Multimodal Study on Freight Transportation in Québec

Eastern Border Transportation Coalition
Annual Workshop

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Presentation Overview

- Objective, structure and scope of the study
- Overview of the database
- Profile of freight transportation in Québec
- Assessment of intermodality potential, methodology and observations
- Conclusion

Objective of the study

- Support Sustainable Mobility Regional Plans
- Characterize current and future (2026) supply and demand for freight transportation for all modes
- Develop and apply a methodology to assess Intermodality Potential
- Three scales of analysis
  - Québec
  - Major transportation corridors (11)
  - Regions (16)

Structure of the study

Block 1

Exploit existing data available in studies, DB, etc.

Long/short (MTL only) distance trucking	Marine
Road performance	Air
	Rail

Filling the gaps

Integration of Block 2 Into Block 1

Block 2

Targeted interviews

Carriers	Shippers
Network and equipment managers	MTQ staff

Forecast 2026 Assessment of intermodality potential

Block 3

Current and future (2026) multimodal transportation profile and assessment of Intermodality potential

Québec	11 corridors	16 regions

Scope and Limitations of the Study

- Aggregation of data by region
- MTQ provincial network
- Interregional freight movements
  - Trucking : Interurban/interregional movements (+ 80 km)
- Different data sources and periods (2006-2010)
- Confidentiality of some information
  - Rail/Air companies
  - Shippers

Overview of the database

Road Performance

SOURCES
Road data (MTQ)
Forecast (O/D Survey + other)

→ **EXCEL**
Physical characteristics
Current/Future Demand
Road Performance Index

→ **TRANSCAD**
Mapping

Trucking

SOURCES
NRS 99 / 06-07 (MTQ/TC)
Forecast (MTO)

→ **POWER PIVOT**
Power Pivot Tables
Analytical Tool

→ **TRANSCAD**
Matrix + Assignment
•Mapping (Flows)

O/D Matrix for Regions
•Mapping (Desire Lines)

Rail

SOURCES
Rail Companies (interviews)
Cont. Gateway Studies (RTG)
Forecast (GI)

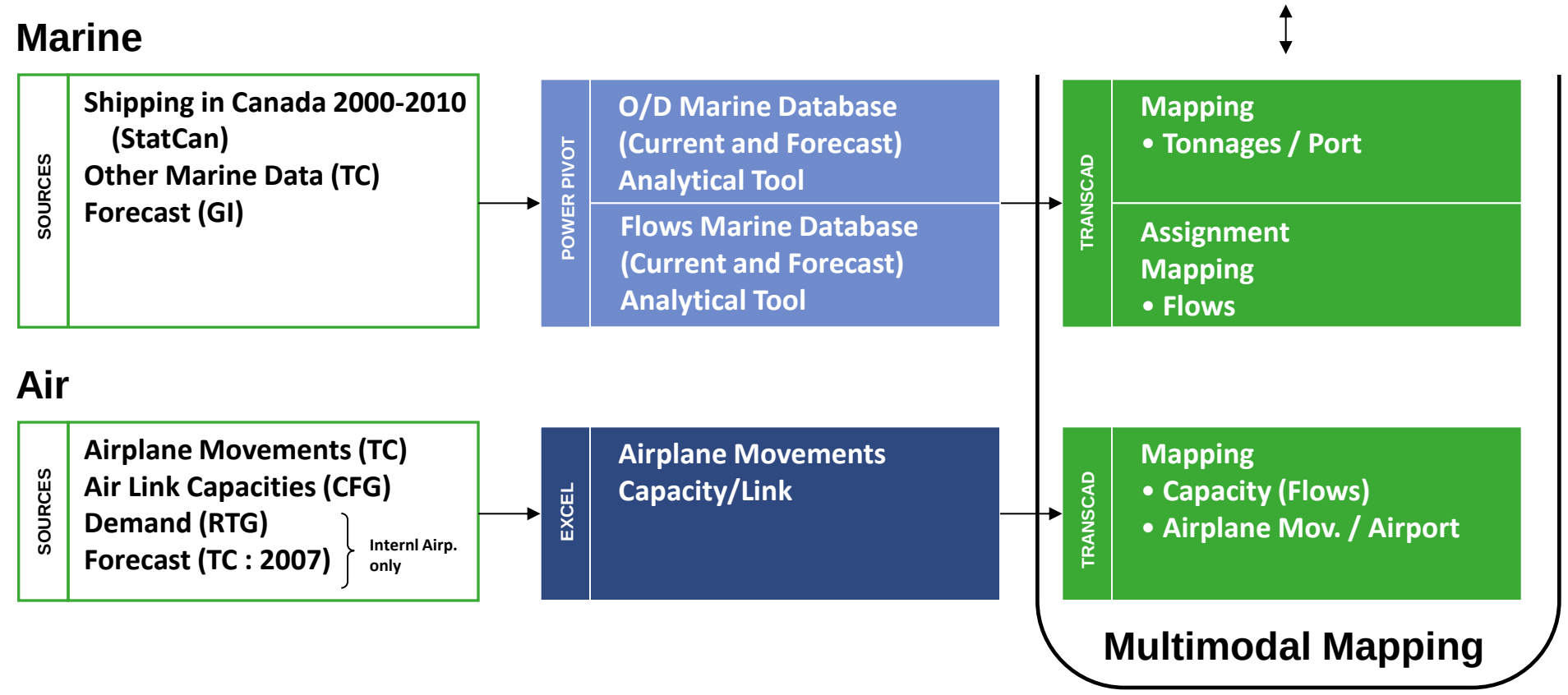
→ **EXCEL**
Physical characteristics
Current/Future Demand
Network Performance

