



THE FUTURE IS TAKING **SHAPE**

THE QUÉBEC ALUMINIUM DEVELOPMENT
STRATEGY **2015-2025**





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The Government of Québec would like to thank
the organizations that provided the photos for this document.

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A MESSAGE FROM THE PREMIER

Aluminium is a metal of the future. Québec has the privilege of being able to count on a diversified and dynamic industry, low-carbon-foot-print aluminium production, and a skilled labour force to increase the reach of all parts of the value chain.

We owe Québec's reputation for excellence to the companies in the aluminium industry which, over the years, have acquired exceptional expertise and an outstanding capacity for innovation. Companies in the Saguenay–Lac-Saint-Jean region in particular are major industry players. This region's Aluminium Valley® brand is recognized not only in North America but across the globe as well.

With the **Québec Aluminium Development Strategy**, Québec is banking on the mobilization and cooperation of the entire sector to unleash the full potential of an industry that constitutes a true driving force for our economy.

This strategy is creating invaluable business opportunities for Quebecers, as well as for foreign investors wishing to join us in this unifying project.

And so I invite industry stakeholders, sector partners and Québec as a whole to make this promising strategy their own and to take an active part in its implementation.

A handwritten signature in black ink, consisting of a stylized 'P' and 'C'.

Philippe Couillard
Premier of Québec



A MESSAGE FROM THE MINISTER OF THE ECONOMY, INNOVATION AND EXPORTS

Accounting for close to 10% of our exports and some 30,000 high-quality jobs, Québec's aluminium industry is a major lever for economic expansion. I am, therefore, proud to present the **Québec Aluminium Development Strategy**, which will give this world-class industry a positive boost and stimulate growth.

Over the past twenty years, aluminium consumption worldwide has grown at a steady pace. Since this consumption is expected to increase even further, Québec must maximize its assets to strengthen its position of excellence and continue to take advantage of the promising outlook for this industry.

This is what we are proposing with this strategy! We will create a business environment in Québec that is conducive to the processing and use of aluminium. We will collaborate with the primary aluminium industry, which intends to make major investments, especially in high value-added products. We will also support the initiatives of equipment manufacturers and specialized suppliers, who are targeting export markets, among other things.

Thanks to our combined actions, Québec now has the necessary tools to make the know-how and innovative character of our industry even more recognized around the world.

We thus have every reason to mobilize to ensure the success of this strategy, which will generate considerable economic spin-offs for our industry and for Quebecers.

A handwritten signature in black ink, which appears to read 'Jacques Daoust'.

Jacques Daoust
Minister of the Economy,
Innovation and Exports

HIGHLIGHTS

With the **Québec Aluminium Development Strategy**, Québec's aluminium industry is giving itself a clear, common vision of growth that will allow it to:

- Reach ambitious objectives, including that of **doubling aluminium processing** in Québec over the next ten years.
- Facilitate **access to metal** for Québec aluminium processors.
- Support private investment projects in order to **enhance** the aluminium processing **value chain**.
- Use **government procurement** as a lever for the use of aluminium, and as a technology showcase.
- Broaden the sector's **international reach** and promote Québec's low carbon footprint aluminium.
- Encourage **aluminium smelter growth** projects in a **partnership with the industry** perspective.
- Promote **dialogue** amongst industry stakeholders in Québec **through AluQuébec**.

The government will be injecting \$32.5 million into implementing the Strategy over the first three years (2015-2018).



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INTRODUCTION

Aluminium is a major strategic sector for Québec and a true metal of the future. The Government of Québec has thus decided to support this industry. With the launch of the **Québec Aluminium Development Strategy**, Québec is giving itself the means to stimulate growth and increase the reach and influence of all parts of the aluminium value chain.

A WORLD-CLASS INDUSTRY

For several years, primary aluminium producers have been major stakeholders in Québec's industrial fabric. Aluminium has systematically been among Québec's two main exports, thereby contributing favourably to the trade balance. The sector also comprises a large number of SMEs and industry partners including equipment manufacturers and specialized suppliers, processors, innovators and industry organizations.

Over time, Québec aluminium industry stakeholders have developed leading-edge expertise and made their mark on the international scene. The know-how of our researchers and companies can now be found in aluminium smelters across the globe and in the products of large manufacturers. The Strategy will enable the industry to seize opportunities for growth by leveraging Québec's position as a global leader.

A VAST CONSULTATIVE APPROACH

This strategy is the result of a consultative approach that began in the summer of 2014. Industry stakeholders were supported in their reflection process by a consultation document containing the industry's main development issues. The two highlights of this process were the individual consultations held in the fall of 2014 and the *Rendez-vous de l'aluminium*, an open discussion forum with the industry on February 2, 2015 in Saguenay.

DEVELOPMENT OPPORTUNITIES TO BE SEIZED

The **Québec Aluminium Development Strategy** proposes concrete actions in response to targeted business opportunities and concerns brought up by industry stakeholders. The Québec Government will act mainly on three fronts, which also constitute the Strategy's three main focus areas.

- Firstly, in partnership with industry, the government will set up a favourable environment for aluminium processing in Québec, an industrial activity of the future that is the Strategy's key priority.
- Secondly, the government intends to bolster the entire industry in Québec through measures that target export, innovation, workforce, and the sector's reach and influence.
- Lastly, the various programs and initiatives implemented by the government and its partners will ensure business competitiveness in the industry.

With the **Québec Aluminium Development Strategy**, the future is taking shape.



1 THE FUTURE IS TAKING SHAPE

1.1 VISION FOR THE FUTURE

The **Québec Aluminium Development Strategy's** aim is to stimulate the industry's growth, reach and influence in Québec and abroad. The Strategy is based on principles that will guide the actions of the government and its partners in this priority sector.

VISION 2025 :

That Québec be globally recognized for the expertise and innovative character of its value chain, including processors, equipment manufacturers and specialized suppliers, as well as for its leadership role in low carbon footprint primary aluminium production.

1.2 RAISONS D'ÊTRE

- To accelerate Québec's economic growth, and to maintain and create high-quality jobs, especially outside the major metropolitan centres.
- To support a strategic industry by dealing with the issues associated with developing its full potential.
- To seize multiple business opportunities appearing in domestic and foreign markets.
- To leverage the assets of this world-class value chain and to unify stakeholders behind a clear, concerted vision of the industry's future.

1.3 FOUNDATIONS

- The Québec Government will play the role of partner to the industry mainly by helping to create a stable business environment that is conducive to the growth of businesses.
- Priority support will be given to innovative, growth-generating projects that allow Québec to stand out on the world stage and that create jobs and wealth.
- Aluminium's properties make this metal the material of choice in a growing number of applications. Its use will be promoted using the "right material, at the right place and for the right use" approach.
- The government will encourage initiatives that emerge from discussions at AluQuébec, the industry's main forum, while simultaneously drawing from the expertise of its members, especially the regional authorities.

I.4 SCOPE

- The Strategy applies to all parts of Québec's aluminium value chain (see Box 1):
 - Aluminium processors
 - Equipment manufacturers and specialized suppliers
 - Primary aluminium producers
 - Innovators
 - Industry organizations
- The concrete responsibility for implementing the measures will be assumed by the various industry stakeholders.
- The **Québec Aluminium Development Strategy** will be deployed over the next ten years, i.e. from 2015 to 2025.
- Every year, in conjunction with industry, the Government of Québec will carry out a rigorous follow-up of the objectives and the means used to reach them. The government will set up a follow-up committee consisting of key aluminium industry partners, including AluQuébec.

I.5 OBJECTIVES

Given Québec's job and wealth creation objectives and the fact that Québec considers the aluminium sector to be a major contributor to these objectives, the **Québec Aluminium Development Strategy** must contain ambitious goals. By 2025, it is hoped that:

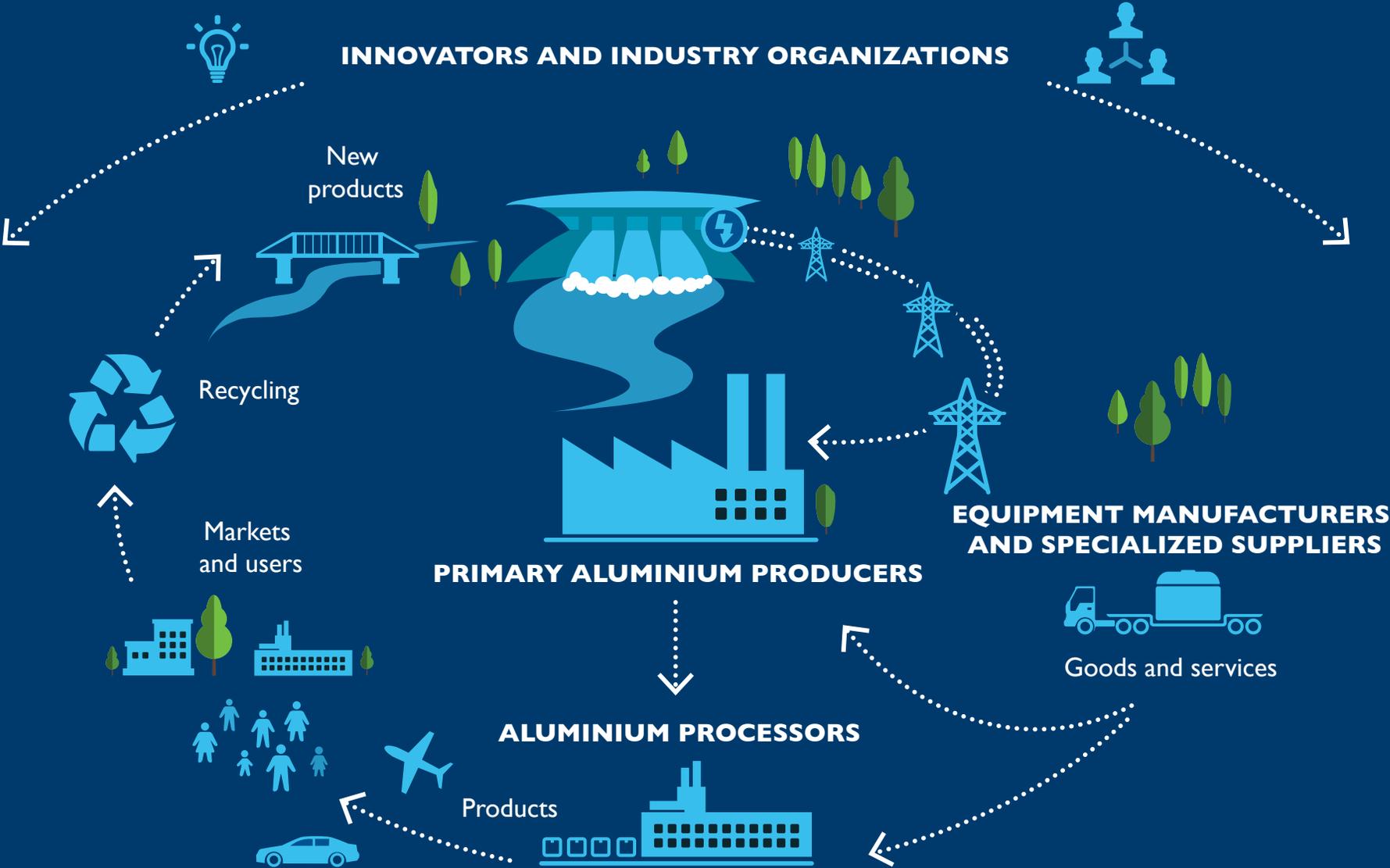
- Aluminium processing will have doubled in Québec, bringing the value of shipments to more than \$10 billion per year.
- Equipment manufacturers and specialized suppliers in Québec will have made major inroads into export markets and will be fully integrated into global production chains.
- Québec will have consolidated its position among the world's largest primary aluminium producers.

With the **Québec Aluminium Development Strategy**, the entire aluminium industry is pulling together to reach the above objectives and to make the targeted industry expansion a reality.



Photo: The roofs of AZUR metro cars are made of aluminium to make them lighter, because the lighter the car, the less electricity it needs to run. With a useful life span of 40 years, this will prove beneficial for the operator, the Société de Transport de Montréal (STM).

BOX I: Diagram of the Québec Aluminium Industry



2 QUÉBEC, A LEADERSHIP ROLE



2.1 THE CURRENT MARKET ENVIRONMENT

Aluminium products are at the heart of large international trade flows. Québec can count on favourable North American and global demand, but is experiencing increased competition in primary aluminium production and processing.

The emergence of new global players and the economic and financial crisis of the past few years have considerably changed the supply and demand balance in this sector.

