched humanity into a planetary race. States are competing to preserve raw materials, know-how and talent, identify the next innovations and secure investments.

Against this backdrop, China has taken a decade's lead in manufacturing, particularly in the battery field, while controlling a large share of the production of critical and strategic minerals (CSMs).

On February 5, 2024, BloombergNEF published an article indicating that **Canada is leading the race in electric vehicle battery manufacturing**. Canada has now overtaken China as the best place in the world to build a lithium-ion battery supply chain, according to the published ranking.

In Quebec, awareness was raised early and strong action is being taken to capitalize on the province's unique potential. The challenge remains immense, however, and we're lagging significantly behind.

What inspires us

When it comes to energy transition, Scandinavian countries consistently stand out. These countries share common characteristics with Quebec: high levels of political commitment and stable regulatory frameworks, investment in research and development, increased deployment of renewable energies and carbon pricing systems encouraging investment in low-carbon solutions.

Among the major economies, France, Germany and the UK have embarked on a series of ambitious strategies, major R&D investments and strategic partnerships to secure their supplies. The United States, for its part, has equipped itself with a vital legislative and financial arsenal whose influence extends far beyond its borders. In particular, **the Inflation Reduction Act** affects the strategies of all players, both governmental and private. They have also invested in 31 innovation hubs, each with an initial budget of US$70 million, seven of which are focused on decarbonization.

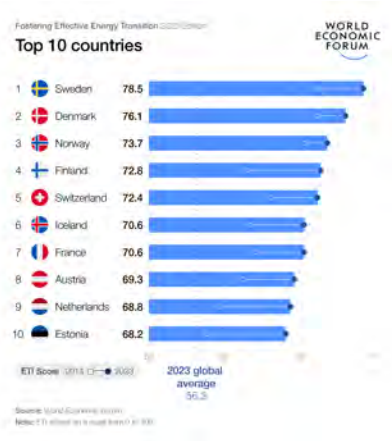
In April 2024, during his visit to Quebec, **French Prime Minister Gabriel Attal delivered an inspiring speech at the National Assembly**. We heard him say, “Today, with Canada, we are accelerating our mutual commitment to protecting biodiversity, decarbonizing our economies and moving away from fossil fuels”. The result is the potential for a France-Quebec energy transition corridor.

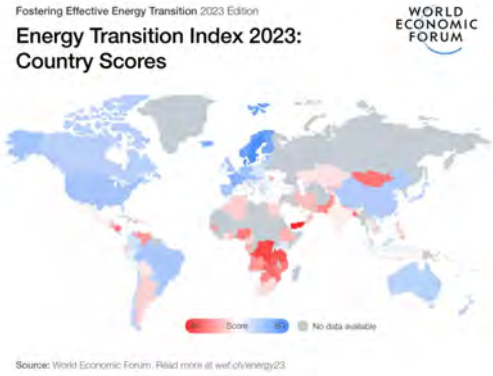
Things to remember

In a context of global competition, it's essential to draw inspiration from and compare ourselves with the best, especially the Scandinavian countries with which we share many similarities, to make up for lost time. The VTE aims to use its lessons to turn Quebec's fundamental strengths into a world-class showcase.

Making the VTE such a showcase will make it even more attractive on the world stage, particularly in terms of talent and investment, but also to raise the international profile of Quebec innovations.

These achievements will require investment and strong collaboration between all stakeholders to keep pace with the tempo imposed by the great powers.





Paradigm 4 - Value creation

Innovation

Current situation

The U.S. Chamber of Commerce has released its 2024 rankings for the International Intellectual Property Index, which assesses the strength and effectiveness of intellectual property frameworks around the world. The results show that **Canada ranks 16th out of 55 countries.**

In Quebec, we note a lack of promotion and visibility for innovations. Local entrepreneurs and innovators do not always benefit from an adequate platform to publicize their ideas and successes. This results in a lack of recognition and opportunities for them.

Historically, Quebec universities have favored basic research and scientific publication to the detriment of applied research and commercialization. Moreover, in Quebec, sources of investment exist for collaborative research. However, the contribution from business and industry is clearly insufficient. There is a clear gap between academia and industry.