→ **TRANSCAD**
Mapping

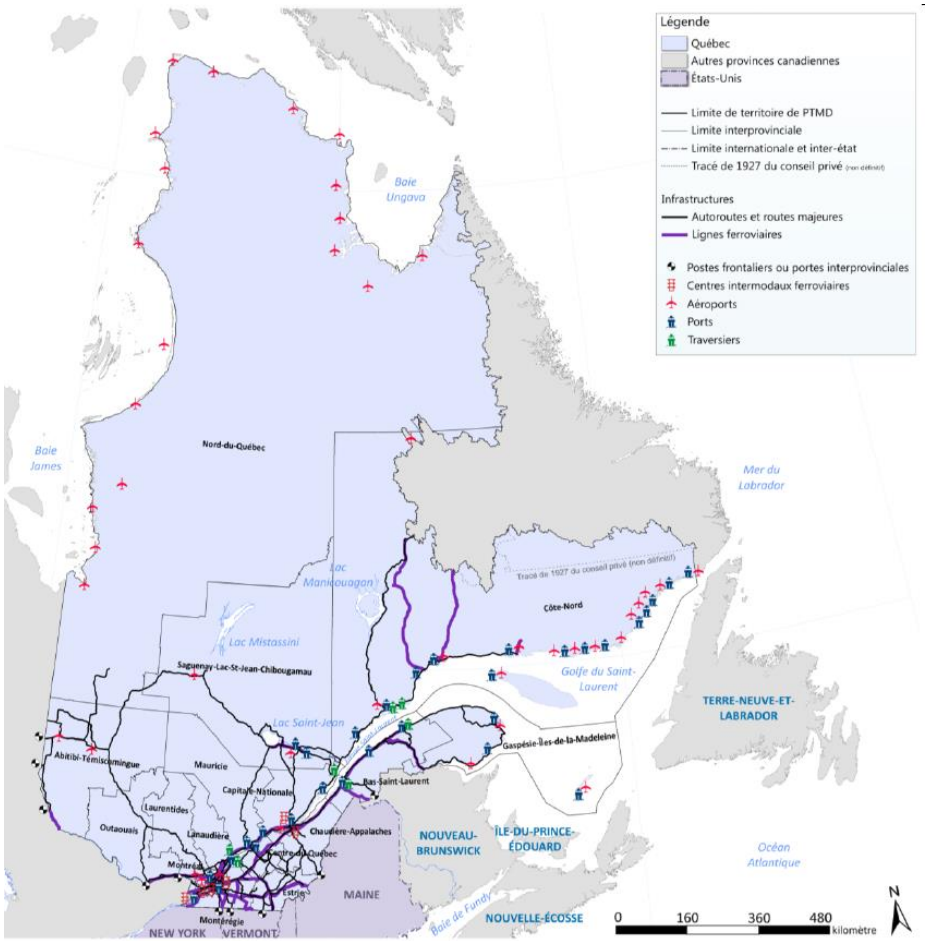
Tabular information

Multimodal Mapping

Overview of the database



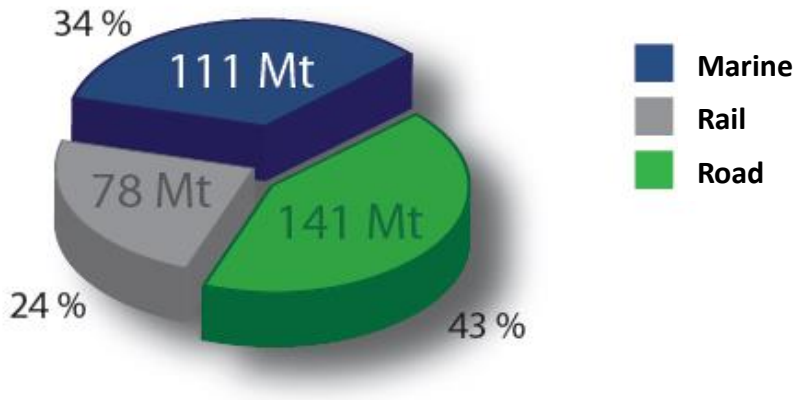
Profile of Québec – Geographic Scope



- 11 800 km of roads
- 7 border crossings
  - 4 in QC, 3 in ON
- 6 200 km of railways
- 6 intermodal terminals
- 21 railways
- 31 ports
- 42 airports

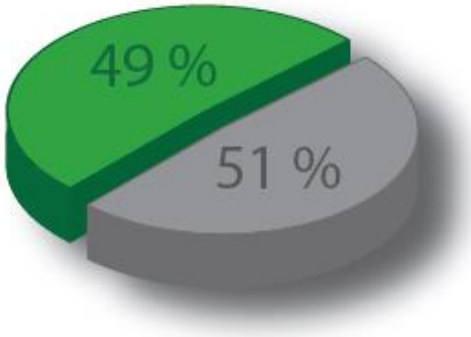
Profile of Québec – Tonnages

Tonnages with an origin or a destination in Québec



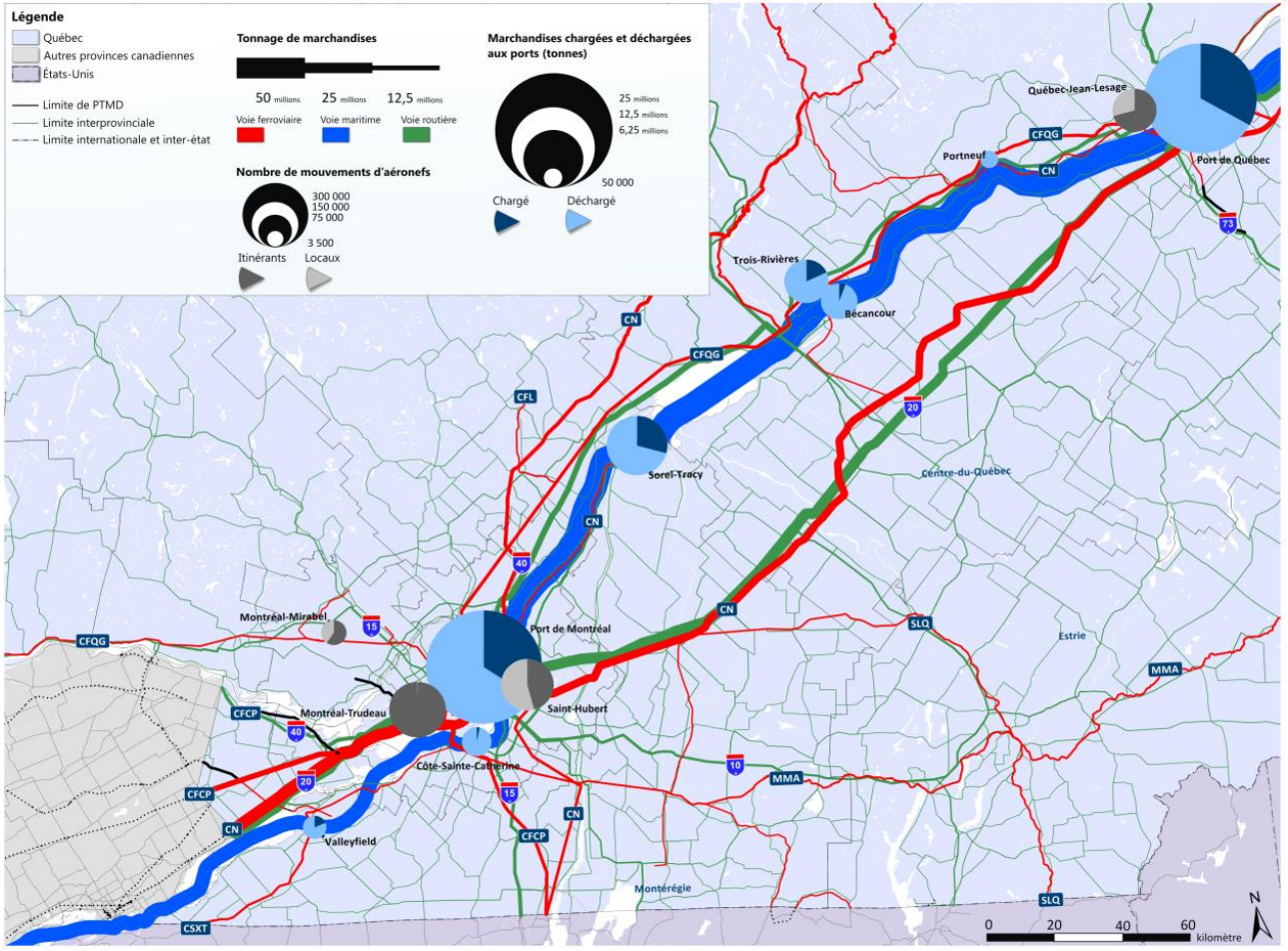
Air - 274 000 tonnes (0,1%)