SUSTAINED ALUMINIUM CONSUMPTION GROWTH

Over the past twenty years, global aluminium consumption grew by close to 5% per year in volume terms. This compares favourably with the growth rate in consumption of other major metals.

Global demand is currently being dominated by processed products used in transportation and construction materials, which represents close to half of primary aluminium consumption.

EMERGENCE OF CHINA AND THE MIDDLE EAST

With this increased consumption, world aluminium production almost doubled in the last ten years, but all production regions did not benefit from this growth equally:

- Most of this growth was in China, which was responsible for 52% of world aluminium production in 2014, compared with 22.1% in 2004.
- Aside from China, this growth was almost exclusively in the Middle East, which saw its production go from practically zero to close to 10% of the global market between 2004 and 2014.

BUSINESS OPPORTUNITIES IN NORTH AMERICA

The outlook for aluminium demand is also promising:

- Global aluminium consumption should continue to see sustained growth, particularly due to transportation and infrastructure investments by emerging countries.
- In North America, where increased environmental performance requirements, fluctuating oil prices and the electrification of transportation should lead to lighter-weight vehicles, the lightness and durability of aluminium seems to make it a particularly well-suited material to meet this challenge (see Box 2).

To maintain their position as leaders and take advantage of projected growth, aluminium businesses will have to increase productivity and focus on innovation. Québec can already count on a well-established industry to implement these conditions for success.

BOX 2: Aluminium and lighter vehicles

New rules governing vehicle fuel consumption in North America are generating an attractive growth outlook for aluminium.

The U.S. Corporate Average Fuel Economy (CAFE) regulations establish the average fuel consumption numbers that a given manufacturer's fleet of vehicles may not exceed. These standards provide for a maximum average consumption of 6.63 L/100 km starting in 2016, a decrease of more than 30% compared with 2008. In Canada, the *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* are harmonizing with the U.S. standards. These requirements represent a colossal challenge for manufacturers, who will have to innovate to comply with them.

The biggest-selling vehicle in North America, the Ford F-150, provides a perfect illustration of the new prospects opening up for aluminium in the automobile sector. The first mass-production vehicle to sport an aluminium chassis, the 2015 edition of the F-150, weighs up to 317 kilograms less than its predecessor, which translates into less fuel consumption.

American manufacturer Tesla is also proposing a line of electric vehicles that is more autonomous thanks to the innovative use of aluminium, the light material of choice. Several players in Québec's aluminium industry are already among the suppliers and strategic partners of these automobile manufacturers.



Photo: Ford F-150, Ford Motor Company



Photo: Tesla Model S, EEKO Car Rental

2.2 QUÉBEC'S ALUMINIUM INDUSTRY

Québec's aluminium industry's history dates back more than a century. The industry was established in Québec in 1901 with the production of primary aluminium in Shawinigan. Over the years, the industry expanded, put down roots in several parts of Québec, particularly in the Saguenay–Lac-Saint-Jean region, and spread to the entire value chain.

THE STRATEGIC IMPORTANCE OF ALUMINIUM

The aluminium industry is a strategically important industry for Québec's economy. In fact, this industry:

- Supports close to 30 000 well-paid jobs, 10 000 of which are in the primary industry.
- Makes Québec one of the main global producers of primary aluminium.
- Generates considerable exports (\$6.9 billion in 2014, making it the second largest export sector in Québec, after aerospace).
- Includes a number of dynamic and innovative companies working in a multitude of sectors, both upstream and downstream of primary production.
- Generates major economic spin-offs for Québec, especially outside the major metropolitan centres.

RECOGNIZED EXPERTISE

Québec has all the assets it needs to succeed, as it is one of the few places in the world that can count on an aluminium sector value chain with as much potential.

In fact, Québec can build an aluminium smelter from A to Z using mostly domestic goods and services (engineering, construction, production technologies, specialized equipment and services).

Québec aluminium processors are also making a good impression in the competitive global market. Their success is measured mainly in their capacity to innovate and to offer high-value-added specialized products. The major automobile and aerospace manufacturers are partners of Québec's aluminium processors.

Québec's expertise in the field of aluminium is recognized internationally and is frequently solicited for the creation of alloys and new technologies, for product design, for the maintenance and operation of facilities, and for modernization and growth projects, among other things.

Québec-based researchers and research centres allow aluminium sector stakeholders to innovate, while industry bodies ensure cohesion.

2.2.1 ALUMINIUM PROCESSORS

Generally speaking, the aluminium that comes from primary production is put through a processing phase that generates several types of semi-finished and finished products that can be used in multiple industries.

In addition to the processing done by the industry's SMEs, the primary industry also plays a large role in the processing phase by carrying out primary processing of the aluminium in its own facilities.

The mapping of aluminium processing companies prepared for AluQuébec illustrates the dynamism of this industry which is active in several markets and throughout Québec.

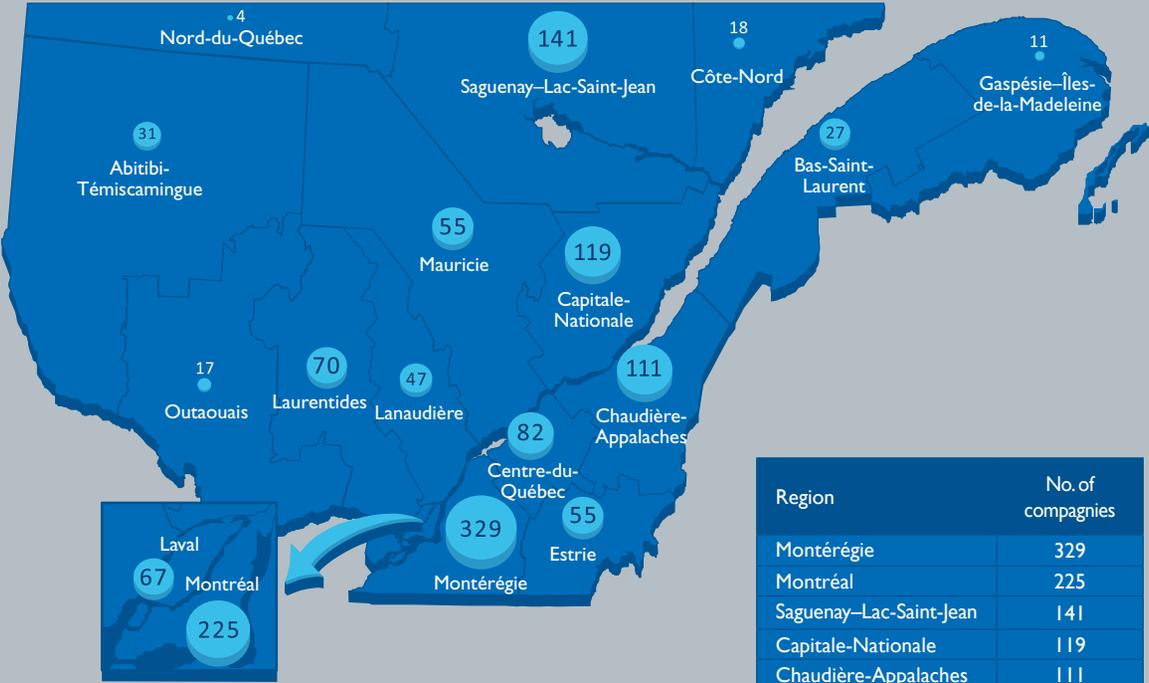
PROCESSING ACROSS QUÉBEC

In 2014, there were a little over 1 400 aluminium processing companies in Québec, representing approximately 15 000 jobs. These companies divided their efforts equally between primary processing and subsequent processing, and the value of the products they shipped totalled more than \$5 billion.

Aluminium processors are located in several regions of Québec. Most of them are in the Greater Montréal area, close to a concentration of large purchasers (see Box 3).

Some Québec processors saw major growth in the past few years, taking advantage of increased interest in processed aluminium products. Moreover, a significant portion of these products is exported.

BOX 3: Breakdown of processing companies by region



Region	No. of companies
Montérégie	329
Montréal	225
Saguenay–Lac-Saint-Jean	141
Capitale-Nationale	119
Chaudière-Appalaches	111
Centre-du-Québec	82
Laurentides	70
Laval	67
Estrie	55
Mauricie	55
Lanaudière	47
Abitibi-Témiscamingue	31
Bas-Saint-Laurent	27
Côte-Nord	18
Outaouais	17
Gaspésie–Îles-de-la-Madeleine	11
Nord-du-Québec	4
Total	1 409

ALUMINIUM PROCESSING MARKETS

Aluminium processors add value to aluminium via a metallurgical operation or an assembly activity. In Québec, processors are active in six large markets:

- Construction
- Equipment and machinery
- Transportation equipment
- Consumer goods
- Energy
- Packaging

These markets are subdivided into several sub-markets where the companies are making a name for themselves with a large number of manufactured products made, either in whole or in part, from aluminium.

Québec has attractive advantages when it comes to aluminium processing, the main ones being:

- A nucleus of innovative companies active in growth markets
- Support from primary aluminium producers, various bodies and research centres
- A skilled labour force and specialized training programs
- A nearby supply of primary aluminium

BOX 4: Examples of Québec equipment manufacturers

Mecfor, a company out of Saguenay, provides specialized mobile and stationary equipment for the aluminium market, such as the MTC40, a hot aluminium crucible hauler and transfiller.



Also from Saguenay, **STAS** develops, manufactures and markets new equipment for aluminium operations, such as the Hot Aluminium Crucible Cleaner (HACC).



2.2.2 EQUIPMENT MANUFACTURERS AND SPECIALIZED SUPPLIERS

The presence of Québec's aluminium smelters has stimulated development of an equipment and services industry that supplies primary aluminium producers and processors.

A STRONG REGIONAL LINK

AluQuébec's mapping activities identified 76 equipment manufacturers in Québec in 2014. Among these, 53 are active in primary aluminium production and 43 in aluminium processing.

Also, the majority of equipment manufacturers are located in the Saguenay–Lac-Saint-Jean region. This is due mainly to the collaboration of Rio Tinto Alcan (RTA) with its network of suppliers close to its smelters and to the development of technological knowledge and advances. Equipment manufacturers connected with the development of RTA's AP60 technology are among the companies that are well-positioned for future markets.

Beyond the equipment manufacturers described above, other specialized suppliers are also important industry stakeholders. For example, Québec engineering consulting firms have unique expertise in the design and construction of new aluminium smelters.

EXPORTING AS AN OBJECTIVE

The expertise of Québec equipment manufacturers and specialized suppliers is recognized the world over. These companies supply goods and services to aluminium smelters and processors (see Box 4).

In addition to working on projects in Québec, these companies are aiming to increase their yield by focusing on new business models and on aluminium production and processing investment projects elsewhere in the world. A good number of these companies are already exporting their products and services outside Québec and are participating in the construction of aluminium smelters mainly in the Persian Gulf region.

The Québec Government supports companies in this industry in their exporting operations. For example, the *Export-Équipementier* project is an initiative launched with a view to strengthening the presence of Québec equipment manufacturers in a target foreign market (see Box 5).

BOX 5: The *Export-Équipementier* Project

Through this project, six equipment manufacturers from Saguenay–Lac-Saint-Jean are carrying out marketing activities to increase their visibility in aluminium smelters in the Persian Gulf region. The project is coordinated by the Saguenay–Lac-Saint-Jean regional niche area of excellence in aluminium transformation and supported by the Aluminium Valley Society (see Page 21).

These activities have made it easier to identify business opportunities in the Middle East that could be explored by regional equipment manufacturers, as well as to define key actions to improve the chances for success. An active and permanent presence in this region is needed to establish a relationship of trust with potential clients. Grouped under a consortium, these companies can benefit from the support of an on-site agent responsible for representing them in the Middle East, for promoting their specialized services, for identifying and qualifying business opportunities, and for assisting them with their efforts in this region.

This pooling of marketing efforts should lead to increased exports of products and services from Québec that support aluminium smelter operations in this part of the world.

2.2.3 PRIMARY ALUMINIUM PRODUCERS

Primary aluminium production has found fertile ground in Québec due in particular to the availability of low-cost electricity. In 2014, production totalled close to 2.7 million metric tons, making Québec the world's fourth largest producer.

Three primary aluminium production companies, i.e., Rio Tinto Alcan (RTA), Alcoa Canada and Aluminerie Alouette, are currently operating nine aluminium smelters across Québec (see Box 6).