In this context, Quebec does not excel adequately in commercializing its innovations, not to mention the lack of funding to support development and commercialization. It is therefore important to mention that Quebec lags behind Can

Axelys

Created in April 2021 by the Quebec government, Axelys is a non-profit organization. Its mission is to contribute to Quebec's economic and social prosperity by accelerating the development and transfer of high-potential innovations stemming from public research. The organization offers consulting and support services in development, intellectual property management and innovation transfer to all of Quebec's public research establishments, in all regions. In particular, it participates in the creation of scientific companies based on public research, with an emphasis on innovation with social impact.

What inspires us

The Swedish model inspires by the proximity between principals, particularly large manufacturers, support structures and public sector support to accelerate the deployment of new ideas to market. This model is often considered a benchmark for innovation due to several key factors:

- Culture of innovation and creativity: A high-quality education system, a society open to original ideas and a tradition of entrepreneurship support this culture.
- Collaboration between the public and private sectors: Partnerships between key players encourage the sharing of knowledge, resources and skills, which in turn stimulates innovation.
- Investment in research and development (R&D): The country devotes a significant share of its GDP to R&D, which encourages the creation of new technologies and products.
- Support for start-ups and innovative companies: Measures such as tax incentives, mentoring programs and easier access to financing encourage entrepreneurship and innovation.
- Focus on sustainability and social innovation: Many Swedish companies integrate environmental and social considerations into their activities and products, making them attractive on the global market.
- Innovation-friendly infrastructure: Sweden boasts high-quality infrastructure, such as technology parks, innovation clusters and incubator networks, which foster the emergence and growth of innovative companies.

Innovation (more)

What inspires us

The University of Waterloo (UdW) in Ontario is an inspiring Canadian model. It is often recognized for its success in innovation, entrepreneurship and academic excellence. Here are some of the key elements that contribute to its success:

- Co-op program: UdW is renowned for its co-op program, which offers students the opportunity to work in their field while they study. This program gives them the opportunity to combine academic theory with practical experience, making them highly attractive to employers after graduation.
- Emphasis on research and innovation: UdW invests heavily in research and innovation, enabling it to remain at the forefront of many academic disciplines. It is particularly renowned for its research in engineering, computer science, environmental sciences and other cutting-edge fields.
- Collaboration with industry: UdW maintains close partnerships with industry, enabling students and professors to work on real projects and tackle real business challenges. This also supports technology transfer and entrepreneurship.
- Entrepreneurial spirit and support for innovation: UdW actively encourages entrepreneurship through start-up support programs, business incubators and resources for students and graduates wishing to launch their own businesses.
- Collaborative, community-based atmosphere: UdW fosters a culture of mutual support and collaboration between students, faculty and staff. This creates an environment conducive to learning and innovation.

Things to remember

On the strength of our inspirations, the VTE clearly needs to work hard to put in place a foundation that will enhance the value of innovations. Quebec has a strong position to take in the geopolitical context and energy transition, with major assets at its disposal (talent, renewable energy, critical and strategic minerals, etc.).

Collaboration with Axelys is crucial. It enables us to help Quebec universities strengthen their resources and skills in the field of commercialization, adjust their internal policies to encourage greater involvement in these activities, and consolidate their collaborations with industry and the private sector. Axelys is well positioned to build trust with universities, while VTE is an important player with industry. It is therefore appropriate that Axelys and VTE should join forces to bring these two worlds closer together, in order to seize opportunities for added value. Intellectual property issues need to be addressed if this rapprochement is to be a win-win situation.

Moreover, Quebec is struggling to protect and promote its innovations internationally. It is important to put in place effective policies and strategies to preserve intellectual property and promote Quebec innovations on the world stage. This would enable local companies to stand out from the crowd and make the most of their innovations.

Companies - Québec inc.