Ton-kilometre on Québec's road and rail networks

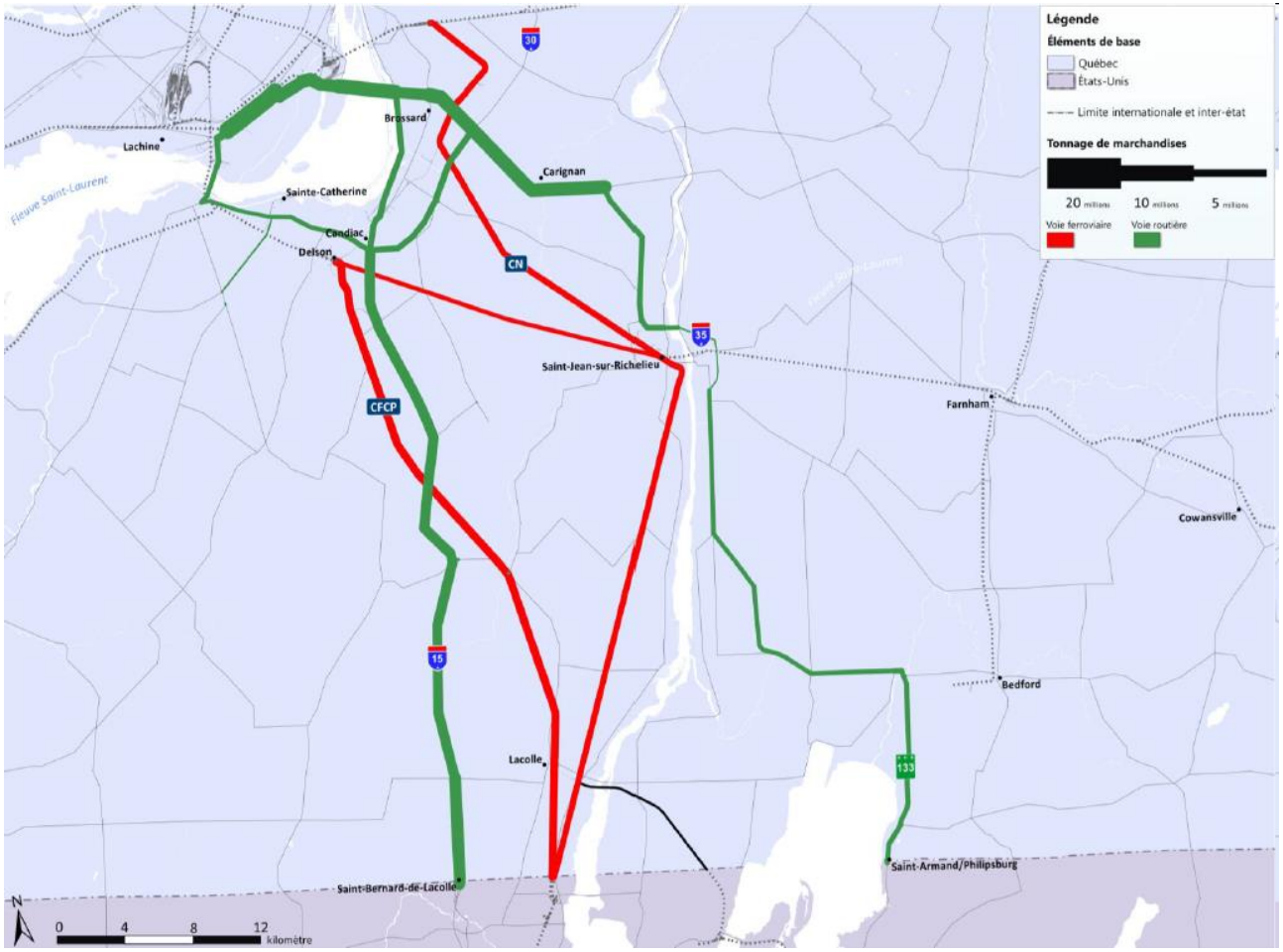


*Road mode doesn't include truck movements under 80 km