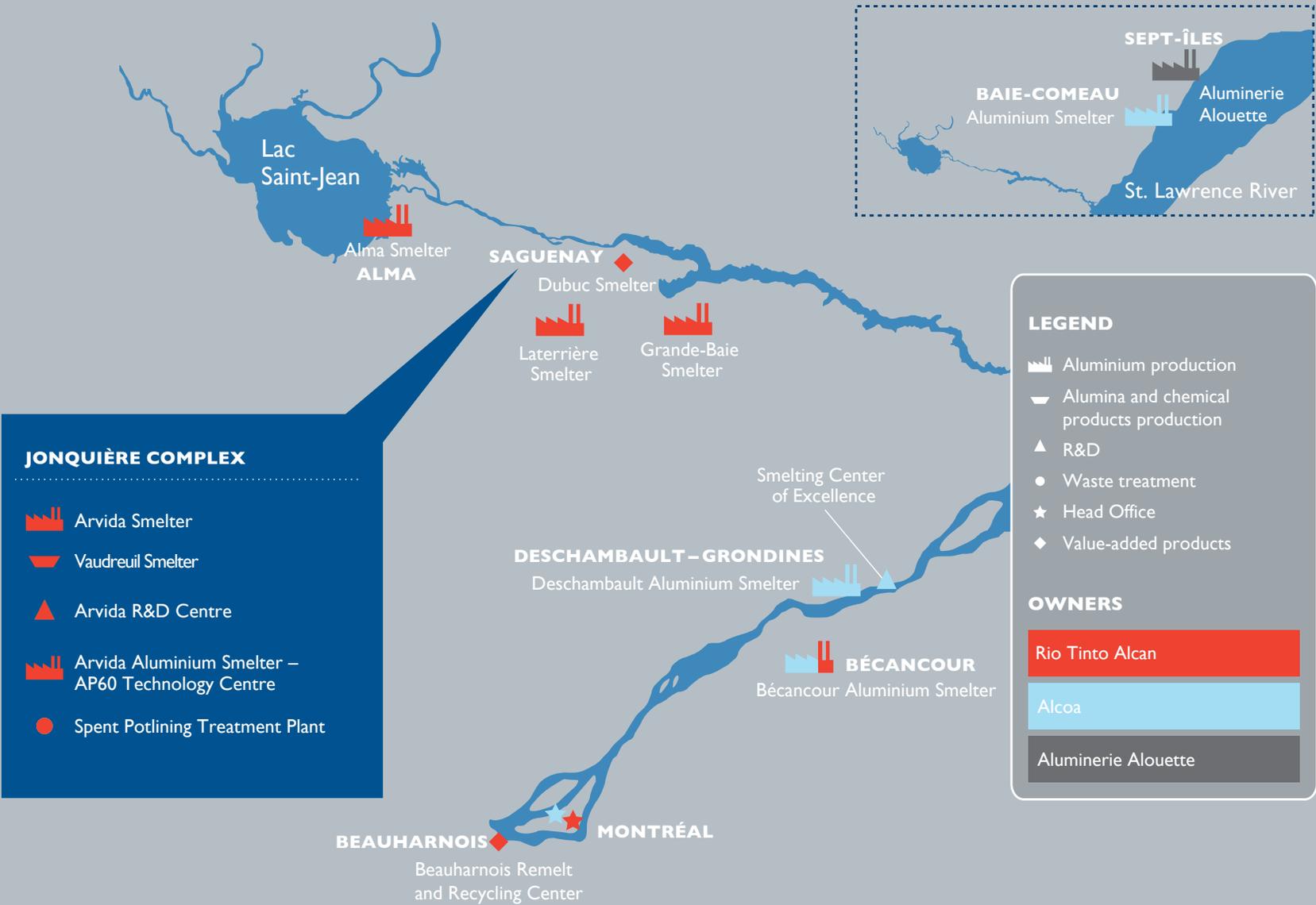
MAJOR ECONOMIC SPIN-OFFS

The direct economic contributions of the primary aluminium industry are substantial for Québec:

- The three primary aluminium production companies employ close to 10 000 people in Québec, almost 6 500 of which work directly in aluminium smelters.
- Raw aluminium (\$5.7 billion in 2014) has been one of Québec's main exports for a number of years.
- This sector has also been at the centre of a number of the largest private investment projects in the past twenty years.
- These three Québec companies are not only active in primary production, but also upstream (e.g.: production of alumina or electricity) or downstream (e.g.: aluminium processing or waste processing). They also carry out R&D and technical assistance activities.

From 2005 to 2014, close to \$50 billion was invested in Québec's economy by primary aluminium industry players.

BOX 6:
 Map of main primary aluminium producer sites in Québec



ADVANTAGES FOR GROWTH

Québec has a number of major advantages when it comes to primary aluminium production:

- Among the most energy-efficient facilities in the world
- Being the showcase for one of the most competitive technologies in the world: the AP60 project
- A good skilled labour pool
- Renowned goods and services suppliers in our own backyard
- Aluminium produced with clean, renewable energy: hydroelectricity
- Flexible facilities containing high-performance equipment capable of producing alloys and shapes that meet the main needs of aluminium processors.
- Major R&D efforts

2.2.4 INNOVATORS

A group of important organizations active on the innovation front provides key support to Québec aluminium producers and processors. These stakeholders include public and private research centres, an intermediation body and a forum for dialogue.

CUTTING-EDGE RESEARCH CENTRES

The public and private research centres working in the field of aluminium include experts in aluminium production and processing procedures (see Box 7). The cutting-edge equipment made available to them supports the innovation projects of the companies in the industry and trains the next generation of innovators.

The portfolio of research projects in the aluminium sector is both large and quite diversified.

This research has led to a number of innovations, products and processes that are presently being marketed or used.

A MOBILIZING BODY

The *Centre québécois de recherche et de développement de l'aluminium* (CQRDA) acts as an intermediation body for the aluminium industry. A true innovation broker, the CQRDA helps companies carry out innovation initiatives by stimulating new projects and mobilizing researchers as well as corporate and public-laboratory managers. The CQRDA supports technology innovation projects using available government funding programs and other direct sources.

A PLACE FOR DIALOGUE

AluQuébec is where the aluminium industry's innovation stakeholders can consult each other, propose solutions to mutual concerns, and come up with a cohesive vision of the innovation environment. The main mandate of its "R&D / Innovation" working group is to promote industry dialogue.

Québec has considerable strength in the area of innovation:

- Great expertise in applied and pre-competitive research
- A culture of cooperation between the public sector and the private sector
- An industrial sector that includes all parts of the value chain

Over the next few years, these advantages will enable Québec companies in the industry to improve their competitive capacity and to prosper.

BOX 7: The industry's main research centres

TYPE	NAME OF ESTABLISHMENT AND DESCRIPTION
University and college research centres	<ul style="list-style-type: none"> • <i>Centre de recherche sur l'aluminium</i> – REGAL, supported by the <i>Fonds de recherche du Québec – Nature et technologies</i> (FRQNT), includes 35 researchers and 125 students located in the following institutions: <ul style="list-style-type: none"> • Université Laval • Université de Sherbrooke • Université du Québec à Chicoutimi (and the <i>Centre d'entrepreneuriat et d'essaimage</i>) • McGill University • École de technologie supérieure • École Polytechnique de Montréal • Cégep de Trois-Rivières (<i>Centre de métallurgie du Québec</i>)
Government research centres	<ul style="list-style-type: none"> • The <i>Centre de recherche industrielle du Québec</i> (CRIQ) has extensive expertise and specialized equipment that is made available to companies in the field of aluminium. • The National Research Council Canada Aluminium Technology Centre (NRC ATC) has research facilities dedicated to aluminium processing procedures and to product characterization.
Private research centres	<ul style="list-style-type: none"> • Rio Tinto Alcan's Arvida Research and Development Centre (ARDC) is the largest private aluminium research centre in Canada. • Alcoa's Smelting Center of Excellence in Deschambault is an applied research centre and an industrial demonstration site.
Joint research centres	<ul style="list-style-type: none"> • Alcoa Innovation, a partnership between Alcoa, CRIQ and CQRDA, is working on designing and prototyping new aluminium products.

2.2.5 INDUSTRY ORGANIZATIONS

The aluminium industry's organizations must ensure stakeholder cohesion. Following is a list of the main actors:

- **AluQuébec** is Québec's aluminium business cluster. Its mission is to promote synergy and a linkage between the major end-user markets and the players in the aluminium industrial chain by focusing on training, innovation and technology development to increase aluminium processing and use. This umbrella organization, which launched its operations in the fall of 2013, is designated as the main place of dialogue for the industry. Consisting of three major strategic focal points, AluQuébec carries out growth-generating activities that respond to the issues of the industry through six working groups (see Box 8).
- The **Aluminium Valley Society (AVS)** helps to stimulate aluminium processing activities and to implement, start up and grow businesses in the Saguenay–Lac-Saint-Jean region. The Society works closely with a network of partners to drive the development of the industry in the Aluminium Valley®. The AVS is also the host of the regional niche area of excellence in aluminium transformation, which aims to reach a critical mass of profitable, successful companies in order to position the region as one of the world's aluminium processing hubs.
- The **Trans-AI Network** is an association of companies working in aluminium processing in Québec. Its mission is to develop the technical and technological expertise of the organizations, in collaboration with the main players in the industry, in order to build synergy within the sector.
- The mission of the **Aluminium Association of Canada (AAC)** is to represent primary aluminium producers in their dealings with citizens, public authorities, current and potential aluminium users, as well as other players on the economic scene. It also actively helps to support and develop initiatives for the industry as a whole.
- The main objective of the **Comité sectoriel de main-d'œuvre de la métallurgie du Québec (CSMO-M)** and the **Comité sectoriel de la main-d'œuvre dans la fabrication métallique industrielle (PERFORM)** is to ensure that the labour force training being provided is in alignment with industry needs.
- With the support of these bodies, the **Québec Aluminium Development Strategy** will stimulate the growth and competitiveness of all parts of the value chain, because aluminium is a metal of the future.

BOX 8: AluQuébec's structure

AluQuébec's coordination and dialogue role in Québec's aluminium industry revolves around three strategic focal points: R&D / innovation, processing and equipment manufacturers, and marketing.

More specifically, the AluQuébec activities prioritized by its members are carried out by six working groups directed by two co-chairs and made up of a critical mass of members who address pre-defined objectives and mandates. These working groups rely on the expertise of existing authorities, entrusting them with mandates that fall under their specializations, in compliance with the concept of "delegation" that has been guiding AluQuébec's actions since its creation.

WORKING GROUP		MANDATE
Branding		To promote the image of the AluQuébec brand in order to market the industry's value chain and promote Québec expertise on the world stage. To show the economic weight of the aluminium industry.
Business opportunities	Infrastructure and bridges	To develop a Québec service offering that allows for the use of more components made of aluminium in the construction and repair of bridges and footbridges.
	Land-based transportation	To optimize the use of aluminium and highlight how it complements other materials used to manufacture land-based passenger vehicles.
Innovation / R&D		To foster collaborative practices to effectively meet client needs. To create groups of stakeholders with similar interests and to disseminate tomorrow's technologies.
Procurement		To map aluminium processing and user companies in Québec, in particular to detect deficiencies in the value chain. To monitor economic indicators.
Training		To encourage educational institutions, architects, designers and engineers to learn more about the advantages of aluminium, and to enhance the knowledge of professionals about the specific properties of this metal.
Financing		To publicize the sources of funding available and to connect with the Montréal Finance cluster.



3

ALUMINIUM: METAL OF THE FUTURE INDUSTRY GROWTH AND COMPETITIVENESS



Photos:
Alcoa Design Contest winning projects
Topo Design/Sesame doors
AL, the essential shopping bag trolley by
Brio Innovation
Outdoor eating area for urban
balconies by Primeau Designers
KOMBI, modular urban scooter by
Topo Designs

The **Québec Aluminium Development Strategy** proposes measures (📍) that promote the growth and competitiveness of all components in Québec's aluminium value chain. These measures revolve around the Strategy's three main focus tracts, towards which \$32.5 million will be allocated during the first three years of its implementation.

3.1 TRACT 1 : SET UP A FAVOURABLE ENVIRONMENT FOR ALUMINIUM PROCESSING IN QUÉBEC

Today, aluminium is found in numerous finished and semi-finished products, and the metal's future prospects are promising. Québec companies that process this metal are being called to carve out an even greater place for themselves in Québec and in foreign markets.

Thanks to a favourable business environment and policies that encourage the use of this metal, aluminium processors who are on the look-out for growth opportunities will receive from Québec all the support they need to prosper.

BOX 9: Examples of Québec products made from aluminium



Saguenay-based **Cycles Devinci** designs, manufactures and markets a wide range of high-end bicycles, such as the Wilson aluminium frame bike.

