BUSINESS CASE FOR MAINTAINING RAIL SERVICE ON THE TRIQUET-FARIBAULT LINE AND THE CRAN AND CHAPAIS SUBDIVISIONS

Final report

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Final report

presented to

Développement Chibougamau (CETC Inc.)

by

GENIVAR Limited Partnership

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List of Acronyms

CEAA	Canadian Environmental Assessment Act
CEAA	Canadian Environmental Assessment Agency
CETC	Développement Chibougamau
CETI	Centre d'expertise en transport intermodal
CFILNQ	Chemin de fer d'intérêt local du Nord-du-Québec
CN	Canadian National
JBNQA	James Bay and Northern Quebec Agreement
LEED	Leadership in Energy and Environmental Design
MDEIE	Quebec Department of economic development, innovation and exports
MRNF	Quebec Department of natural resources and wildlife
MTQ	Quebec Department of Transport
SLSJ	Saguenay–Lac-Saint-Jean administrative region

I – Introduction

The Department of Transport, Infrastructure and Communities is conducting a review of rail freight service in Canada.[1] The goal of the review is to develop recommendations aimed at improving the efficiency and effectiveness of the rail-based logistics transportation system in Canada.

The Review is being conducted in two phases. Phase I, currently underway, involves research and analysis. This phase includes studies by consultants to gain a better understanding of the nature and extent of problems and of best practices within the logistics chain, with a focus on performance. In Phase II, a panel of three people appointed by the Minister will make recommendations.

In a letter dated November 9, 2009, the Phase II committee requested comments from interested parties on problems, solutions, best practices and which factors the committee should consider in preparing its recommendations.

This document describes the socio-economic situation (Chapter 2), the supply situation (Chapter 3), and the current and foreseeable demand situation (Chapter 4), and it makes a diagnostic analysis (Chapter 5). Finally, there is a business case (Chapter 6) that sets out the proposals of the Town of Chibougamau for improving the rail-based logistics transportation system on the Triquet (Saint-Félicien) - Faribault (Chibougamau) line and the Cran and Chapais subdivisions.

It was not possible to obtain technical and financial data from Canadian National about the current state of the railway and its maintenance. The data presented here come from the Nord-du-Québec transportation plan and from conversations with rail users.

[1] Transport Canada. *Rail Freight Service Review*. Address: http://www.tc.gc.ca/eng/policy/acg-rfs-review-examen-sfm-rvw-eng-442.htm. Updated March 22, 2010.

2 SOCIO-ECONOMIC SITUATION

2.1 Study area

The study area is in the shape of a quadrilateral that embraces the municipalities of Chibougamau and Chapais, as well as the Aboriginal communities of Mistissini and Oujé-Bougoumou. On the southern boundary is the town of Chapais, and the area extends north as far as the La Grande River, including the Otish Mountains mining region. The area needs to be this large in order to describe supply and demand and thus identify the potential for economic development that would require rail service.

2.2 Population characteristics

2.2.1 Demography

The town of Chibougamau, which has over 7,500 inhabitants, is the economic and demographic centre of the study area. The town of Chapais has some 1,600 inhabitants, while the Cree First Nations of Mistissini and Oujé-Bougoumou have populations of 3000 and 600 respectively.

Between the 2001 and 2006 censuses, the population of Chibougamau decreased 4.5%, as compared to 8.6% from 1996 to 2001. Thus the downward trend appears to be slowing. At the Oujé-Bougoumou First Nation, the population increased 9.6% between 2001 and 2006 (no data for the Mistissini First Nation). The growth rate for Quebec as a whole during this period was 4.3%.

2.2.2 Population by age

The data from the latest census reveal that the study area's population is young relative to Quebec as a whole: 25.2% are 0-14 years of age, compared to 16.6% in Quebec (table 2.1), while 7.0% are 65 or older, which is half the figure for Quebec (14.3%).

The age structure is related to the demographics, in that the 0-14 age group represents some 35% of the population in the Cree communities. Thus in 2006, the median age in the study area was 33, as compared to 40 for Quebec as a whole.