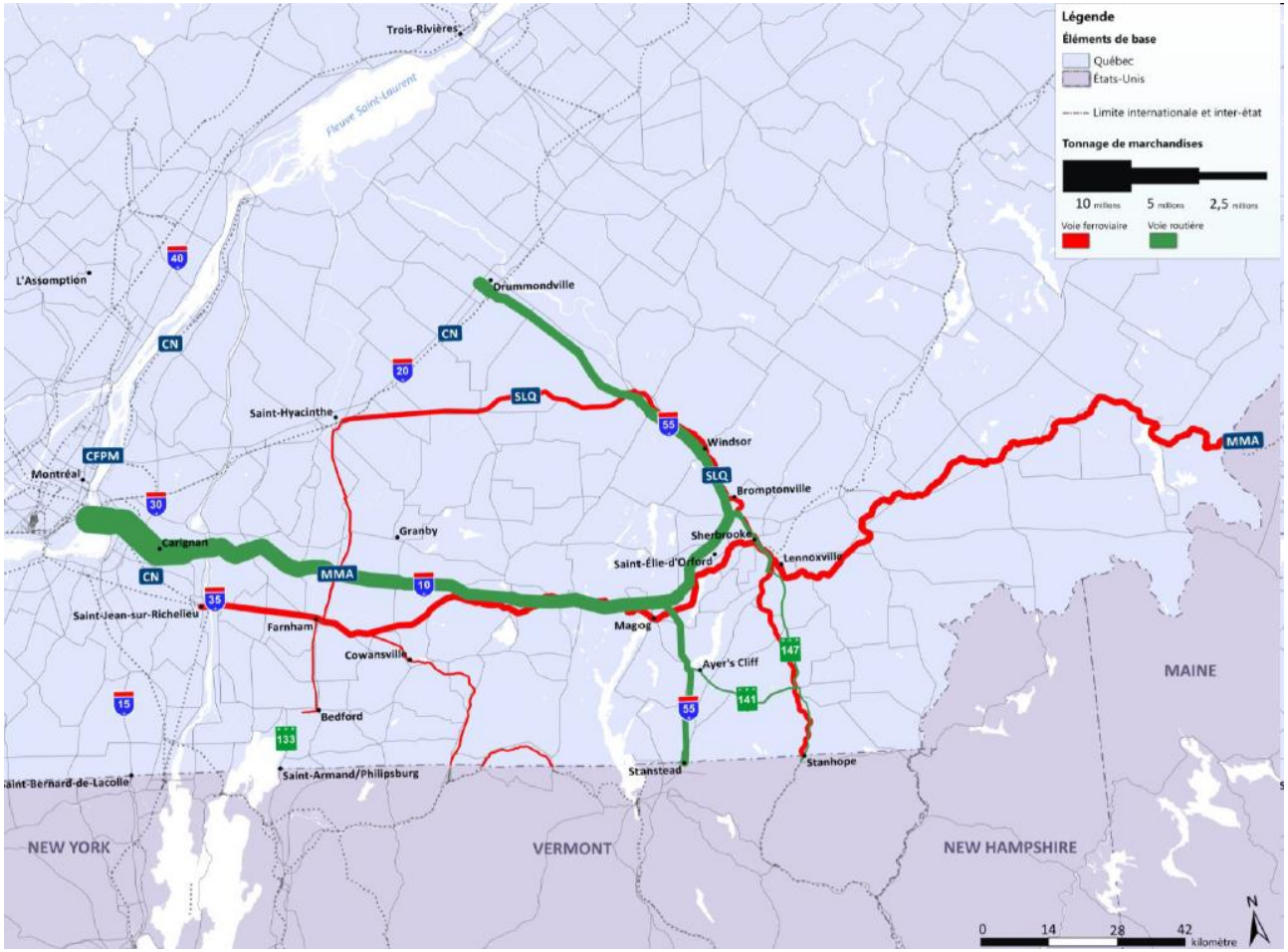
Profile of Québec – Modal Flows



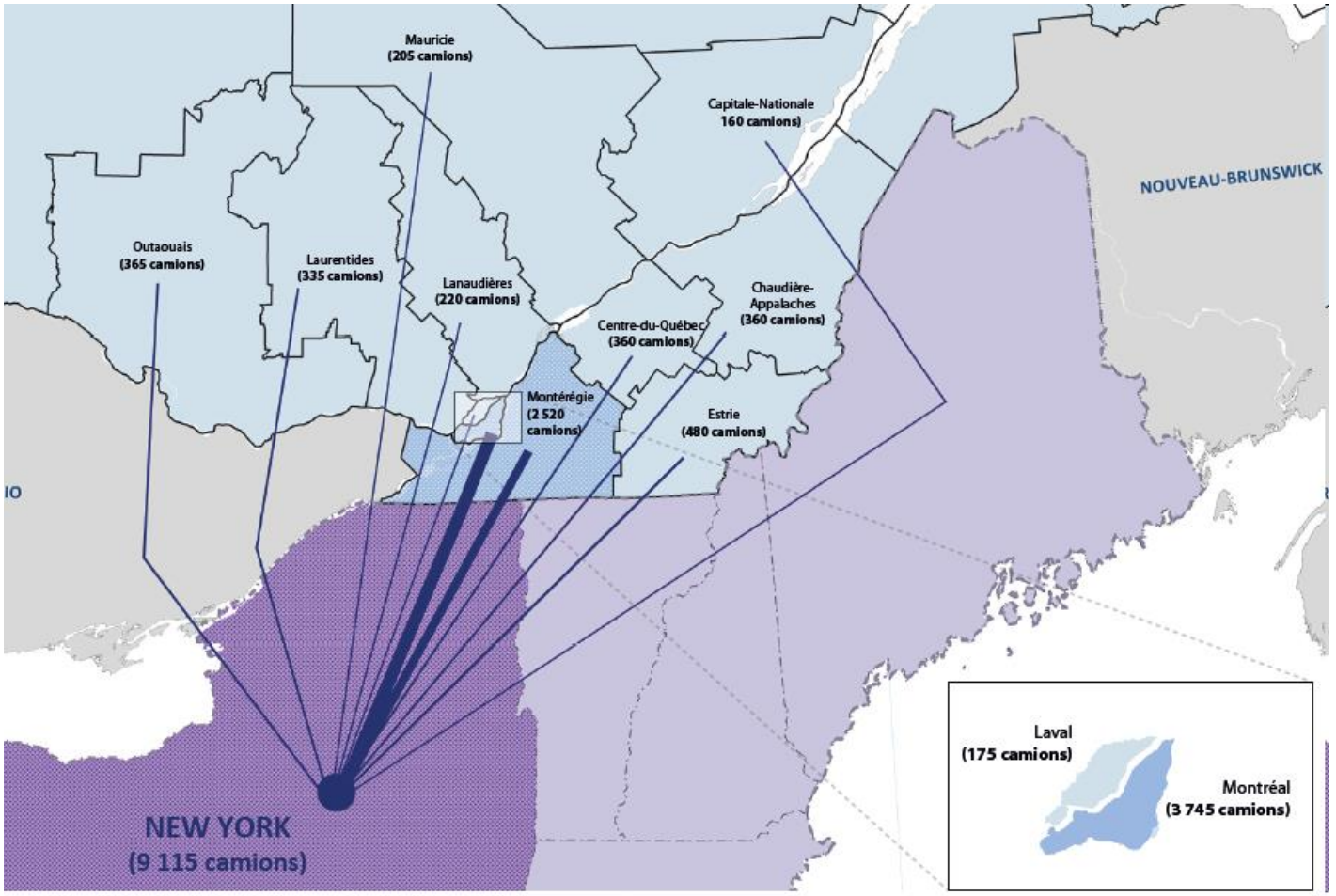
Profile of Québec – Modal Flows in corridors