Unisson Structures, a company out of Lanaudière, is a leader in designing, manufacturing and setting up aluminium stages and structures. This company created one of the biggest free-standing stages in North America for the *Festival d'été de Québec*.



A VARIETY OF GOODS AND PRODUCTS

Automobiles, airplanes, recreational vehicles, mass transit vehicles, medical products, bridges, footbridges, doors and windows, cladding and architectural products, public infrastructures, engineering structures and other consumer goods: aluminium can be the best material for a wide variety of applications. Québec can already count on innovative aluminium processors who are making their mark with distinctive products that stand out for their functional and esthetic qualities (see Box 9).

THE ADVANTAGES OF ALUMINIUM

A great number of companies in Québec process aluminium, thus adding value to the metal. They demonstrate their know-how by developing products that respect specific performance requirements and standards. By leveraging the aluminium's properties and advantages these companies can offer a wide array of products (see Box 10).

By significantly contributing to an investment-conducive climate that will benefit aluminium processors, the **Québec Aluminium Development Strategy** will encourage development of the full potential of this metal of the future.

BOX 10: Aluminium's properties and advantages

LIGHTNESS

Aluminium's density is approximately one-third of the density of steel.

ELECTRICAL CONDUCTIVITY

Pure aluminium and certain alloys, in form of bars or tubes, are widely used as conductors.

CORROSION RESISTANT

The fine layer of oxide that naturally forms on the surface of aluminium protects it from corrosion.

INERTIA

The chemical stability of aluminium makes it a metal that is suitable for food preservation.

STRENGTH

Combined with other materials, aluminium becomes very strong.

RECYCLABLE

Aluminium can be recycled indefinitely without losing any of its properties.





Photo: Rio Tinto Alcan

3.1.1 FACILITATING ACCESS TO METAL

To help facilitate their growth and to leverage business opportunities in North American and global markets, Québec's aluminium processors will get improved access to locally produced metal. The Strategy will further support SME processors, improving their procurement and sales practices while optimizing use of locally produced aluminium.

A VARIED PRODUCT OFFERING

Manufacturers of finished and semi-finished aluminium goods draw on a variety of producers and intermediaries to obtain the metal, which is sold in a variety of quantities, forms and alloys.

Québec's aluminium smelters leverage their expertise and wide variety of products to help meet the needs of both "basic" and high-value added aluminium processors. Several of the aluminium products supplied for use in subsequent processing stages are made from specific alloys, in order to respond to a given market (see opposite photo).

THE PROXIMITY FACTOR

The metal's selling price is one of the main parameters that govern the relationship between the sellers and processors. It is generally set by the sum of three main variables: the price of the metal on the exchange, the regional market premium and the product premium (see Box 11).

In addition to needing the right type of aluminium at the right time, Québec processors usually expect to benefit from supply costs that reflect their geographical proximity with local producers. For producers, delivery of the metal to sites located near the factories generally reduces transport costs.

The agreement in principle concluded between the Government of Québec and Rio Tinto Alcan (RTA) to prolong activities at the *Centre d'électrolyse Ouest d'Arvida* in Saguenay until the end of 2020, includes this type of arrangement. Indeed, RTA has committed to make available an additional 35 000 tons of metal per year for processing activities in Québec, at a price that takes into account transport savings.

The government intends to continue discussions with aluminium smelters, notably with respect to expansion projects, so that processors can benefit further from this proximity factor.

A PIVOTAL ROLE FOR ALBECOUR

Albecour, a wholly owned subsidiary of *Investissement Québec*, in turn owns a 6.67% share of *Aluminerie Alouette*, (through its equity capital) and manages an equal proportion of its aluminium production. Albecour also manages additional tonnage through commercial agreements with its partners.

 Pursuant to the **Québec Aluminium Development Strategy**, Albecour is called to play an even greater role in supporting aluminium processing activities in Québec. As a result, the government intends to request *Investissement Québec*'s support so that Albecour:

- Gives priority to the needs of Québec SMEs while maintaining a market-based trade policy and taking into account the geographic proximity of local processors;
- Seeks to increase the quantity of metal that it manages, notably by making targeted purchases from producers at market prices and conditions.

Albecour will also study the possibility of expanding by taking additional shares in aluminium production assets, which would increase the quantity of metal it manages.

Québec SME aluminium processors, striving to get access to aluminium in smaller lots, could thus count on an experienced market actor with a commercial product offering that is adapted to their needs and environment. The presence of Albecour provides processors with greater choice while fostering a healthy competitive market environment.

THE IMPROVEMENT OF PROCUREMENT AND SALES PRACTICES

Ensuring adequate metals supply can be a complex undertaking for aluminium processors, particularly for SMEs and start-up businesses. Optimal supply presupposes a good knowledge of products available, flexible negotiation strategies and the occasional use of risk management tools.

AluQuébec will offer help to Québec processors in order to make them better equipped for buying the metal they need and for selling to their own clients. To do this, the organization will offer training in financial markets, risk management methods and other subjects.

In partnership with the Aluminium Association of Canada, AluQuébec will also organize a forum that deals with the supply of the metal, an annual networking and information sharing event that will bring together aluminium sellers and processors. In order to launch these works on a solid footing, AluQuébec, will identify the aluminium supply needs of Québec processors.

A sum of \$550,000 will be allocated to these activities for the 2015-2018 period.



BOX 11: The main components of the price of aluminium

Like most metals, aluminium is a commodity traded in global markets. The selling price generally comprises the sum of three main variables:

- 1) **The metal's trading price**, which reflects market expectations of aluminium traders at the London Metal Exchange (LME) the world's main metals exchange;
- 2) **The regional market premium**, a daily index that reflects the delivery cost, payment conditions, and for the past several years, the balance between supply and demand. The market premium applicable to metal traded in North America is the Midwest premium, which is determined daily by Platts, based on a transaction compilation methodology. The regional premium forms an intrinsic part of the aluminium price, and an essential element in the purchase of the metal;
- 3) **The product premium**, a premium that is negotiated between the seller and the buyer, that reflects the value added to basic aluminium (eg. the product's form and alloys).

In addition to these components, various contractual parameters are taken into account when fixing prices, notably geographic proximity, (transport savings), the nature of the transaction (spot price, annual contract, multiyear contract, etc...), volume, financial risk and other terms of delivery.

3.1.2 IMPROVING THE VALUE CHAIN

Attainment of Québec's aluminium processing objectives will also involve the addition of new capacity, and the broadening of manufacturing activities.

Financial support and priority help will be made available to investors from Québec and elsewhere to help them seize opportunities in promising markets.

A MARKET PORTRAIT

The mapping of the aluminium processing industry carried out for AluQuébec will identify sector businesses, key markets and sub-markets, promising economic opportunities and weaknesses in the supply chain.

AluQuébec will deepen analysis of the sector map in its Procurement working group, in order to guide canvassing efforts, interest potential investors and encourage development of new business relations to boost the value chain (see Box 12).



SUPPORT FOR INVESTMENT PROJECTS

Administered jointly by *Investissement Québec* and the *ministère de l'Économie, de l'Innovation et des Exportations* (MEIE), the ESSOR program supports major long-term development projects. This support can take the form of aid to finance the completion of studies or for capital expenditures.

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The **Québec Aluminium Development Strategy** allocates an additional \$14 million for the 2015-2018 period to the ESSOR program to support structuring projects that contribute to improving the aluminium value chain. This sum should generate approximately \$150 million in new investments during these three years.

In addition, the maximum aid that can be accorded by this program for the completion of feasibility studies for sector processors and equipment manufacturers will increase from \$100,000 to \$250,000.

A FOREIGN INVESTMENT PROSPECTING PLAN

Attracting foreign investment is a promising avenue to promote growth and fill certain weaknesses in the value chain.

During coming years foreign businesses that want to participate in the growth of North American markets (automotive and aerospace businesses for example), take advantage of business opportunities linked to the opening of new markets, (including the Comprehensive Economic and Trade Agreement linking Canada and Europe), and benefit from favourable implantation conditions, may consider investing in Québec.

Supported by AluQuébec, the Aluminium Valley Society (AVS) and the MEIE, *Investissement Québec* will develop a prospecting plan specifically tailored to aluminium processing. The organization will then leverage its international network as it prioritizes and plans the actions necessary for its deployment.

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The pooling of knowledge and efforts by industry actors in prospecting, welcoming and guiding foreign investors, will significantly increase the chances of attracting new projects to Québec.

THE DEVELOPMENT OF PROJECTS IN SAGUENAY-LAC-SAINT-JEAN

In order to pursue efforts linked to the development of aluminium processing in the Saguenay-Lac-Saint-Jean region, home of the regional niche area of excellence in aluminium processing, financing of the AVS will be increased by \$250,000 per year for the 2015-2018 period.

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The organization will thus continue its activities related to new projects and the development of business cases to interest businesses to invest in the region.

3.1.3 PROMOTE ALUMINIUM USE

The **Québec Aluminium Development Strategy** will support structuring activities of industry actors and leverage public sector markets to promote economic activity by Québec aluminium processors and highlight the large potential for the use of aluminium thanks to its remarkable properties.

THE ACCELERATION OF ALUQUÉBEC WORKING GROUPS

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Work done by AluQuébec (working groups presented in Box 8) is already bearing fruit. The government plans to leverage the momentum generated. More specifically, AluQuébec will strengthen:

- The Branding working group, which will emphasize the promotion of innovative industry actors and technologies and the spreading of information regarding the economic spinoffs of the entire value chain;
- The Business Opportunities working group (Infrastructure and bridges), which, by guiding public sector procurement personnel, should lead to the development of Québec solutions for these markets;
- The Innovation, Research and Development working group, which through collaboration with strategic partners, will pursue opportunities to substitute aluminium parts for existing parts in transportation equipment;
- The Training working group which will launch its activities by completing a study and portraits that will document current aluminium processing techniques.

AluQuébec's Marketing strategic focal point will also be strengthened in order to increase networking with large North American and European buyers. AluQuébec will also collaborate with STIQ so that aluminium occupies a choice position during Supplier/Large purchaser Days organized by the latter.

The sum allocated to AluQuébec for these activities has been increased by \$930,000 for the 2015-2018 period. Québec aluminium processing actors will thus benefit from increased support (see Box 13).

BOX 12: Recent investment projects

SOTREM-MALTECH

On November 24, 2014, the Québec Government announced that Shawinigan Aluminium, a subsidiary of *Groupe Sotrem-Maltech*, a Saguenay-based aluminium processing firm, would resume activities at the Rio Tinto Alcan pouring centre in Shawinigan. Continuation of activities at the centre will preserve 75 quality jobs in the region, while generating \$15 million in economic activity over a ten-year period.

The government confirmed that it would support the project by extending a \$3 million loan, through Investissement Québec. In addition, starting in 2017, Albecour will supply 12 000 tons of aluminium per year to *Groupe Sotrem-Maltech* at market rates and conditions.

AMT DIECASTING

AMT Diecasting, which is located in the Bas-Saint-Laurent region, specializes in the production of high vacuum die-cast aluminium parts. Thanks to a \$10 million loan extended through IQ, the company can proceed with a \$47.5 million investment project. The project, which will lead to the creation of 130 jobs, consists of increasing the business's production capacity (which is currently fully used) by replacing and adding moulding units and machining centres.

RIO TINTO ALCAN-DUBUC WORKS

A \$4.5 million investment will enable Rio Tinto Alcan to manufacture small foundry ingots at its Dubuc plant, which is located in the Saguenay-Lac-Saint-Jean region. This ingot production, which should start in the summer of 2015, will help better meet aluminium demand in the transportation industry. The new production unit will create 14 new jobs.

BOX 13:
 Examples of Québec aluminium processing businesses

BUSINESS	TYPE OF PROCESSING	DESCRIPTION
<p>Raufoss</p>	<p>Hot formed and cold formed aluminium products</p>	<p>Boisbriand-based Raufoss is specialized in the development and manufacturing of aluminium parts for the automotive sector; which it does using exclusive hot forming and cold forming processes. Its suspension control arms are used in some of the world's best known automobiles</p>
<p>Paber Aluminium</p>	<p>Gravity moulding</p>	<p>Paber Aluminium, which is located in Cap-Saint-Ignace, specializes in the production and optimization of high-value added aluminium parts. The business supplies a wide range of markets, including the medical, military, electricity, transport, electronics and industrial equipment sectors.</p>
<p>Verbom</p>	<p>Dies and sheet metal forming</p>	<p>Verbom has completed a large investment project for the design and manufacture of a custom hydraulic aluminium thermoforming press. The Valcourt-based business, primarily manufactures punches and aluminium dies used in mass production. A majority of its products, which target the automotive sector, are exported.</p>

THE LEVERAGE OF GOVERNMENT PROCUREMENT

Aluminium is a potential choice material for various government applications. Each year government organizations engage in the construction, acquisition, renovation or maintenance of a large quantity of goods and infrastructures. The resulting economic activity is significant for Québec; it generates considerable economic spinoffs for numerous goods and services suppliers.