Table 2.1 Main socio-economic development indicators for the study area, 2006

	Study area		Chibougamau		Chapais		Province of Quebec	
Age								
Total population 2001	N.D.		7 923		1 796		7 237 480	
Total population 2006	15 035		7 565		1 630		7 546 131	
Population aged between 0 and 14 years	3 792	25.2%	1 485	19.6%	340	20.9%	1 252 505	16.6%
Population aged between 15 and 64 years	10 053	67.8%	5 430	71.7%	1 145	69.6%	5 213 331	69.1%
Population aged 65 years and over	1 051	7.0%	660	8.7%	155	9.5%	1 080 295	14.3%
Mean age of population	33		37		36		40	
Highest education level								
Total population age 15 and over	11 145		6 040		1 345		6 184 485	
Number and percentage of those 15+ having:								
No diploma	4 222	37.9%	1 745	28.9%	525	39.0%	1 547 870	25.0%
Secondary/vocational/technical or college graduation	7 810	52.0%	3 550	58.7%	745	55.4%	3 315 925	53.6%
University graduation	1 034	9.3%	735	12.2%	65	4.8%	1 320 695	21.4%
Activity								
Median income of households (2005)	$67 367		$71 698		$62 105		$59 729	
Labour force participation rate	71.8%		73.2%		59.3%		64.9%	
Employment rate	63.0%		66.0%		51.0%		60.4%	
Unemployment rate	12.4%		9.5%		14.5%		7.0%	

Source: Statistics Canada, 2006 Census

2.2.3 Population 15 and over by education

In 2006, 37.9% of the study area population 15 and over had no diploma (table 2.1). The figure is much lower in the town of Chibougamau, at 28.9%, while for Quebec as whole, the proportion is 24.6%. On the other hand, the proportion with a vocational, technical or college diploma is higher in the region than in Quebec as a whole (34.0% as compared to 31.3%).

2.2.4 Key labour market indicators

The median household income in the study area is 13% higher than in Quebec as a whole. The difference is especially marked in Chibougamau, where the median income was $71,698 in 2006.

The employment rate (the proportion of those of working age (15-64) who have a job) is 64% in the study area and 66% in Chibougamau. Based on these data, the economy in the study area has a greater capacity to make use of its human resources than does Quebec as a whole, where the employment rate is 60.4%.

However the study area, and to a lesser extent the town of Chibougamau, have unemployment rates of 12.4% and 9.5%. By comparison, the Quebec unemployment rate was 7.0% in 2006. In this regard, it should be mentioned that the Copper Rand and Joe Mann projects of mining company Campbell Resources Inc. ceased operating during 2006 and 2007.

2.3 Industrial structure and regional specificities

The Nord-du-Québec administrative region is classified by the MDEIE (Quebec department of economic development, innovation and exports) as a resource region. Its economy depends heavily on the extraction and primary processing of natural resources. In the study area, the proportion of jobs related to the primary sector of the economy is four times what it is in Quebec as a whole (table 2.2).

Table 2.2 Jobs by industry for two parts of the study area, 2001 and 2006

	Chibougamau		Chapais		Province of Quebec	
Total jobs	4 425		790		4 015 200	
Primary sector	**425**	**9.6 %**	**120**	**15.2 %**	**113 680**	**2.8 %**
11 Agriculture, forestry, fishing and hunting	105	2.4 %	40	5.1 %	96 995	2.4 %
21 Mining and oil and gas extraction	320	7.2 %	80	10.1 %	16 685	0.4 %
Sectonary sector	**1 010**	**22.8 %**	**230**	**29.1 %**	**811 515**	**20.2 %**
22 Utilities	100	2.3 %	45	5.7 %	32 305	0.8%
23 Construction	170	3.8 %	40	5.1 %	205 660	5.1 %
31-33 Manufacturing	740	16.7 %	145	18.4 %	573 550	14.3 %
Tertiary sector	**2 920**	**66.0 %**	**425**	**53.8 %**	**3 004 460**	**74.8 %**
41 Wholesale trade	85	1.9 %	10	1.3%	173 190	4.3 %
44-45 Retail trade	580	13.1 %	65	8.2 %	472 030	11.8 %
48-49 Transportation and warehousing	230	5.2 %	50	6.3 %	181 470	4.5 %
51 Information and cultural industries	30	0.7%	10	1.3%	99 490	2.5%
52 Finance and insurance	110	2.5%	10	1.3%	153 970	3.8 %
53 real estate and rental and leasing	0	0.0 %	0	0.0 %	57 255	1.4 %
54 Professional, scientific and technical services	65	1.5 %	0	0.0 %	246 795	6.1 %
55 Management of companies and enterprises	0	0.0 %	0	0.0 %	3 865	0.1 %
56 Administrative and support. waste management and remediation services	75	1.7 %	80	10.1 %	141 945	3.5%
61 Educational services	270	6.1 %	15	1.9 %	270 895	6.7 %
62 Health care and social assistance	455	10.3 %	55	7.0 %	441 705	11.0 %
71 Arts, entertainment and recreation	50	1.1 %	10	1.3%	75 745	1.9 %
72 Accommodation and food services	410	9.3 %	65	8.2 %	246 720	6.1 %
81 Other services. except public administration	290	6.6 %	30	3.8 %	195 040	4.9 %
91 Public administration	270	6.1 %	25	3.2 %	244 345	6.1 %

