

Electromobility in Québec: strengths and interests

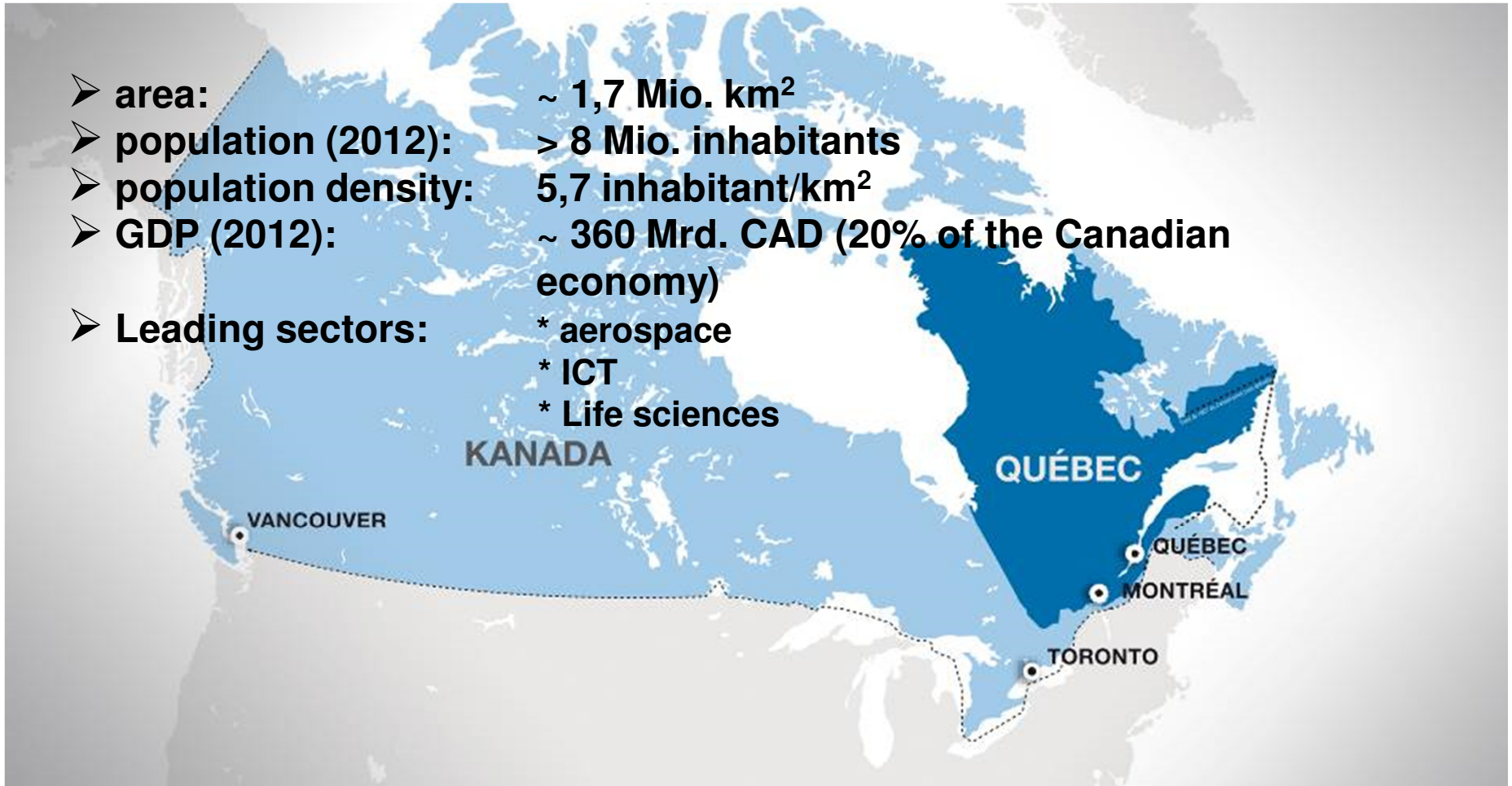
**International Conference
Electromobility
Leipzig, 27 october 2014**

AGENDA

- Québec – an overview
- National strategies of the Government of Québec
- Strengths of Québec in the electromobility sector
- Québec's electrical expertise: Public transport, cars and special-purpose-vehicles, autobus, charging infrastructure, technology of batteries
- Cooperation with Saxony
- Conclusion

QUÉBEC – AN OVERVIEW

- area: ~ 1,7 Mio. km²
- population (2012): > 8 Mio. inhabitants
- population density: 5,7 inhabitant/km²
- GDP (2012): ~ 360 Mrd. CAD (20% of the Canadian economy)
- Leading sectors:
 - * aerospace
 - * ICT
 - * Life sciences



NATIONAL STRATEGIES OF THE GOVERNMENT OF QUÉBEC

- **April 2011:** ACTION PLAN for electric vehicles 2011-2020 (PAVE)

Objectives: by 2020 a) 25% of new light vehicles should be electric

b) Increase the number of jobs in the sector to 5,000

by 2030 c) widespread use of electricity in public transit (95% of trips on the province's public-transit system on electric-powered vehicles)

- **September 2011:** Québec took the lead of the Public-Policy-Initiative Electromobility (EVPI) in the context of the *Climate Group*.