Current situation

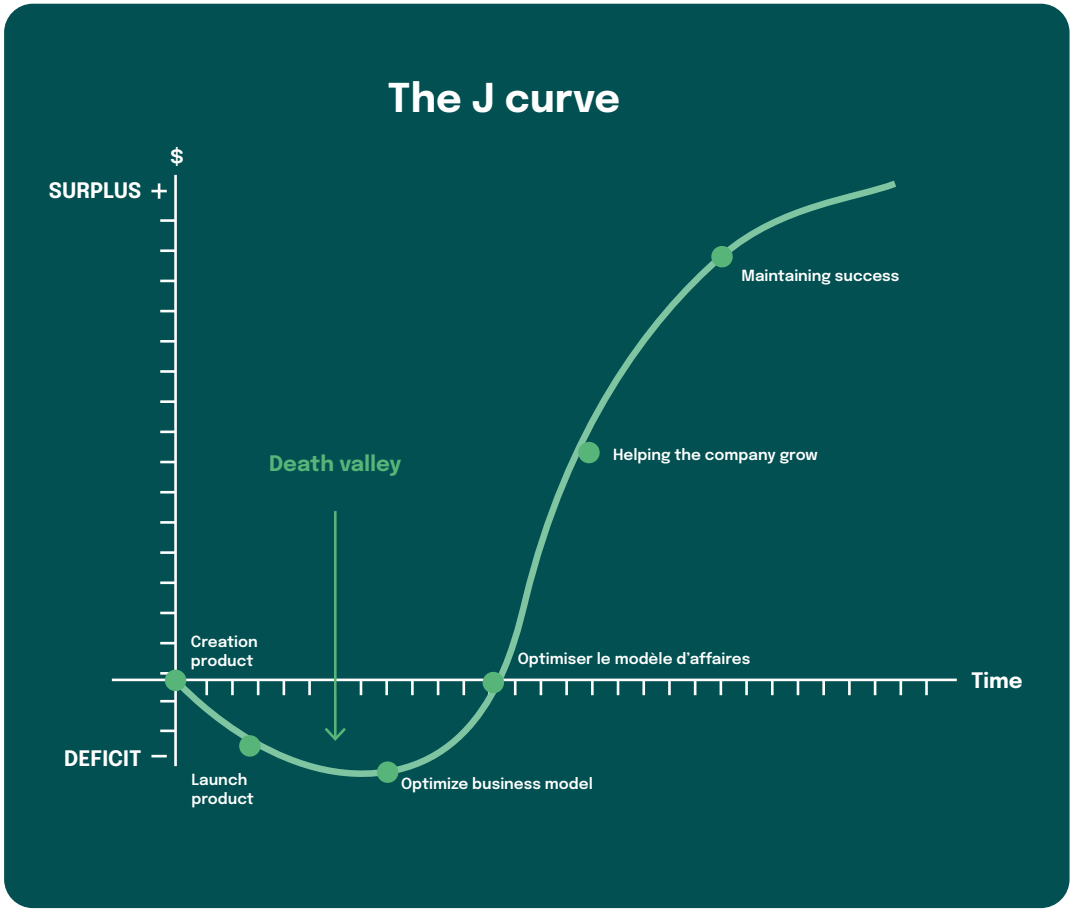
The “valley of death” curve represents the period during which a start-up has begun to operate, but has not yet generated revenue from its customers. The longer a company remains on the start-up curve, the more likely it is to fail, due to a higher burn rate. Indeed, the faster a new business consumes its cash reserves without generating a profit, the faster the runway ends.

Many start-ups in Quebec fall by the wayside as they make their way through the Valley of Death. While this market may not be as dynamic today as it once was due to global economic headwinds, it's still a great time to learn about these early hurdles to help build a better start-up in the future.

Climate technology start-ups face the valley of death four times: during formation, the product development phase, the market validation phase and when establishing a reputation for reliability.

Many innovative companies and start-ups in Quebec have difficulty obtaining financing to grow their ideas and turn them into marketable products or services. Quebec benefits from a number of private and institutional financing players, but it's not easy to navigate through them to obtain funding.

Although support structures do exist, Quebec generates far fewer start-ups than its demographic weight in Canada.



Companies (more)

What inspires us

Quebec has a number of players to support young companies in their development. Some of them are of particular interest to us.
Here are three of them:

Centech

It supports high-tech companies and projects with strong growth potential, from conceptualization to commercialization, thanks to a bold, collaborative and passionate ecosystem.