Source: Statistics Canada, 2006 Census

2.3.1 Mines and metal products

Jobs related exclusively to mining account for 6.1% of all jobs in the study area, as compared to 0.4% in Quebec as a whole. The figure is 7.2% for Chibougamau and 10.1% for Chapais.

Excluding jobs associated with resource processing, mining jobs represented an estimated $43.6 million in wages in 2006,[2] with the associated impact on consumption in the region. Mining also has indirect effects on employment (through transportation companies, suppliers and subcontractors) as well as the induced effects of spending in local stores in Chibougamau and Chapais. For every industrial job created, 0.5 indirect jobs and 0.1 induced jobs are created.[3]

For example, the Troilus mine has 260 non-unionized employees and uses 95 contractors. It has granted procurement contracts amounting to some $15 million to Aboriginal-owned companies, and operation contracts amounting to $3.5 million to local cafeteria and lodging services, for aggregate and concentrate haulage, and for maintenance.

Finally, the presence of mining companies in the study area is necessary to the development of municipal and commercial infrastructures. They justify maintaining public services such as education, health and social services.

2.3.2 Forestry and wood products

The second biggest natural resource extraction and processing industry is the forest industry. The Nord-du-Québec region alone accounts for a little over 8% of Quebec jobs in this sector[4] and provides 14% of the wood harvested from Quebec's public forests (table 2.3). The region is second, after Saguenay-Lac-Saint-Jean (SLSJ), in volume of wood harvested.

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[2] Blanchette, L. 2008. *Avis sur l'industrie minière en Abitibi-Témiscamingue et dans le Nord-du-Québec*. 9 p.

[3] Ibid.

[4] MRNF. 2008. *Ressources et industrie forestière. Portrait statistique*. Available at: http://www.mrnf.gouv.qc.ca/forets/connaissances/connaissances-statistiques.jsp, page consulted March 25, 2010.

Table 2.3 Volumes of wood harvested in public forests ('000 m³), 2005-2006

	Total (sofwood)	%	Total (hardwood)	%	TOTAL	%
Saguenay—Lac-Saint-Jean	7 492	30.5	797	16.0	8 289	28.1
Nord-du-Québec	**3 831**	**15.6**	**272**	**5.5**	**4 103**	**13.9**
Côte-Nord	3 873	15.8	65	1.3	3 938	13.3
Abitibi-Témiscamingue	2 654	10.8	754	15.2	3 407	11.5
Mauricie	2 176	8.9	670	13.5	2 846	9.6
Outaouais	629	2.6	801	16.1	1 430	4.8
Gaspésie—Îles-de-la-Madeleine	1 136	4.6	202	4.1	1 338	4.5
Laurentides	592	2.4	581	11.7	1 172	4.0
Bas-Saint-Laurent	773	3.1	271	5.4	1 043	3.5
Lanaudière	581	2.4	314	6.3	894	3.0
Capitale-Nationale	677	2.8	139	2.8	817	2.8
Chaudière-Appalaches	128	0.5	60	1.2	188	0.6
Estrie	30	0.1	41	0.8	71	0.2
Montreal	-	-	-	-	-	-
Laval	-	-	-	-	-	-
Montérégie	-	-	-	-	-	-
Centre-du-Québec	-	-	-	-	-	-
TOTAL	**24 571**	**100.0 %**	**4 967**	**100.0 %**	**29 537**	**100.0 %**

Source: Ministère des Ressources naturelles et de la Faune, Ressources et industries forestières, portrait statistique, 2008.