Profile of Québec – Modal Flows in corridors

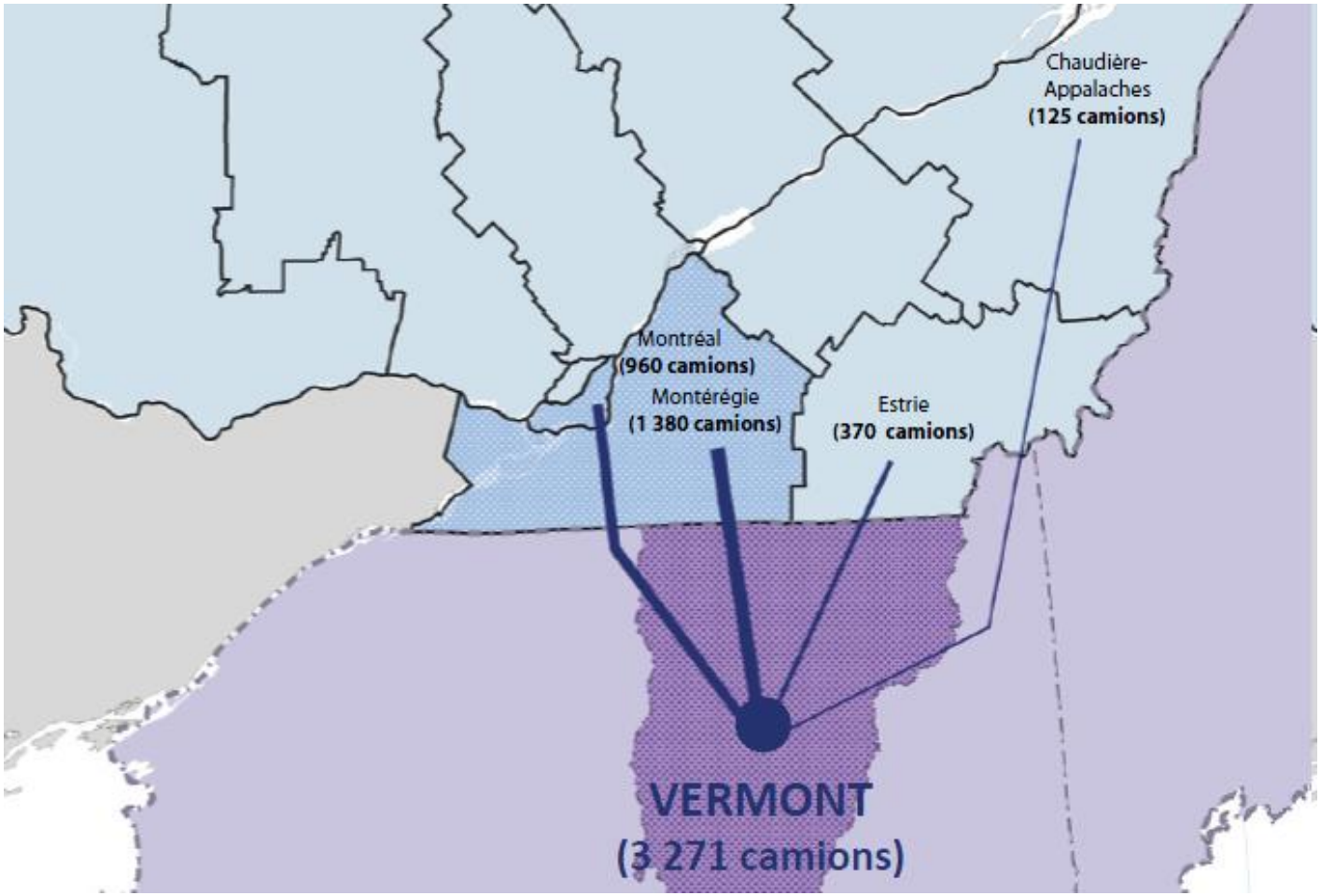


Profile of Québec – Desire Lines



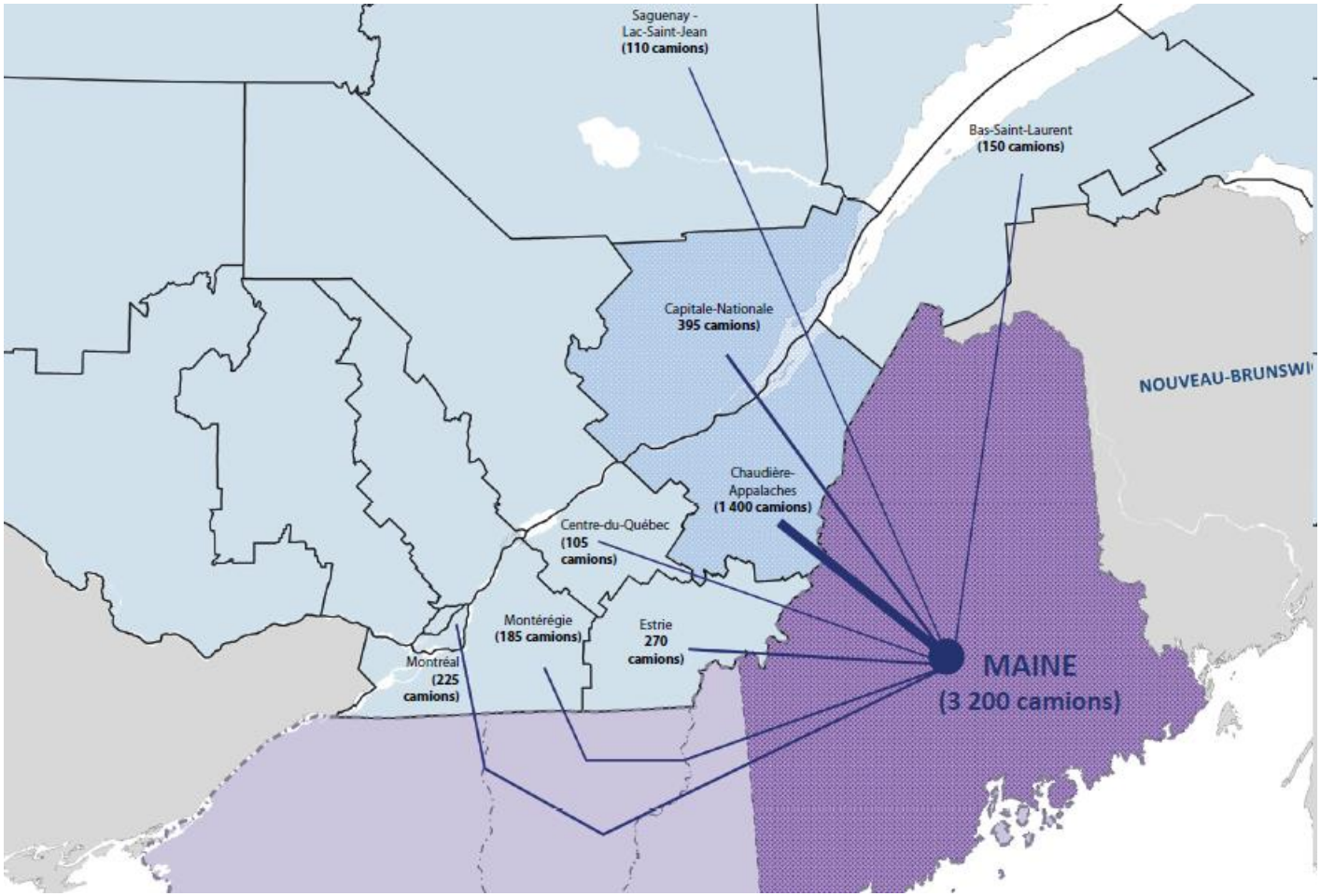
Truck movements during a week in 2006-2007 between Québec and New York