The Québec Government intends to allow aluminium, on a comparable basis, to compete with other materials in government contracts. This orientation will apply in full conformity with the existing legislative and regulatory framework, notably the *Loi sur les contrats des organismes publics* (LCOP) as well as with agreements related to the opening of government procurement markets. It will be based on an approach that prioritizes the right material, at the right place and for the right use. Its application must also be in conformity with government procurement rules contained in international trade agreements for which Québec has declared itself to be bound.

Public sector organizations will also contribute to the promotion of aluminium by participating in research and demonstration projects.

TAKING INTO ACCOUNT THE TOTAL COST OF OWNERSHIP

The total cost of ownership (TCO), is an economic concept that includes taking into account all of the costs of a good over its useful life (for example costs related to construction, use, maintenance, dismantling and waste management). This enables the forecasting of the total costs which helps guide a buyer in his design and material choices.

The TCO forms part of the decisional parameters that are evaluated at the solution design stage prior to the launching of a tender by a government organization. In this regard, one of the principles enshrined in the LCOP enjoins government organizations to implement “ the use of effective and efficient contracting procedures, including careful, thorough evaluation of procurement requirements that reflects the Government’s sustainable development and environmental policies”.

To encourage government organizations to implement TCO more systematically (while respecting the aforementioned principles), the government will review the rules to specify that a public sector organization, when applicable and pertinent, must consider using TCO when making a careful and thorough evaluation of procurement requirements, prior to the tender procedure, in order to make an optimal acquisition.

The review of the rules and the way they are applied by these public bodies will enable aluminium to stand out, among other things, due to its useful life, maintenance costs and its economic value at the end of its useful life.

ALUMINIUM IN MINISTÈRE DES TRANSPORTS INFRASTRUCTURES

Aluminium is frequently used in *ministère des Transports* (MTQ) infrastructures, notably in lighting and signalling equipment. Its use is however less widespread in bridges and overpasses.

- In Québec, the aluminium bridge in Arvida, which is located in the municipality of Saguenay, is a civil engineering work built in 1949 and 1950. This arch bridge is composed of a top panel, 153.62 meters long which includes three spans.
- More recently, the MTQ launched a pilot project in Saint-Ambroise, in the Saguenay-Lac-Saint-Jean region where a short span bridge will be rebuilt using an aluminium bridge floor system. Installation of the aluminium components should take place during 2015.

The potential use of aluminium in road work, notably in bridges and overpasses, merits particular attention, due to the material's lightness, durability and resistance to corrosion. The latest advances in assembly techniques, reference codes, and professional training, suggest a promising future for the metal. The authors of one study have highlighted its potential use in North American bridges for certain components, such as running surface decks (see Box 14).

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As part of the **Québec Aluminium Development Strategy**, the MTQ will highlight aluminium's advantages for use in infrastructures:

- By contributing actively to AluQuébec's Business Opportunities (infrastructure and bridges) working group;
- By enlisting the help of one or more Québec researchers or research centres to monitor the performance of the floor system on the Saint-Ambroise bridge and that of any other TCO demonstration project;
- By developing, in collaboration with Québec researchers or research centres, aluminium concepts or components that target road usage applications, prioritizing bridge floor systems;
- By launching, by 2018, a second wave of bridge demonstration projects, which seek to validate advances made in the field of aluminium components;
- By promoting the use of aluminium in architectural components used in its structures.

During the three coming years, the MTQ will allocate \$4.6 million to build knowledge related to aluminium's technical and economic attributes in order to make optimum use of the metal, based on an approach that consists of favouring the right material, at the right place and for the right use.

DEMONSTRATION PROJECTS IN PUBLIC BUILDINGS

Promotion of the use of aluminium products within various constructions and government buildings will also be done, in collaboration with the *Société québécoise des infrastructures* (SQI) and the *Société d'habitation du Québec* (SHQ), which will facilitate the demonstration of new aluminium products in projects to which they are associated.

- The SQI's mission is to support government organizations in managing public infrastructure projects, as well as in developing, maintaining and managing a real estate portfolio which meets their needs.
- The SHQ is the main government organization responsible for housing on the Québec territory. It offers housing and renovation assistance, prioritizing low and modest income households.

During the three coming years, \$4 million will be allocated to support SQI and SHQ partners that wish to test new aluminium products in their construction and renovation projects.

In addition, AluQuébec will offer the accompaniment that these organizations need, so that they have access to an up-to-date portrait of existing aluminium products and technologies as well as access to the tools they need to evaluate this material choice.

With the **Québec Aluminium Development Strategy**, the government and its partners are putting in place concrete means to promote the use of aluminium in public procurement.

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BOX 14:

Market study on the use of aluminium in road bridges

ALUMINIUM IN BRIDGES, A MARKET TO BE SEIZED

A market study made public in November 2013 by the Aluminium Association of Canada (AAC) revealed that half of the 1,000 to 1,400 bridges, which will have to be repaired or replaced each year during coming decades in Eastern Canada and Northern United States, are less than 30 meters long. They thus constitute ideal projects in which to incorporate aluminium decking made in workshops.

According to a study supported by the *ministère de l'Économie, de l'Innovation et des Exportations* and the AAC, there are more than 56 000 road bridges in Canada and approximately 603 000 in the United States. The majority of these were built between 1950 and 1970. Many are, or will soon be, structurally deficient. An analysis of some 86 500 bridges belonging to provincial and municipal networks reveals that close to 20% already have weaknesses in this respect.

The study, which provides information regarding aluminium's potential in the maintenance and repair of bridges, suggests the possibility of a new market for Québec businesses that are specialized in the processing of aluminium, as well as for construction industry designers, engineers, and entrepreneurs. (The study is available on the AAC website).

3.2 TRACT 2: BOLSTER THE ENTIRE INDUSTRY IN QUÉBEC

In addition to creating a more favourable environment for Québec aluminium processors, the **Québec Aluminium Development Strategy**, proposes concrete actions for strengthening the industry as a whole.

Québec will thus have players that are more active and better-equipped for export markets, that will stand out due to their expertise and technological innovations and that can count on a labour pool apt to meet industry-related growth challenges.

These actions will contribute to boosting the Québec aluminium industry's image here and on the international stage.

3.2.1 FACILITATING EXPORTS

Québec equipment manufacturers and aluminium processors export into the American, European, Middle Eastern and Asian markets. The **Québec Aluminium Development Strategy** will help these industries further develop these large global markets.

To this end, Québec will increase industry promotion internationally, and will target marketing actions that will enable it to stand out on the global stage.

SUPPORT FROM EXPORT QUÉBEC

To facilitate exports, Export Québec will:

- Offer oversight and support services on the ground, while ensuring the distribution of strategic information regarding business opportunities in the main targeted regions;
- Support the completion of market studies, in order to identify trends and business opportunities;
- Organize and support the holding of training seminars on markets and other export related subjects;
- Support group promotional activities such as trade missions, participation in trade shows, and the welcoming of buyers;
- Hire attachés that are dedicated to the aluminium sector in targeted territories;
- Financially support the canvassing of businesses and of their international expansion/implantation plans.

FOLLOW-ON STEMMING FROM THE EXPORT-ÉQUIPEMENTIER PROJECT

Members of the *Export-Équipementier* project, who have joined together in a consortium, are now tackling the Persian Gulf market. The consortium will get continued financial support to ensure the success of their efforts during the coming years.

In addition, following a proven model, *Export Québec* will support the creation of other groupings of businesses that wish to unite their efforts in a targeted foreign market. The initiative will also accommodate Québec aluminium processors who wish to form groupings.

TRADE MISSIONS UNDER A COMMON BANNER

Industry branding activities will also be undertaken, notably for “must go” international events. The aluminium trade show in Düsseldorf Germany, in which a number of Québec players participate, constitutes no doubt, the most prestigious of these events (see Box 15).

Québec industry actors who attend will be united under a common banner and will promote their products and services in a common area, in order to boost the Québec aluminium industry’s brand and ensure a stand-out presence. Additional means will also be deployed in collaboration with mission participants, to generate more business meetings on site.

A total of \$1.5 million will be allocated to the aluminium sector by *Export-Québec* during the three coming years, to support its exporting initiatives.

3.2.2 INCREASE THE INDUSTRY'S CAPACITY FOR INNOVATION

Innovation enables businesses to develop their markets by introducing new products. It also provides the opportunity to increase productivity by improving their manufacturing and business processes.

Québec's university network, college technology transfer centres and government research centres constitute some of its core drivers of innovation. Their solid aluminium sector expertise will enable them to continue to contribute to business projects on an ongoing basis.

With the **Québec Aluminium Development Strategy**, innovation will occupy a central role in the industry, as it mobilizes numerous actors, promotes collaboration between private and public organizations and supports growth.

ALUMINIUM RELATED STUDIES IN UNIVERSITIES

The knowledge of materials is among the many required competencies in several professions, including engineering, architecture and industrial design. Like other materials, aluminium can be a choice option for certain applications, and should be included in university training. In addition, key professions are in strong demand in the primary industry, notably electrical and metallurgical engineers.

Universities and training organizations, such as professional bodies, possess the latitude necessary to adapt their content to better respond to needs expressed by the milieu.

12 During coming years, through its Training working group, AluQuébec will coordinate an initiative to outline the university training needed by the industry's businesses and partners. It will also incentivize universities to better respond to the industry's changing needs.

The Québec Government intends to promote the efforts of dynamic educational establishments that take a greater interest in this priority sector.

BOX 15: The Düsseldorf Aluminium trade fair

Aluminium (Düsseldorf) is the aluminium industry's most important event. This international trade show is a "must go" networking place for a range of clientele, including suppliers of primary materials, finished and semi-finished goods and surface treatments, as well as for producers of machines, facilities and aluminium processing equipment. Approximately 27 000 visitors and professionals from around the world converge there seeking business solutions and innovative technologies.



Photo: Düsseldorf Germany

A NEW RESEARCH PARTNERSHIP

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Le *Fonds de recherche du Québec – Nature et technologies* (FRQ-NT) is an indispensable organization in Québec's research milieu. It currently already supports some aluminium industry initiatives by offering financial support to the *Centre de recherche sur l'aluminium – REGAL*. In order to push the aluminium industry even further, the MEIE will invest \$2 million in a research program into aluminium technologies, which was developed in collaboration with FRQ-NT, and which will include:

- Support to the innovation network. Québec is already well equipped on this front with REGAL, which brings together researchers from six universities and one college;
- The completion, in 2016-2017, of an aluminium-themed partnership-oriented research program that will support several projects undertaken by Québec researchers;
- BMP-Innovation research bursaries for aluminium-themed projects in a practical environment. This program, which is offered jointly with the Natural Sciences and Engineering Research Council of Canada (NSERC) targets students registered in Masters or Doctoral programs.

Completion of collaborative industrial research projects will also facilitate the organization of aluminium-themed internships in the industrial milieu, for advanced degree students, in conjunction with the *Élévation Québec et Accélération Québec – FRQ-Mitacs* programs.

Aluminium industry actors will also contribute to bringing along the next generation of professionals, researchers and technologies.

SPREADING ALUMINIUM-RELATED EXPERTISE

To encourage and facilitate aluminium use in buildings, infrastructures or other applicable areas (such as transportation equipment), technical training and design support will be needed.

To meet this need, AluQuébec has a mandate to spread expertise on aluminium's qualities as a material. A sum of \$600,000 will be allocated for the 2015-2018 period to start up this initiative.

Inspired by activities undertaken by the *Centre d'expertise sur la construction commerciale en bois* (Cecobois), AluQuébec will inform professionals regarding the norms, construction codes and advantages of aluminium use, its potential and about design technologies and tools. To do this, the organization will draw on the know-how of industry actors, scientific literature and other studies.

AN INNOVATION BROKER

For certain projects, a research and development phase, related to technological innovation, may be needed to resolve challenges linked to new products and procedures. Collaborative projects enable businesses to share innovation-related costs and risks, bring together industrial and public sector researchers as well as facilitate knowledge transfer and student training in a practical environment.

In order to stimulate innovation projects and help industry businesses to complete them, the *Centre québécois de recherche et de développement de l'aluminium*, (CQRDA) will act as an intermediary organization, mobilizing leaders from business, research and public laboratories.