Despite difficult circumstances for the forest industry, the Chantiers-Chibougamau and Barette-Chapais companies are continuing to do business. They have also made major investments to improve productivity.

2.4 Land transportation infrastructure

2.4.1 Rail transportation

The CFILNQ (Nord-du-Québec shortline railway) is the main railway serving the administrative regions of Abitibi-Témiscamingue, SLSJ and Nord-du-Québec. In 1995, an agreement between Canadian National (CN) and CN employees working on branch lines made CFILNQ a semi-autonomous division of CN.

A 214 km stretch of track connects Triquet station (Saint-Félicien) and Faribault station (Chibougamau). From Faribault station, the Cran subdivision goes to Chibougamau and the Chapais subdivision to Chapais, representing a total distance of 48 km. The Triquet-Faribault line is basically for use by freight trains taking natural resources to southern Quebec and the markets of Ontario and the northeastern U.S.

2.4.2 Road transportation

The study area can be accessed via highway 167, which connects Roberval (in the SLSJ region) to Chibougamau, a distance of 256 km. From Roberval, one can then reach Quebec City or Montreal (distances of 598 and 844 km respectively). The study area can also be reached via highway 113 from the Abitibi-Témiscamingue administrative region.

3. SUPPLY

3.1 Operator

The Triquet-Faribault line is operated by CN, which (through CFILNQ) operates most of the railway lines in the Abitibi-Témiscamingue, SLSJ and Nord-du-Québec regions.

3.2 Services

On the Triquet-Faribault line, trains mainly carry raw materials (wood, metals, petroleum products, etc) and processed goods (lumber, wood chips, beams, processed metals, synthetics, etc).

According to the diagnosis made in 2005 when the Nord-du-Québec transportation plan was developed[5], shippers in this region, like those in Abitibi-Témiscamingue and SLSJ, are not satisfied with the quality and level of maintenance of the infrastructure, the quality of the railway cars, client service, and car tracking.

The preliminary diagnosis[6] brought out details of the issues raised by stakeholders:

- small businesses have service problems;
- state of railway cars is sometimes appalling;
- small businesses have problems with car tracking and car availability;
- public worried about replacement of trains by trucks for transportation of dangerous goods, an increased number of trucks on the road and the impact on safety;
- worries about reduction of competitive supply and loss of service for carriage of big items of equipment (especially with the appearance of B-train trailers);
- worries about the state of the tracks;
- problems for regional stakeholders playing a significant role in the rail industry, specifically with respect to investment.

[5] MTQ. 2005. *Plan de transport du Nord-du-Québec*. *Diagnostic*. 83 p.

[6] MTQ. 2002. *Plan de transport du Nord-du-Québec*. *Prédiagnostic.* Working document. Final version. 32 p. and appendices.

Interviews with users of the Triquet-Faribault line in March 2010 showed that services are minimal. In recent years, operating days have dropped from 5 to 2 a week, and since service is only available for at most 8 hours per working day, there is little flexibility and it is very hard to plan shipments.

Interviews with the forestry and mining companies that use the line reveal that client service is deficient, though it has improved in recent years.

CN's clients say that there has been no major investment in the tracks over the past 30 years, and as a result the maximum train speed is 25 km/h over the entire line.

The number of cars specifically designed to carry forest products has apparently decreased in recent years, leading to lower use of the railway for this purpose and increased costs.

CN's freight rates are said to be increasing from one year to the next, at an average rate of 4%, which is greater than inflation. Also, for a number of years CN has been applying surcharges for waiting time during unloading.

CN clients see the poor quality of service and unsatisfactory freight rates as the result of the carrier's monopoly in this area of Quebec. They say that as one of the biggest freight handlers in North America, CN should be living up to its reputation by providing quality service that meets the needs of the industry.

3.3 Government policy

When the rail line that connects Chibougamau-Chapais to the SLSJ region was built in the 1950s (which is very recent in the history of the railway system), it reflected a political will to "open up the middle north" both to meet the needs of the mining industry after the discovery of copper and zinc at Chibougamau and Chapais, and to exploit forest resources beyond the St. Lawrence watershed.[7]

[7] CETI. 2007. *Étude sur les besoins en logistique avancée et en intermodalité des entreprises de la grande région de Québec*. Available at http://www.transportintermodal.com, page consulted March 25, 2010.