Profile of Québec – Desire Lines



Truck movements during a week in 2006-2007 between Québec and Vermont

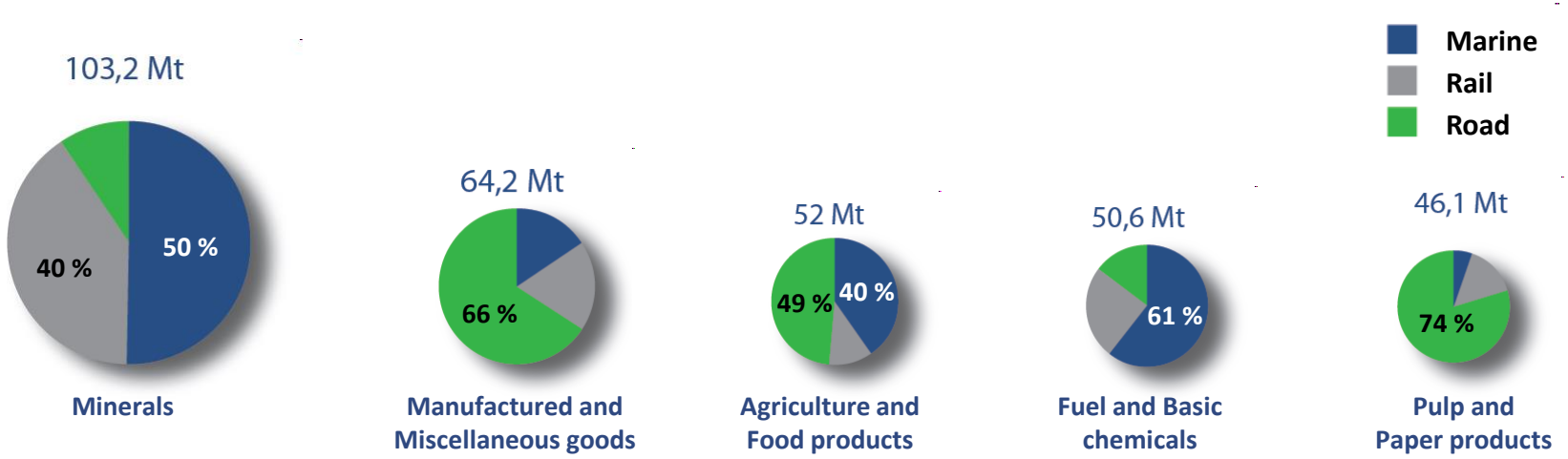
Profile of Québec – Desire Lines



Truck movements during a week in 2006-2007 between Québec and Maine

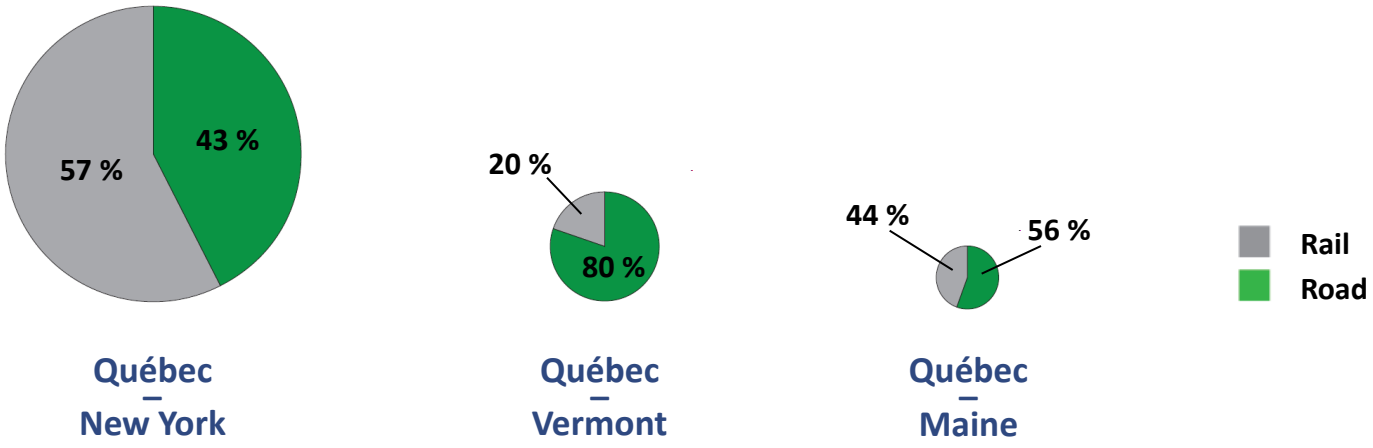
Profile of Québec – Supply Chains

- Significant presence of supply chains based on natural resources / transformed products from natural resources
- Commodity supply chains usually favor 1 or 2 modes