- **November 2013:** Transportation Electrification Strategy 2013-2017

NATIONAL STRATEGIES OF THE GOVERNMENT OF QUÉBEC

- Since April 2014: new government in Québec. Electrification of the transport system is still a priority for the government. The Ministry of Transportation became leader and coordinator of the strategy (over 40 projects and initiatives led by 15 ministries and governmental organisations)
- Montréal as a showcase of the electric public transit system:
Project Cité Mobilité of Volvo and the Montréal transport authority STM: testing of three electric buses and a fast charging system by conduction



STRENGTHS OF QUÉBEC IN THE ELECTROMOBILITY SECTOR

- Positive environmental impact: 29% of the energy consumption and 44% of the greenhouse gas emissions from the transport sector
- 97% of Québec's electricity comes from hydro-power
- 3000 jobs (directly and indirectly in the electromobility sector)
- 650 companies in the ground transportation sector; approx. 30 companies active in the field of electromobility
- Approx. 30 research institutes/ technology transfer centers
- Québec's expertise: vehicle components, engine systems, technology of batteries, lightweight construction, charging infrastructures

ELECTROMOBILITY IN QUÉBEC

- 4 868 electric cars in circulation (September 2014)
- 29 754 hybrid vehicles in circulation (September 2014)
- Objective by end of 2016: 10 200 new electric cars
- Existing brands: BMW, Chevrolet, Ford, Mitsubishi, Nissan, Porsche Panamera, Smart, Tesla, Toyota
- Substantial rebates for buying electric cars
 - « Roulez électrique »: up to \$8,000 for buying an electric car
 - « Branché au travail »: rebates for installation of a charging station
- Today: 700 charging stations. Objective by 2017: installation of 3,500 charging stations in companies

PUBLIC TRANSPORT

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- Electrification of the public transport as one of the main pillars of the strategy of the government of Québec
- Target for 2030 (Action plan): to have 95% of trips in the province's public-transit system on electric-powered vehicles
- Existing electric public transport systems:
 - Subway in the Great Area of Montréal
 - Electric Train line between Montréal and Deux-Montagnes



CARS AND SPECIAL-PURPOSE-VEHICLES

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- Communauto: Car-sharing company with 30 000 users; no-reservation electric car-sharing service Auto-Mobile (100 hybrid + 20 electric cars)
- Conception / Production of hybrid and electric special-purpose-vehicles in Québec (Nova Bus, Paccar, Volt-Age, Pedno, Kargo, Wattman Trains et Trams, BRP, Lito Green Motion)
- Bombardier:
 - transportation company with headquarter in Montréal
 - BRP: different vehicles; project with TM4, supported by the Government of Québec with 1,3 Mio. \$
 - Primove: technology that enables the wireless charging of electric cars
- Suppliers of components and system suppliers: 25 companies as TM4 or Spectra Premium



AUTOBUS

- Electrical autobus:
 - Design and production: Nova Bus (group Volvo)
 - Presentation of the project by the Government of Québec in 2012
 - Used in the context of the project Cité Mobilité : Pilot Project with three electrical buses
- Electrical school bus:
 - Design and production: Lion Bus
 - Partners: CNTA (electric drivetrain), TM4 (motor), EnerDel (battery cells), B3CG (battery packs)
 - Prototype already in use in Laval; demonstration-project will start beginning of 2015; start of commercialisation: spring 2015



CHARGING STATIONS

- AddÉnergie: Development of electric vehicle and plug-in hybrid charging stations designed to operate safely in all climates
- Three charging networks in Quebec (especially Level 2):
 - Circuit électrique (Hydro-Quebec) 
 - RéseauVER (AddÉnergie)  **VERnetwork**
RECHARGED BY ADDÉNERGIE
 - Sun Country Highway/Eco Route  **ÉCO ROUTE**
QUÉBEC
- Québec-Montréal electric charging corridor:
 - First fast-charging corridor in Québec along Highway 40 and Route 138
 - 12 charging stations for electric vehicles (seven 240-V-charging and five fast-charging stations)
 - Inauguration of the first location of the charging corridor in September 2014



BATTERIES

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- Québec has a vast experience in the field of technology of batteries.
- Two renowned companies in Québec:

Bathium:

- Subsidiary of the French Bolloré Group
- Unique Lithium Metal Polymer battery technology
- Over 25 years and half a billion dollar spent on R&D to the profit of the electric car



Phostech Lithium:

- Founded by researchers of the University of Montréal and the research institute of Hydro Québec IREQ
- Subsidiary of the Swiss company Clariant
- Development and production of lithium iron phosphate



COOPERATION WITH SAXONY

- 2014: Celebrating 24 years of relationship between Québec and Saxony
- Several cooperations in fields as economy, technology, education, culture
- 2006/2008: Agreement between AEE and LfUG/SAENA (energy efficiency)
- February 2010: Visit of prime minister Tillich in Québec. First official intention to include electromobility as a new field of cooperation.
- April 2012: Electromobility Showcase Project Bavaria-Saxony with Quebec as international partner
- October 2012: Minister and business delegation to Québec. Meeting with EV actors.
- June 2013: Minister and business delegation from Québec to Saxony.

CONCLUSION AND OUTLOOK

- Québec has very good conditions to become a leading region of the electromobility sector in North America
- An active industry: Québec has recognized know-how in several sectors linked to electromobility
- Interest for cooperation projects with partners from Saxony and other regions in Europe. Already some cooperation projects with Germany: IREQ-Fraunhofer, Distribution of Lito Green Motion, TM4-Rational Motion.
- Important event: EVS29 in Montréal, June 2016

MERCI BEAUCOUP!

**Marie-Andrée Bernard
Director of Economic Affairs,
Québec Government Office in Munich
marie-andree.bernard@mri.gouv.qc.ca**

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