In the early 1990s, the Quebec Department of transport recognized certain railway lines in the Nord-du-Québec region, such as the CN line between Franquet and Chibougamau-Chapais, as essential to Quebec. Yet that line was abandoned in 1994, leaving the Triquet-Faribault line as the only way of accessing the region by rail.

Despite the competition from trucks, and the lack of attention to trains in the regions, the rail companies have in recent years been investing (sometimes with government support) in infrastructure near large urban centres. They have installed intermodal technologies, purchased new locomotives, acquired equipment to facilitate carriage of containers, and built infrastructure to speed up and improve traffic flow at the U.S.-Canada border.

These investments improve the outlook for greater use of regional railways. For example, the development potential related to mining in Nord-du-Québec requires transportation infrastructure that is in good condition[8] and in many cases it will involve the use of rail (see section 4.1). Exploitation of natural resources offers a path to economic and social development for the communities in the region.

[8] MRNF. 2009. *Plan Nord – Pour un développement économique socialement responsable et durable*. Working document. 29 p.

4. PORTRAIT OF CURRENT AND FORECAST DEMAND

4.1 Mining sector

Demand for rail transport by the mining sector is based on the ore to be transported to processing plants or ports for export, and especially on supplies of fuel, explosives, reactants, and other products used for mining. Rail is also used to transport oversized loads.

According to the description of the Canadian rail freight logistical system prepared for the rail freight service review in November 2009, transportation of metals and minerals has been the fastest-growing business unit in terms of revenue and volume since 2001.

4.1.1 Current situation

The history of Chibougamau shows that the mining and forestry industries have always been heavy users of the rail network. Since 1953, the mining district of Chibougamau has been growing rapidly. Some 30 mines have been operated there, for a total of 80 million tonnes of ore. In 2008, three mines were in operation in the study zones. However, these mines are expected to close during the next there years (Table 4.1).

The closure of the Copper Rand and Joe Mann mines by Campbell Resources Inc., in 2006 and 2007, as well as the decrease in forestry activity, mean that only two round trips a week are made on the Triquet-Faribault line, for an equivalent of 4,160 cars per year.[9] This rail line previously had daily service in both directions.

[9] Sylvain Dallaire, MTQ, Interview conducted February 22, 2010.

Table 4.1 Metal production in Chibougamau, 2008

Company and mining project	Metal produced	Fuel (million litres)	Explosives and other supplies[3]
Campbell Resources Inc.	3,016 tm copper	4.5	530 mt
- Copper Rand[1]	340 kg gold		
	948 kg silver		
Campbell Resources Inc.	260 tm copper	2	46 mt
- Fosse Merrill[1]	17.1 kg gold		
	0.185 kg silver		
Inment Mining Corporation	25 000 mt	8[2]	1,177 mt
- Troilus	Stonedust		
Total volume	**28,277 mt**	**14.5**	**1,753 mt**

1 MRNF. Location of producing mines and architectural stone quarries in Québec, Appendix 1, 2009 and GENIVAR estimates.
2 Estimatde 50,000 L ofdiesel per day, Richard Saint-Jean, Inmet, Troilus division
3 Estimates based on comparable mining projects
mt: metric tonnes

4.1.1.1 Troilus Mine

Troilus is an open-pit gold and copper mine located 120 kilometres north of Chibougamau. Inmet Mining Corporation, which operates this mine, sent an average of 25,000 tonnes of ore per year to Rouyn-Noranda during the last five years of operation. It produces stonedust that is shipped to be processed at the destination.

In recent years, Troilus Mine has needed an average of 50,000 litres of diesel per day for its operations. This means nearly 7 million litres are transported by rail annually. The decision to have fuel shipped by rail is supported by a comparative analysis that found a savings of 2.4¢ per litre when fuel is shipped by train rather than by tanker truck.

Finally, mine infrastructure requires the use of very large components. When the mine was being built, the railway made it possible to transport parts weighing between 75 and 100 tonnes. Shipping these specific parts by rail was easier and more cost-effective than by road.

Inmet Mining Corpoation will continue to operate Troilus mine until June 2010. It plans to create a new exploration program. The company is optimistic about the future and its operations.

4.1.2 Foreseeable situation

4.1.2.1 Otish Mountains Sector

There has been significant mine exploration in the Otish Mountains region in recent years. This work revealed just how much potential for mineral activity development there is. The development of this potential is, however, closely linked to the development of access conditions.