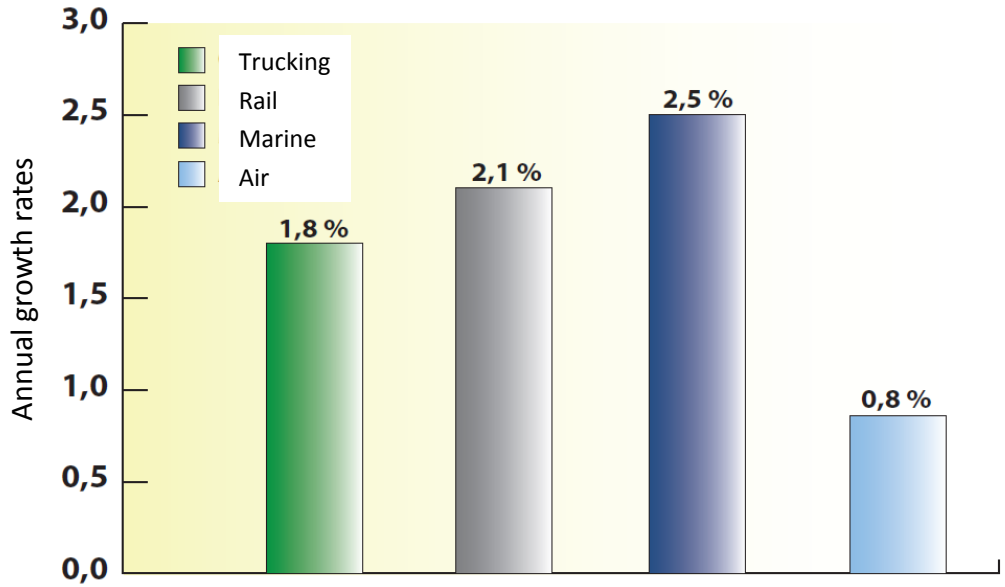
Profile of Québec – Modal shares

- Modal shares at the Québec / U.S. States Border
- Québec / NY+VT+ME globally : Rail 47 % / Road 53 %



Profile of Québec – Forecast 2026

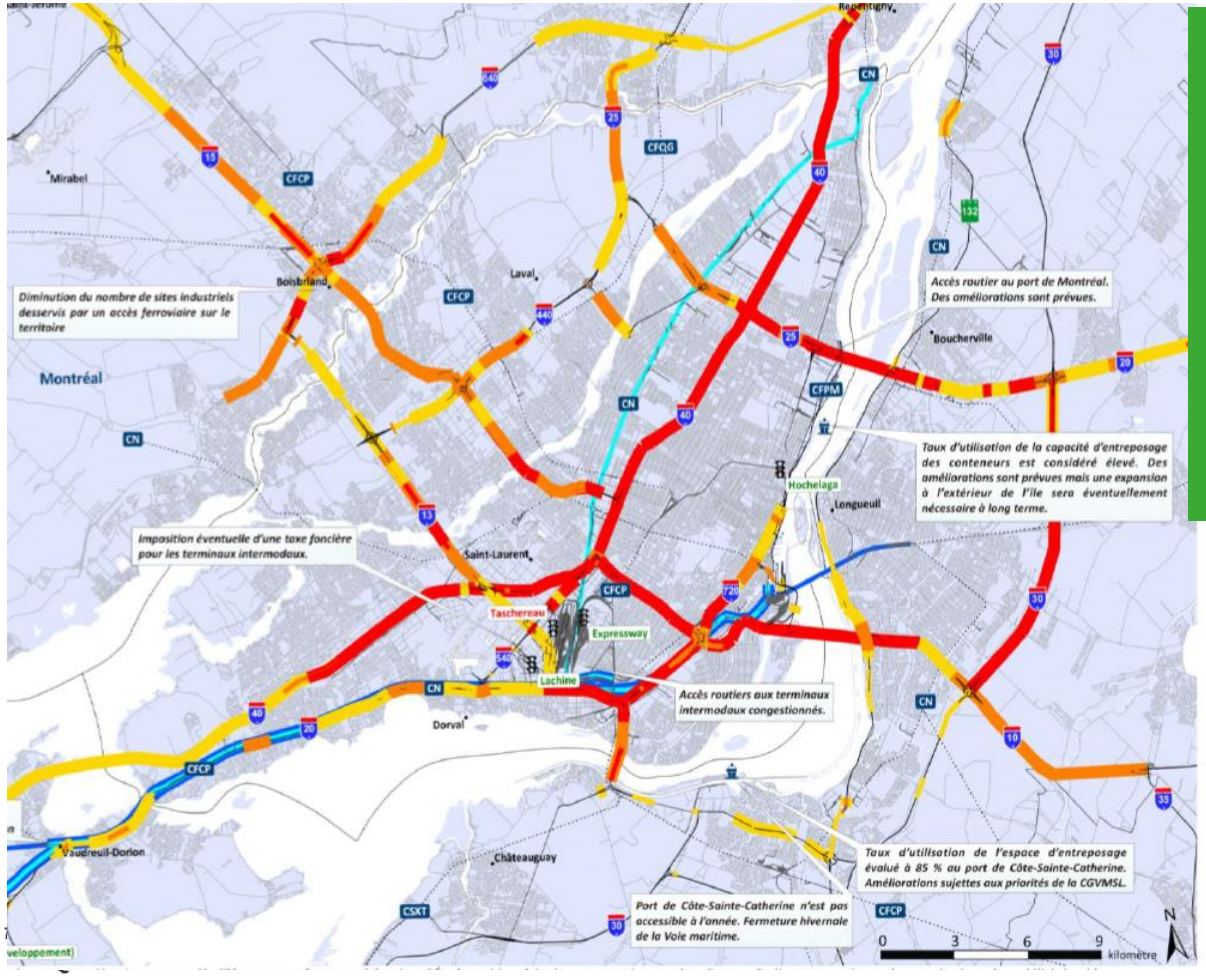
- Development of mining projects in Northern Québec has an important impact on rail and marine forecasts for 2026



Annual growth rates :

Trucking :
Number of movements 2006 - 2026
Rail :
Ton-kilometre 2010 - 2026
Marine :
Handled tonnages 2010 - 2026
Air :
Handled tonnages at three international airports 2007 - 2026