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As an innovation broker, CQRDA will help businesses gather financing from the various sources needed to complete projects. Research assistance programs administered by the MEIE, such as *Passeport Innovation*, will help support these initiatives.

A NEW CONSORTIUM

The MEIE programs will also support projects stemming from the new NRC-ATC ALTec research and technology partnership. This consortium, which brings together a variety of actors from the Québec industry, seeks to increase aluminium use in the automotive industry.

A sum of \$450,000 will be allocated to support such projects during the 2015-2018 period.

COOPERATION AMONG INNOVATION STAKEHOLDERS

AluQuébec constitutes a gathering point where aluminium industry innovation stakeholders can work together to develop solutions to common problems. To improve industry cooperation and bring forth a coherent vision related to the organization of innovation-related activities, AluQuébec will compile a portrait of innovation actors and expertise and will propose cooperation mechanisms that strengthen its R&D/Innovation strategic focal point.

3.2.3 ENSURING A POOL OF QUALIFIED WORKERS

New projects stemming from Québec smelters and industry SMEs will require human resources. The aluminium industry's growth rests in large part on the availability of sufficient qualified and semi-qualified workers, to meet the industry's needs.

The **Québec Aluminium Development Strategy** will foster a better balance between the industry's needs and the training that is available from the educational establishments. It will support efforts to attract, train and retain workers.

The aluminium trades are stimulating and offer attractive employment prospects; this information needs to be better known.

INITIAL TRAINING LINKED TO ALUMINIUM

The Québec aluminium industry already benefits from numerous educational establishments, which offer attestations and diplomas in a variety of programs that meet the employment requirements of industry businesses. These include the *attestation de spécialisation professionnelle* (ASP), *diplôme d'études professionnelles* (DEP), *attestation d'études professionnelles* (AEP), *diplôme d'études collégiales* (DEC) and *attestation d'études collégiales* (AEC).

These professional and technical studies programs are flexible, providing educational establishments the ability to modify the time they allot to teaching aluminium-processing related issues.

During the coming years, attracting workers, particularly to SMEs, will remain the major human resources challenge for the industry. This problem stems from the shortage of students that take professional and technical training. A promotion campaign related to the aluminium trades and the associated study programs will be implemented to correct this.

TRAINING AND HUMAN RESOURCES MANAGEMENT

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In collaboration with *Emploi-Québec*, the *Commission des partenaires du marché du travail* (CPMT) and a large network of organizations rooted in certain regions, the *ministère du Travail, de l'Emploi et de la Solidarité sociale* (MTESS) will propose targeted human resources management and personnel training support measures, to develop employees' skill sets.

Emploi-Québec, through its *Concertation pour l'emploi* measure, will also support businesses in the management of their human resources, to increase their productivity and competitiveness.

The MTESS will also continue to offer support measures and financial aid for worker training, through *Emploi-Québec* programs that target individuals and businesses, and subsidy programs from the CPMT's *Fonds de développement et de reconnaissances des compétences de la main-d'œuvre*.

A ROUNDTABLE FOR COOPERATING WITH PARTNERS

Cognisant of challenges related to the ageing of the active labour force, worker scarcity, economic revitalization and worker retraining, the MTESS promotes regional cooperation between job market stakeholders to optimize the balance between worker skills and employer needs.

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With this in mind, a roundtable will be set up to match skills training with industry needs. It will include stakeholders from the aluminium sector, various ministries, the CPMT and the *Comités sectoriels de main-d'œuvre* (CSMO).

This roundtable will have a mandate to evaluate the benefits resulting from the increase in investment projects stemming from the **Québec Aluminium Development Strategy** and to determine their repercussions on the labour pool. It will also propose improvements related both to entry level positions and for continuing education in businesses, and will be able to solicit and coordinate concrete projects.

The MTESS expects to allocate close to \$6 million over the 2015-2018 time horizon towards these measures.



Photo: Qualified worker at an aluminium processing plant

3.2.4 BROADENING THE INDUSTRY'S REACH

The aluminium industry, particularly the links in this world-class value chain, constitutes a major economic asset for Québec. Some of the world's best performing and most innovative smelters are located in Québec and its aluminium and processed aluminium products can be found in a wide variety of goods. Furthermore, Québec's aluminium industry businesses are recognized as strategic suppliers for major manufacturers who themselves are recognized as leaders in their respective sectors.

The **Québec Aluminium Development Strategy** will help to increase overall industry recognition and to highlight one of its major assets, its performance related to greenhouse gas emissions.

QUÉBEC ALUMINIUM'S CARBON ADVANTAGE

Québec's electricity supply comes mainly from hydro-electric stations, which account for few greenhouse gas emissions. This unique characteristic offers a considerable advantage to Québec aluminium.

In fact the average carbon footprint of a Québec aluminium ingot is about 50% less than that of the global average (excluding China). A carbon footprint is the sum of greenhouse gas emissions accumulated during a product's lifecycle (see Box 16). Inclusion of China, the world's largest producer, in the totals, would considerably increase Québec's carbon advantage, as Chinese smelters mostly get their electricity from coal-powered plants.

If we include just the stages that take place in Québec, (foundry, electrolysis and anode production), Québec aluminium smelters account for three times fewer greenhouse gas emissions than the global average per ton of aluminium produced.

An update regarding the carbon footprint will be completed to reflect recent changes in the primary industry. For Québec, this includes the closing of ageing installations, and putting in service of new, better-performing production capacity.

Québec's aluminium industry's carbon advantage makes it stand out. This material will be increasingly sought out by businesses that wish to offer consumer products that respect sustainability principles.

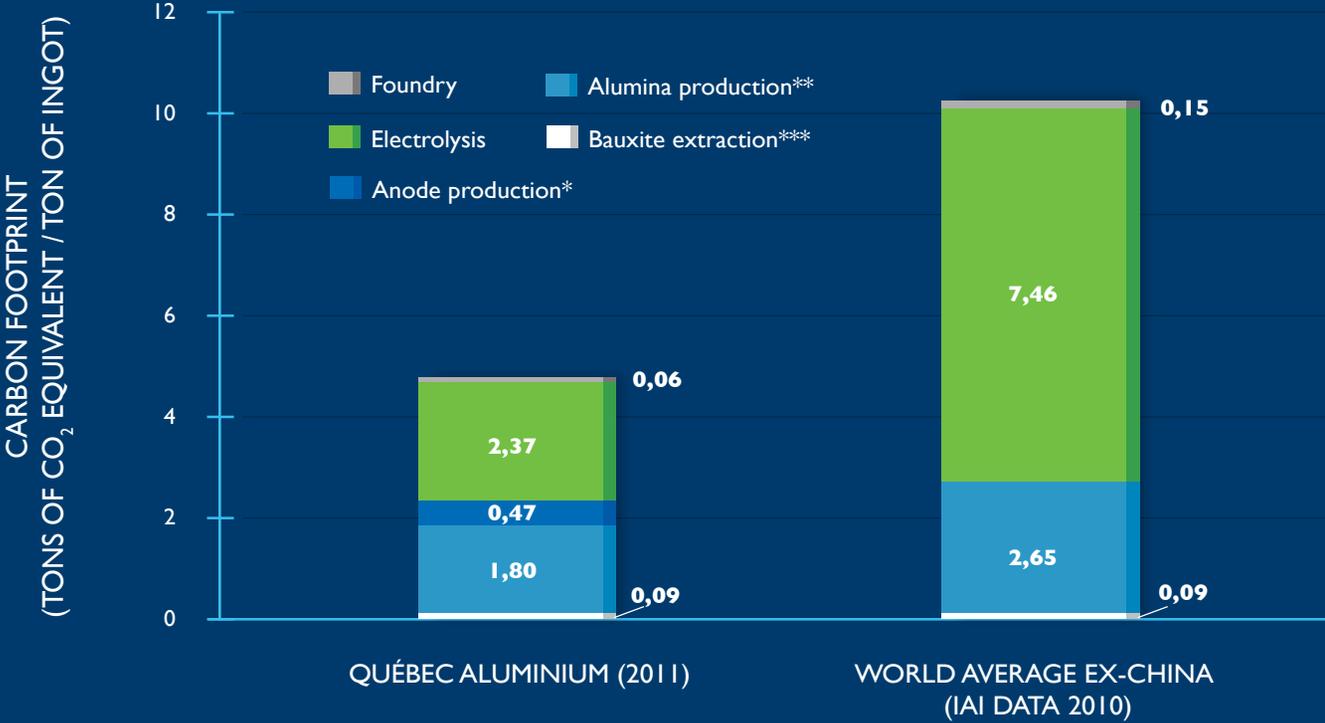
A PLAN TO PROMOTE THE INDUSTRY

The Québec aluminium industry is a structuring industry for the province and needs to be recognized for its full worth. The improvement of industry branding and promotion will benefit its individual businesses, workers and the host regions.

During the three coming years, \$1.65 million will be allocated to various Québec aluminium industry promotion initiatives and to sensitize key target groups regarding the advantages of this "metal of the future," notably Québec's carbon advantage. To advance this effort, the government will collaborate with key industry actors, the goal being to significantly increase the level of awareness of this important strategic industry.

These **Québec Aluminium Development Strategy** measures are expected to significantly strengthen the industry as a whole.

BOX 16: The Québec aluminium industry's carbon advantage



* For the IAI data the electrolysis portion includes the production of anodes.

** About 3/4 of the alumina consumed in Québec is imported.

*** All of the bauxite consumed in Québec is imported.

These data come from Québec's carbon footprint pilot project completed in 2012-2013 by the *ministère de l'Économie, de l'Innovation et des Exportations* (MEIE) in collaboration with the Aluminium Association of Canada. As part of this initiative, Québec's three aluminium producers conducted a study, verified by an independent third party, to quantify the carbon footprint of their respective primary aluminium production and to establish a Québec average.

3.3 TRACT 3: ENSURE BUSINESS COMPETITIVENESS IN THE INDUSTRY

Improving productivity and competitiveness is one of Québec's aluminium industry businesses' main concerns. To grow they need to foster innovation, exporting, labour force training, branding and to leverage their competitive advantages.

That means they need to remain aware of clients' changing needs and technological and commercial developments, in order to correctly assess threats and opportunities; ensure supply and access to markets; and finally, to increase partnerships with clients and suppliers.

For primary aluminium producers, competitiveness means (among other things) performing well on the sales, cost control and inventory management fronts. Producers' profitability enables them to meet major investment needs and to maintain and grow assets.

The **Québec Aluminium Development Strategy** intends to encourage completion of large investment projects that will generate significant economic benefits for Québec and to promote the growth of competitive SMEs.

3.3.1 SUPPORT THE PROJECTS OF PRIMARY ALUMINIUM PRODUCERS

Québec's primary aluminium industry is vital to the growth and reach of the entire value chain. The commitment of its businesses towards a host of sector initiatives contributes significantly to driving the entire industry.

This is one of the key reasons that the primary industry has, during the past few years, invested in setting up AluQuébec and other initiatives to push for increased aluminium use and deployment. These efforts included support for the development of national standards and the funding of research projects and training programs in the transport, infrastructures and bridges sector.

The major challenge of Québec smelters consists of maintaining a competitive position on the world stage, so they can continue to play a pillar role in Québec's economic development, particularly outside major metropolitan centres.

These primary production businesses, which operate within a complex environment and a highly competitive market, intend to pursue growth when economic conditions become favourable.

The actions which flow from the **Québec Aluminium Development Strategy** also seek to strengthen many of the primary sector's objectives. These include the completion of large investment projects, the optimization of the Québec value chain and the pursuit of sustainable development initiatives.

INVESTMENT PROJECTS

Québec's primary aluminium producers' future development projects could rank among the largest private sector investments in the province's history. If we include the resulting peripheral investments, more than \$10 billion could be invested in Québec's primary aluminium sector between now and 2025. The economic spin-off benefits for the host regions and the industry as a whole will be highly structuring.

The expansion projects that RTA is considering undertaking in Saguenay-Lac-Saint-Jean represent potential investments of several billion dollars. Aluminerie Alouette, North America's largest aluminium plant, for its part, is considering a third growth phase at its Sept-Îles facilities. As for Alcoa, in 2014 the company committed to invest \$250 million during the five coming years in its Québec smelters (see Box 17).

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The Québec Government plans to support these initiatives in a partnership perspective with the producers. The government will make hydroelectricity available for economic development, based on the benefits these projects bring for Québec. It would apply the same decision criteria to all new projects in this sector.

The Québec Government will also support the primary industry through other significant government policies (see Box 18).