Objectives:

- Stimulate entrepreneurial ambitions and technology transfer in Quebec;
- Support entrepreneurial technological innovation projects with significant potential;
- Participate actively in Québec's economic development by providing concrete solutions to societal challenges.

2degrés

Its mission is to support, structure and drive the development of clean technologies with a view to reducing the carbon footprint of our economic activities and creating sustainable wealth.

Espace inc.

Its mission is to identify and accelerate emerging entrepreneurial talent, and to support them over the long term in building innovative companies with sustainable growth through a network of entrepreneurial peers.

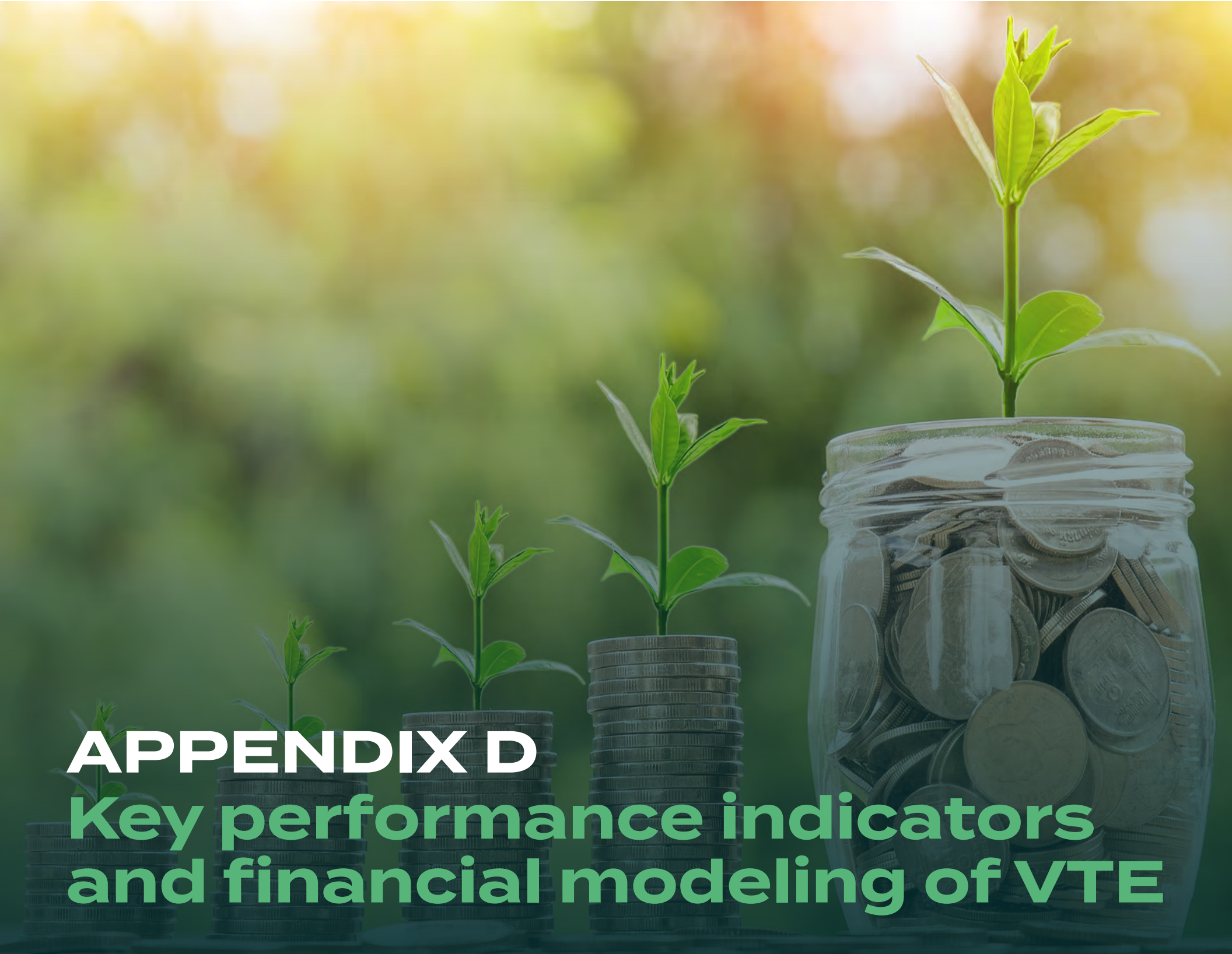
Espace-inc.'s approach is based on three key elements:

- Lead coach, a seasoned entrepreneur who truly understands his clients' reality;
- Action-oriented coaching that takes the challenges of your business in hand while developing ;
- A program tailored to the challenges and opportunities of individual entrepreneurs.

Things to remember

Developing a company's full potential is a major challenge. Despite all the resources at their disposal, companies too often fail to seize growth opportunities due to a lack of support. In this context, they need better coaching to help them realize their ambitions in areas such as GHG, innovation, manpower, efficient operations, marketing and financing, in order to generate collective wealth.

Building on the strength of its innovation ecosystem, from which promising players are emerging, the VTE wishes to create a structure to promote the energy transition. The aim is to unite Quebec's financing and support forces in a common front to gain development velocity to propel our potential and generate collective wealth.



APPENDIX D
Key performance indicators and financial modeling of VTE

Table MEIE - Objectives to be measured and performance performance indicators

Objectives and brief description	Indicators selected for VTE
1 Development and scientific research Promote networking between academic research and private enterprise, by increasing : - Academic research (fundamental and applied) on the IZ's development axes - Private funding for research (TRL 1-3) - Inventions in the IZ	→ Number of research projects carried out at the IZ in line with its development priorities (TRL 1-3) → Proportion of funding from private companies for research projects (TRL 1-3) carried out within the IZ and directly linked to one of the development axes
2 Collaborative innovations Stimulate interaction between research and industry players to accelerate : - Collaboration between stakeholders with a view to innovation - The valorization of collaborative innovations - Economic spin-offs from innovation efforts in the IZ	→ Value of spending on collaborative innovation projects (TRL 4 to 9) financed by private companies involved in the IZ perimeter → Value of spending on collaborative innovation projects (TRL 7 to 9) financed by private companies involved in the IZ perimeter
3 Private investments Encouraging private investment, both local and foreign, and facilitating access to capital for businesses : - Private investment in research and innovation (TRL 1-9) - CAPEX investments - R&D investments by foreign companies	→ Value of R&D spending by private companies → Value of R&D spending by foreign companies → Proportion of cumulative value of public and private investment in infrastructure and real estate projects within the IZ

Objectives and brief description	Indicators selected for VTE
4 Entrepreneurship and financing Act as a driver of value creation, in particular by accelerating or facilitating : - Financing start-ups in the IZ - The creation of new innovative companies - Use of IP as a vector for innovation	→ Value of private equity capital raised by startups and scaleups in the IZ → Sales of Quebec-based companies supported by a IZ organization
5 Workforce and talent attraction Gather and attract cutting-edge expertise and creative workers to enrich the ecosystem, by increasing : - The number of researchers in the IZ - The number of highly skilled, highly creative jobs	→ Number of researchers working in the IZs development areas
6 Economic diversity Bringing together companies of different sizes, to be resilient, efficient and sustainable, i.e. : - New companies, SMEs - Large industrial or manufacturing companies with high potential for investment in innovation	→ Number of knowledge-based SMEs with more than 20 employees → Number of large industrial or manufacturing companies involved in the IZ → Proportion of entrepreneurs in the number of high-skill jobs in the IZ
9 Durability Propose activities to mobilize the various stakeholders in order to generate the expected spin-offs from the creation of new ideas to commercialization that will promote : - Visitor traffic - Citizen participation - Corporate involvement in cultural and leisure activities in the IZ	→ Ratio of visitors to IZ employees → Cumulative value of initiatives aimed at improving quality of life and participation within the IZ → Financial involvement of IZ companies in cultural leisure activities (excluding R&D)

Graphism and website : cinetic.ca

zivte.com

vte Vallée de la Transition Énergétique

10092024-EN