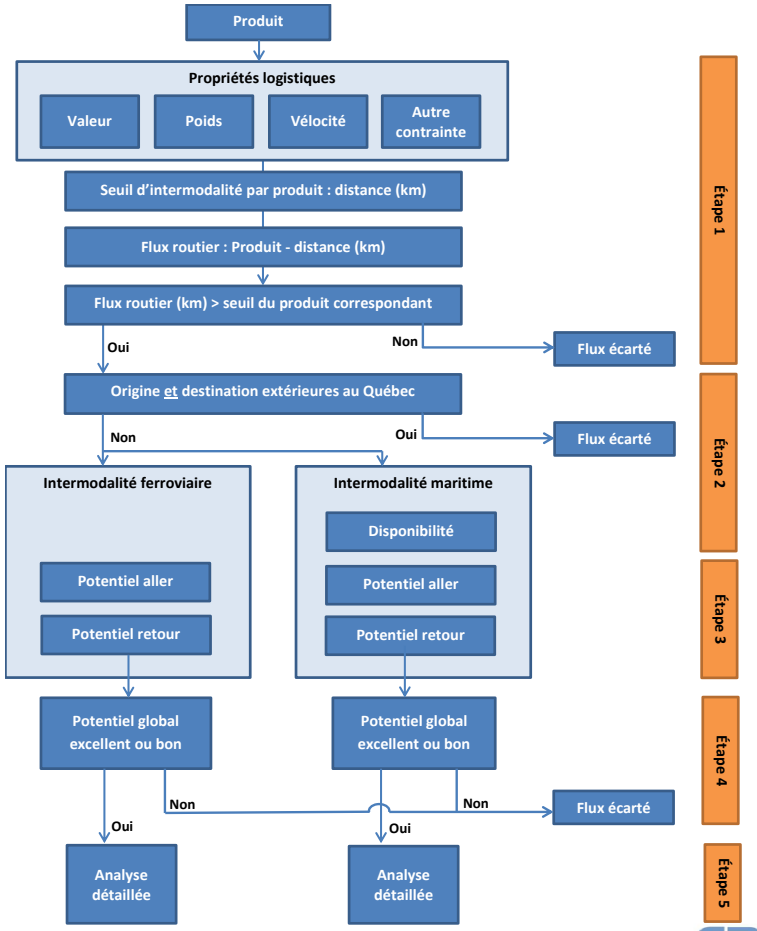
Profile of Québec – Major Constraints



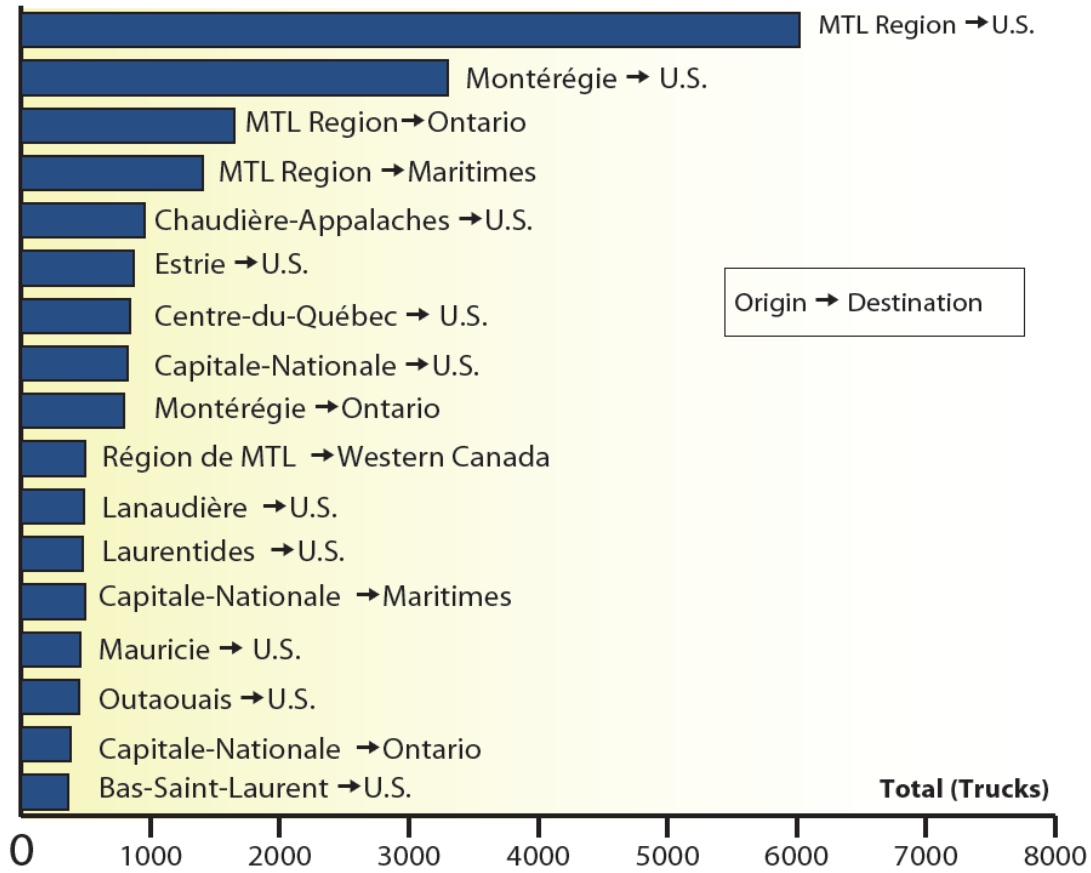
- Road congestion on the Island of Montréal
- Utilization rates on rail lines (passengers vs freight trains)
- Handling capacity for containers at the Port of Montréal
- Increase of air cargo

Intermodality Potential – Methodology

- National Roadside Survey 2006-2007
- Filtering data according to movement features
- Focus on movements which have Québec as an origin or a destination
- Detailed analysis of flows with an important potential



Intermodality Potential – Analysis



Aggregated flows by region with an Intermodality potential

- 17 flows = 17 440 truck movements which represent 6% of all moves (291 200) and 26% of total km travelled

- No flows between 2 Québec regions

- Montréal, Montérégie and Québec City represent 75% of the movements with intermodality potential

Intermodality Potential – Observations

- Detailed qualitative analysis of the 17 flows (step 5) :
  - Precise O/Ds, commodities, transportation equipments, etc.

- Identification of many constraints to intermodality :
  - Multiple precise O/Ds
  - Consolidation of goods supplied by competitors
  - Short distances
  - Irregular flows
  - Higher delays/cost compared to trucking
  - Specialized equipment non-available

Intermodality Potential – Observations

Additional observations…

- **RAIL** : Best opportunities are located where rail intermodal options already exist (ex. between Montréal and U.S.). Non-existence of intermodal equipments doesn't seem to be a frequent constraint

- **MARINE** : No line services, insufficient volumes, closure of the St. Lawrence Seaway during 3 months (Ontario and Midwest) and longer marine distance (U.S. East Coast)

- **TRUCKING** : Choice of trucking often justified by its lower cost, more appropriate logistics, flexibility (last minute delivery, JIT, no need for consolidation)

Intermodality Potential – Observations

- Interurban trucking forecast 2026
  - # of truck movements : + 41 %
  - # of truck movements with intermodality potential : + 22 %
  - Proportion of truck movements with intermodality potential would decrease from 6 % to 5,2 %
- **Global incentives might increase intermodality, however, only a low proportion of movements have the features associated with those types of supply chains**

Thank you for your attention!

Questions or comments?

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