FOCUSING ON ADDED VALUE

Québec aluminium producers are increasingly turning to higher valued-added products. Demand for such products is in fact increasing and they generate additional economic benefits for these businesses.

For example, during coming years, RTA hopes to continue to employ the resources needed to expand its portfolio of value-added products, to better respond to this growing niche.

This is a highly desirable and beneficial trend for Québec as it generates increased economic activity, generally broadens the range of products made available to processors and stimulates the entire value chain.

Adding value to raw aluminium could also lead to new development projects in Québec, strengthen the position of Québec aluminium smelters, consolidate their activities and protect jobs outside major metropolitan centres.

ALUMINIUM SMELTERS AND THE ENVIRONMENT

Québec's primary aluminium producers are always on the lookout for ways to respond to social and environmental concerns linked to their activities. Making sustainable development a cornerstone of their strategy and working to minimize their environmental footprint are thus crucial to their prosperity.

For example the industry is multiplying its efforts to manage waste generated in the primary aluminium production process, by separating it out and reducing it at the source. It also promotes reuse, recycling and recovery of by-products, in order to eliminate disposal in landfills. Yet despite significant advances in recent years, waste management remains a major challenge.

To support these efforts and to get a better picture of economic activity surrounding this niche, \$150,000 will be allocated towards completing a study of the technical-economic potential of the recovery of aluminium production waste and other by-products.

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Moreover the main Québec aluminium production sites are subject to the *Système de plafonnement et d'échange de droits d'émission de gaz à effet de serre du Québec* (SPEDE), commonly known as the carbon market. Québec's carbon market, which is linked to California's and soon Ontario's, is a flexible market tool that makes the carbon price a consideration in business decisions. The goal is to facilitate, at a lower cost, attainment of Québec greenhouse gas reduction targets while promoting the emergence of clean technologies.

Implementation of similar mechanisms, that attribute a cost to carbon emissions in other aluminium-producing regions, will eventually enable Québec producers to benefit from the low carbon footprint of local aluminium. This in turn will boost their competitiveness.

The Québec primary industry is already well positioned on the global stage in this matter. The province has in fact contributed to the creation of SWITCH, l'*Alliance pour une économie verte* (see Box 19).

3.3.2 ENCOURAGE THE GROWTH OF INDUSTRY SMES

By improving certain initiatives set-up by the Québec Government and its partners, the **Québec Aluminium Development Strategy** responds to the specific needs expressed by the industry's SMEs.

A NETWORK APPROACH

In order to be more competitive, Québec aluminium industry SMEs may undertake initiatives to improve their management, innovation and production processes. The adoption of a strategic plan could be a major contributor to that effort.

BOX 17: Aluminium smelter investment projects

RIO TINTO ALCAN PROJECTS

RTA expects to complete major investments in Saguenay-Lac-Saint-Jean to add an additional 340 000 tons of aluminium production capacity to its installations. Expansions are projected at the Arvida smelter, AP60 Technology Centre (current capacity: 60 000 tons) and the Alma plant (current capacity: 455 000 tons). These projects will require several billions of dollars in investments.

ALUMINERIE ALOUETTE PROJECT

During the coming years, Alouette projects the construction of phase 3 of its smelter. This would represent a \$2 billion investment. This phase, which would increase annual production to close to one million tons, comprises commitments by Alouette, such as the construction of the Alouette University Building in Sept-Iles (see page 59) and the creation of 1 000 jobs outside of the plant.

ALCOA PROJECTS

In February 2014, Alcoa committed to proceeding with a projected \$250 million in investments during the five coming years in its Québec smelters. These will include optimization of the Baie-Comeau Smelter pouring centre, in response to demands by North American automotive manufacturers, who are increasingly turning to aluminium to produce more energy efficient vehicles.

Other Alcoa development projects could also generate spinoff benefits for Québec. These include a partnership with Phinergy to design an aluminium-air battery.

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MEIE has proven resources available, including the Focus Stratégie^{MC} and InnovaXion^{MC} networks, which will be adapted to help Québec aluminium industry SMEs to complete strategic planning initiatives. These networks group together up to 18 businesses and their activities are spread out over a period of between three to 10 months. They include a group training portion and guidance by seasoned consultants. The participating businesses can also implement tools to support their growth strategies and to structure and improve their business processes.

A sum of \$300,000 will be allocated for the 2015-2018 period to support the implementation of at least one Focus Stratégie^{MC} or InnovaXion^{MC} network per year.

ALUQUÉBEC SUPPORT OF EQUIPMENT MANUFACTURERS AND SPECIALIZED SUPPLIERS

Equipment manufacturers and specialized suppliers take on unique challenges that merit special attention. In addition to help for their export initiatives, equipment manufacturers need to be able to organize and get the support of the industry's main organizations.

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Therefore starting in 2015, AluQuébec will launch a working group that will address the development issues, and propose concrete actions for this important link in the value chain.

AluQuébec will receive \$240,000 during the three coming years, to implement this cooperation initiative.

SUPPORT FROM PODIUM ALUMINIUM

Launched in 2009 by STIQ, in collaboration with various partners, including Aluminerie Alouette and the Québec Government, Podium Aluminium is a unique performance improvement program, which targets Québec manufacturing SMEs that have a job creation project.

BOX 18: Maritime strategy and energy policy

The **Québec Energy Policy 2016-2025**, which is currently being developed, will encompass Québec's approach to energy issues. It will undoubtedly deal with electricity prices, a major issue for the primary aluminium production industry. This new policy will provide the government an opportunity to confirm its vision regarding allocation of large blocks of energy to industries that are large electricity consumers.

Due to the location of Québec smelters, which are generally along-side deep-water ports, the **Maritime Strategy** will also interest primary aluminium producers, particularly with regards to maritime transport optimization and the development of the liquefied natural gas industry.



Photo: Baie-Comeau's port installations, notably those of Alcoa.

Participating companies commit to an improvement process focused on developing human resources competencies to increase their competitive edge. Up to now, Podium Aluminium has only been open to aluminium processor SMEs, but now equipment manufacturers and specialized suppliers in the industry are also welcome.

AN ALUMINIUM ACCELERATION PROGRAM

The Québec Government recognizes that the partnership agreement signed by the Aluminium Valley Society (AVS) and Desjardins-Innovatech contributes to ensuring the competitiveness of industry businesses by stimulating existing aluminium processing activities as well as by participating in the set-up, start-up and growth of new activities.

In keeping with its mission, the AVS has set up an acceleration program with a view to supporting the development of innovative, high-performance companies by offering them a coaching service to accelerate their time to market and help them grow (see Box 20).

Eligible Saguenay–Lac-Saint-Jean businesses will receive financial support from Desjardins-Innovatech—a venture capital investment fund dedicated to the emergence and development of innovative Québec organizations, which will also be channelled towards other sources of financing in the Québec ecosystem.

As a Desjardins-Innovatech sponsor, the government is proud to support this initiative. In collaboration with its partners, the government will also assess the possibility of broadening the scope of this program to all regions of Québec.

In addition to the enhanced initiatives in the **Québec Aluminium Development Strategy**, the Government of Québec has recently implemented other measures and strategies and made them available to companies in this industry. These programs, some of which are outlined in this section, allow us to substantially boost economic activity in the aluminium industry.

BOX 19: SWITCH



Québec aluminium producers are adamant about the fundamental role that low-carbon-footprint aluminium must play in improving the Québec economy's carbon footprint. This industry's environmental performance, the fruit of considerable investment and effort, should thus be promoted from a sustainable development perspective.

For this reason the AAC helped create SWITCH, the Alliance for a Green Economy in Québec. SWITCH, along with environmentalists, unions, business and financial leaders, as well as forward-thinking cleaner technologies companies, has been working on implementing public policies that accelerate the shift towards a green economy. The goal is to contribute to an innovative and competitive Québec society that balances social equality, the environment and quality of life.

Brainstorming sessions conducted to date have focused on ecofiscal policy, the carbon market, green jobs and government contracting

CRÉATIVITÉ QUÉBEC

With a \$150 million budget over three years, *Créativité Québec* is one of the means the government has put in place to develop a true innovation culture to ensure Québec's prosperity.

Managed by *Investissement Québec*, this new program is aimed at companies whose projects meet the following criteria:

- Having \$500,000 or more in expenses to either acquire new technologies or to develop or improve products or processes;
- Related to a technologically innovative product or process;
- Demonstrating commercial potential, improving a process or striving to implement a new and improved production method;
- Giving the company a clear technological and competitive advantage.

The financial commitments, up to \$5 million worth, will take the form of repayable contributions (loans), loan guarantees, equity participation and, in the rare case, subsidies.

MEIE'S INNOVATION SUPPORT PROGRAMS

Companies in the Québec aluminium industry can also rely on the support of the MEIE for their technological innovation projects, with project-specific assistance. For projects with tight deadlines, the *Passeport Innovation* program lets an organization get fast answers to specific problems by providing easier access to public laboratories.

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The MEIE also provides support for larger initiatives with the *Soutien aux projets structurants – Projets de recherche industrielle en collaboration* of its *Programme de soutien à la valorisation et au transfert*. Inter-company collaborations are encouraged in the early phases of the development process in order to decrease technological risk.

The government has set aside \$750,000 for the 2015-2018 period to support these projects.

BOX 20: AVS Acceleration Program and Desjardins-Innovatech Partnership Agreement

Desjardins-Innovatech has earmarked \$5 million for this 5-year agreement.

Profile of eligible projects:

- Start-up company or existing company that wants to launch a new product;
- Aluminium processing or specialized equipment manufacturing project;
- A proven technically feasible prototype and marketing-ready project;
- Product with strong commercial potential and that meets an obvious need;
- Company headed by a solid manager or a complementary team;
- Company located in Saguenay–Lac-St-Jean that commits to manufacturing its product in this region;
- Innovative product with job-creation potential.

With its expertise, the AVS receives, validates and analyzes the projects that meet the program's eligibility criteria, with a view to recommending them to Desjardins-Innovatech for financing. When a company's financing is authorized, the AVS continues to support the company and makes sure that its project is going well.

PERFORME

The most dynamic SMEs in Québec's aluminium industry that have growth projects in the works may, under certain conditions, receive support from *PerforME*, *Stratégie d'accélération des projets d'entreprises performantes*, the MEIE's strategy to accelerate high-performing business projects. The purpose of this initiative is to establish business partnerships with innovative, export organizations that are recognized as being exceptionally high-performing by their peers, in order to increase Québec's wealth (see Box 21).

To support the growth of these companies and accelerate completion of their projects, the government, in collaboration with its partners, will adapt its involvement to their particular context and needs. In fact, five investment partners, i.e. the *Caisse de dépôt et placement du Québec*, *Capital régional et coopératif Desjardins*, *Fondation CSN*, *Fonds de solidarité des travailleurs du Québec* and *Investissement Québec*, have set up a \$50 million fund to facilitate access to the capital that companies need for their financing.

BOX 21: PerforME Services

PerforME, *Stratégie d'accélération des projets d'entreprises performantes*, the MEIE's strategy to accelerate high-performing business projects, offers several ways to drive project delivery for companies:

- *Accompagnement-conseil stratégique™*, a strategic coaching and advisory service offered by the MEIE that consists of analyzing the company's operations and determining intervention priorities, bearing in mind the company's specific needs and challenges.
- Optimal customized financing.
- Cutting-edge training.
- Special access to a network of recognized experts.

In addition, companies can expect the deployment of an acceleration team made up mainly of *Investissement Québec*, *Export Québec*, *Emploi-Québec* and other ministries.

The projects must support the organizations' growth, be incorporated into their overall strategy and meet program eligibility criteria.

Companies wishing to apply to the *PerforME* program can do so on the MEIE website.

CONCLUSION



A PROMISING FUTURE

Québec's aluminium industry provides an opportunity for Québec to contribute significantly to the expansion of our innovative companies and the reach of our know-how.

This diverse and vibrant industry is made up of aluminium processors, equipment manufacturers and specialized suppliers, primary aluminium producers, innovators, and industry organizations that support this world-class value chain.

With the **Québec Aluminium Development Strategy**, Québec is positioning itself to realize the full potential of a strategically important industry that has all the assets it needs to succeed.

EXPORTING ADDED VALUE

The aluminium sector took root in Québec primarily because of the availability of hydroelectricity, a cleaner renewable energy. When Québec aluminium is sold on foreign markets, Québec exports this important natural resource in the form of products. The spin-offs for Québec are even greater when the aluminium has been processed a second or third time and is found in a value-added product.

This drive to add value to aluminium that is produced and processed in Québec is a characteristic of the industry.

THE SUSTAINABLE DEVELOPMENT OF QUÉBEC AND ITS REGIONS

As a result of Québec's green energy, Québec aluminium has the lowest carbon footprint in the world, a feature increasingly in demand. Use of this aluminium also reduces the ecological footprint of other activities, for example, helping to make vehicles lighter and infrastructures more sustainable. This strategic material can also be recycled *ad infinitum*.

Aluminium can also be found at the core of industrial operations in several regions in Québec, providing quality jobs and contributing to the socio-economic vitality of the community. The Québec aluminium industry is proof that it is possible to strike a balance between developing our natural resources, protecting our environment and developing our economy, especially outside major metropolitan centres.

RIGOROUS FOLLOW-UP

The **Québec Aluminium Development Strategy** will evolve over time. It constitutes a first step, whose goal is to help the industry prosper and make a greater name for itself on the world stage. Its implementation will be monitored rigorously in conjunction with industry partners, and any necessary adjustments will be made periodically. Other initiatives and concrete projects connected with the Strategy will ultimately also be implemented, with a view to consolidating the Québec aluminium industry's advantageous position.

With the **Québec Aluminium Development Strategy**, a promising future is taking shape.

APPENDICES



I SUMMARY OF MEASURES

OBJECTIVES	MEASURES	CREDITS 2015-2018	ORGANIZATION RESPONSIBLE
Tract I: Set up a favourable environment for aluminium processing in Québec		\$24,830,000	
Facilitate access to metal	1 Leading role for Albecour in order to meet the needs of aluminium processors	-	Albecour
	2 Improvement of aluminium processors' metal purchasing and sales practices	\$550,000	AluQuébec
Enhance the value chain	3 Continue Québec aluminium processor mapping work	-	AluQuébec
	4 Support investment projects with added funding to ESSOR program	\$14,000,000	MEIE
	5 Foreign investment prospecting plan	-	IQ
	6 Accelerate the development of aluminium processing projects in Saguenay–Lac-Saint-Jean	\$750,000	AVS
Promote aluminium use	7 Accelerate AluQuébec working groups	\$930,000	AluQuébec
	8 Taking into account the total cost of ownership by public bodies	-	SCT
	9 Use of aluminium in <i>ministère des Transports</i> infrastructures	\$4,600,000	MTQ
	10 Support demonstration projects in public buildings	\$4,000,000	SQI/SHQ

OBJECTIVES	MEASURES	CREDITS 2015-2018	ORGANIZATION RESPONSIBLE
Tract 2: Bolster the entire industry in Québec		\$6,200,000	
Facilitate exporting	11 Support export market access initiatives, including the <i>Export-Équipementier</i> project and trade missions under a common banner	\$1,500,000	Export Québec
Increase the industry's capacity for innovation	12 Teach aluminium related subjects at the university level	-	AluQuébec/MEESR
	13 New partnership research program	\$2,000,000	MEESR/FRQ-NT
	14 Dissemination of expertise on the use of aluminium	\$600,000	AluQuébec
	15 Role of innovation broker for CQRDA	-	CQRDA
	16 Support innovation projects, notably those that come out of the NRC ATC ALTec Consortium	\$450,000	MEIE
Ensure a pool of qualified workers	17 Promote the aluminium trades and related study programs	-	MEESR/MTESS
	18 Support training and human resources management	-	MTESS
	19 A roundtable to match skills training with industry needs	-	MTESS
Broadening the sector's reach	20 Promotion and awareness-building plan revolving notably around the carbon footprint advantage	\$1,650,000	MEIE
Tract 3: Ensure business competitiveness in the industry		\$1,440,000	
Support the projects of primary aluminium producers	21 Support investment projects in a partnership perspective	-	MEIE
	22 Study on the potential of creating value from aluminium production waste recovery	\$150,000	MEIE
Encourage the growth of SMEs	23 Support industry SMEs in their strategic planning processes	\$300,000	MEIE
	24 Launch a new working group for equipment manufacturers and specialized suppliers	\$240,000	AluQuébec
	25 Open <i>Podium Aluminium</i> to equipment manufacturers and specialized suppliers	-	STIQ
	26 AVS acceleration program in partnership with Desjardins-Innovatech	-	AVS
	27 Support industrial research projects	\$750,000	MEIE
TOTAL		\$32,470,000	

2 SYNTHESIS OF THE RESOURCES AND PROGRAMS

LABOUR AND TRAINING	R&D AND INNOVATION	ENTREPRENEURSHIP AND SUCCESSION
<p>Organizations</p> <ul style="list-style-type: none"> • AluQuébec • Créneau Accord Transformation de l'aluminium • Comité sectoriel de main-d'œuvre de la métallurgie du Québec <p>Ministère de l'Économie, de l'Innovation et des Exportations</p> <ul style="list-style-type: none"> • Programme Premier emploi en recherche <p>Ministère du Travail, de l'Emploi et de la Solidarité sociale</p> <ul style="list-style-type: none"> • Mesure de formation de la main-d'œuvre <p>Commission des partenaires du marché du travail</p> <ul style="list-style-type: none"> • Soutien à l'amélioration de la compétitivité des entreprises • Soutien régionalisé aux entreprises pour le développement de la main-d'œuvre <p>Fonds de recherche du Québec – Nature et technologies</p> <ul style="list-style-type: none"> • BMP grants and Mitacs internships • Grants for graduate-level research <p>STIQ</p> <ul style="list-style-type: none"> • Podium Aluminium <p>Tax measures</p> <ul style="list-style-type: none"> • Tax holiday for foreign researchers • Tax holiday for foreign experts • Tax credit for worker training in the manufacturing, forestry and mining sectors • Tax credit for a work-place apprenticeship • Tax holiday for Health Services Fund (contributions) for the hiring of specialized workers 	<p>Organizations</p> <ul style="list-style-type: none"> • AluQuébec • Créneau Accord Transformation de l'aluminium • Centre québécois de recherche et de développement de l'aluminium • REGAL (Centre de recherche sur l'aluminium) • Aluminium Technology Centre • Trans-Al Network • Alcoa Innovation <p>Ministère de l'Économie, de l'Innovation et des Exportations</p> <ul style="list-style-type: none"> • Programme Passeport Innovation • Programme Premier brevet • Programme de soutien à la valorisation et au transfert – Soutien aux projets structurants – Projets de recherche industrielle en collaboration <p>Investissement Québec</p> <ul style="list-style-type: none"> • Programme Créativité Québec <p>Aluminium Valley Society</p> <ul style="list-style-type: none"> • Fonds Innovation Rio Tinto Alcan <p>Fonds de solidarité FTQ</p> <ul style="list-style-type: none"> • Fonds AP60 <p>Tax measures</p> <ul style="list-style-type: none"> • R&D tax credits • Tax credit for design • Tax credit for technological adaptation 	<p>Organization</p> <ul style="list-style-type: none"> • Centres de transfert d'entreprises • The Femmessor Network • Fondation de l'entrepreneurship • Futurpreneur Canada • Centres d'entrepreneuriat universitaire • Réseau Anges Québec <p>Ministère de l'Économie, de l'Innovation et des Exportations</p> <ul style="list-style-type: none"> • MPA training – the best business practices, Focus Stratégie and Réseau InnovaXion <p>Investissement Québec</p> <ul style="list-style-type: none"> • Fonds Relève Québec <p>Fondation de l'Entrepreneurship</p> <ul style="list-style-type: none"> • Croissance Québec Techno <p>Fédération des chambres de commerce du Québec</p> <ul style="list-style-type: none"> • Prêt à Entreprendre program <p>Filaction</p> <ul style="list-style-type: none"> • Fonds Femmessor • Fonds Mosaïque • Fonds afro-entrepreneurs

INVESTMENT	EXPORTS AND MARKET DEVELOPMENT	INVESTMENT CAPITAL
<p>Organizations</p> <ul style="list-style-type: none"> • AluQuébec • Créneau Accord Transformation de l'aluminium • STIQ <p>Ministère de l'Économie, de l'Innovation et des Exportations</p> <ul style="list-style-type: none"> • Fonds de diversification économique du Centre-du-Québec et de la Mauricie • Fonds de diversification économique — MRC des Sources <p>Ministère de l'Énergie et des Ressources naturelles</p> <ul style="list-style-type: none"> • Programme ÉcoPerformance <p>Municipalités régionales de comté and similar organizations</p> <ul style="list-style-type: none"> • Fonds locaux d'investissement • Fonds régional de la transformation de l'aluminium <p>Investissement Québec</p> <ul style="list-style-type: none"> • Programme ESSOR • Programme UNIQ <p>Hydro-Québec</p> <ul style="list-style-type: none"> • Programme Systèmes industriels <p>Rio Tinto Alcan</p> <ul style="list-style-type: none"> • Regional economic development offices <p>Tax measures</p> <ul style="list-style-type: none"> • Tax credit related to investment in manufacturing and processing equipment (abolition projected for 2018) • Tax holiday for large investment projects • Additional deduction for transportation costs for SME manufacturers 	<p>Organizations</p> <ul style="list-style-type: none"> • AluQuébec • Créneau Accord Transformation de l'aluminium • Expansion Québec • Regional export promotion organizations • Manufacturiers et exportateurs du Québec <p>Ministère de l'Économie, de l'Innovation et des Exportations</p> <ul style="list-style-type: none"> • Services d'Export Québec • Stratégie PerformE • Export program • Trade agreements <p>Ministère des Relations internationales et de la Francophonie</p> <ul style="list-style-type: none"> • Québec representative offices abroad <p>Aluminium Valley</p> <ul style="list-style-type: none"> • Fonds de partenariat régional Rio Tinto Alcan • Board of Trade of Metropolitan Montréal and Québec International • Passeport PME <p>Fédération des chambres de commerce du Québec</p> <ul style="list-style-type: none"> • COREX program <p>Tax measures</p> <ul style="list-style-type: none"> • Tax credit related to market diversification of manufacturing businesses 	<p>Organizations</p> <ul style="list-style-type: none"> • Investissement Québec • Caisse de dépôt et placement du Québec <p>Investment capital funds</p> <ul style="list-style-type: none"> • Anges Québec Capital • Fonds de Solidarité FTQ • Fondation CSN • Capital régional et coopératif desjardins • Programme d'accélération SVA (Desjardins-Innovatech)

3 CONSULTATION PROCESS AND SUMMARY OF THE ISSUES

On April 23, 2014, the day the cabinet was named, the Québec Premier asked the minister of the Economy, Innovation and Exports to develop, in collaboration with other concerned ministries and organizations, an aluminium development strategy.

An inter-ministerial committee was put in place to implement the initiative and document the Strategy. This committee was comprised of representatives of the following ministries and organizations:

- The *ministère de l'Économie, de l'Innovation et des Exportations*;
- The *ministère des Transports*;
- The *ministère de l'Énergie et des Ressources naturelles*;
- The *ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques*;
- The *ministère du Travail, de l'Emploi et de la Solidarité sociale*;
- The *ministère de l'Éducation, de l'Enseignement supérieur et de la Recherche*;
- The *ministère des Finances*;
- The *Secrétariat du Conseil du trésor*;
- *Investissement Québec*;
- *Hydro-Québec*.

On the basis of a document published in September 2014, the Québec Government initiated a consultation process with Québec aluminium industry stakeholders that included:

- Six days of meetings and visits to four regions in October 2014;
- Participation of 44 organizations, including nine equipment manufacturers and specialized suppliers, three producers of primary aluminium, eight aluminium processors, nine innovation stakeholders, three large private buyers and 12 other organizations;
- Consultations with 62 representatives.

This consultation sought to:

- Define the industry's priority development issues;
- Identify existing business opportunities;
- Determine the best potential levers, whether it be for industry, industry partners or government.

The consultation enabled the study of seven major issues.

GLOBAL ISSUES	
Innovation	Branding and reach
Ensure a better integration of innovation within a larger number of structuring projects for the industry.	Promote the branding of aluminium as the metal of the future and of the Québec aluminium industry as a whole.

SPECIFIC ISSUES		
Equipment manufacturers and specialized suppliers	Primary aluminium producers	Processors
Maintain and improve Québec offerings and expertise.	Improve the competitiveness of Québec primary aluminium producers.	Promote increased domestic use of aluminium in Québec, notably in government procurement.
	Finalize new investment projects.	Increase aluminium processing in Québec and fill weaknesses in the value chain of processed products.

Following this, *Rendez-vous de l'aluminium*, an open forum was held on February 2nd, 2015 in Saguenay, where industry stakeholders were able to discuss these issues together. A participants' guide containing 24 proposals stemming from the consultations facilitated the framing of these exchanges and led to the production of the **Québec Aluminium Development Strategy**.

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Québec