It is in this context that the northward extension of Highway 167 is prioritized by the Government of Quebec in the context of the Plan Nord, which aims to open a new economic space for the development of Quebec.[10]

The project submitted by MTQ to the Canadian Environmental Assessment Agency (CEAA) in April 2010 concerns the 250-km extension of Highway 167 to the Otish Mountains. Because the project is located on territory covered by the James Bay and Nord-du-Québec Agreement (JBNQA), the environmental assessment process set out in the CEAA will be replaced by the federal environmental and social impact review process set out in Section 22 of the JBNQA.[11]

The extension of Highway 167 to the north aims to maximize the benefits of a future mining operation, notably by promoting the implementation in the short term of several projects that have reached the advanced stages of planning. The MRNF work summary shows that over 30 companies were present in the area in 2008, with 40 different projects (table 4.2). Uranium is the most sought-after mineral substance, with over 20 projects. There is also a significant increase in the number of projects for base metals, which increased from 2 to 12 in 2 years. Precious metal and diamond exploration activities totalled 5 projects in 2006 and 2008.

[10] MRNF. 2009. *Plan Nord – Pour un développement économique socialement responsable et durable*. Working document. 29 p.

[11] CEAA. April 21, 2010. *Route 167 North, Direction Otish Mountains. Notice of Commencement of an Environmental Assessment*. Canadian Environmental Assessment Registry. Internet. Address: http://www.ceaa.gc.ca/050/details-eng.cfm?cear_id=54435, Updated May 5, 2010.

Based on the analyses conducted, five advanced exploration projects may reach the production phase in the medium term, between 2010 and 2014 (table 4.3).

Table 4.2 Summary of mining exploration projects in the Otish Mountains region 2006-2008

	2006	2007	2008	Variation 2006-2008
Number of companies	10	27	33	+ 23
Number of projects	12	35	40	+ 28
Substances				
Uranium	4	24	22	+ 18
Precious metals	1	3	3	+ 2
Base metals	2	3	12	+ 10
Diamonds	5	5	3	- 2
Location				
South of Renard	10	30	27	+ 17
North of Renard	2	5	13	+ 11

Source: MRNF, Activity Report 2006-2007-2008.

Table 4.3 Forecast annual inputs and outputs for Chibougamau region mining projects, 2009

Company and mining project	Output	Input		Useful life of mine
	Annual production (estimates)	Fuel (millions of litres)	Explosives[3] and reactants	
Stornoway Diamond Corporation - Renard (Foxtrot)	168 kg diamonds (840,873 carats)	11.7	650 mt	7 years
Strateco Resources Inc. - Matoush	1,006 mt uranium	4.3	461 mt	7 years
Western Troy Capital Resources inc. - Lac MacLeod	10,899 mt copper 1,623 mt molybdenum 2,511 kg silver 22 kg gold	20.7	1,946 mt	9 years
Eastmain Resources Inc. - Eastmain Mine and Ruby Hill	14,279 kg gold[1]	29.2	3,877 mt	7 years
Abitex Resources - Lavoie	1,134 mt uranium	5.1[2]	480 mt[2]	8 years
Total volume	**14,700 mt**	**71**	**7.414 mt**	

[1] Project comparable to Detour Lake in Ontario.
[2] Fuel consumption estimated based on comparable mining projects.
[3] Based on the hypothesis that 0.26 kg of explosives are needed to generate a tonne of ore.
mt: metric tonnes.
Source: Compilation by GENIVAR based on pre-feasibility studies of mining companies under NI 43-101.

Based on the five most advanced projects, nearly 15,000 tonnes of concentrated ore will have to be shipped to other processing plants or markets each year. Furthermore, an estimated 30 million litres of fuel must be shipped from Montreal to the mining projects in the study area each year. Also, a non-negligible estimated 7,414 tonnes of explosives, reactants and other supplies must be shipped to mining sites annually.

The five mining companies whose projects have undergone advanced study have expressed interest in using the railway to transport ore and especially for shipping supplies to the mine.

In summary, in coming years, metal products are expected to experience an annual increase of nearly 6,000 tonnes, from 9,000 to 15,000 tonnes. Mining projects located in the Otish Mountains region, which use diesel power, are expected to increase demand for diesel from 14.5 million to 30 million litres per years. Other supplies should generate a volume of 7,414 tonnes.

In addition to the mining projects that have undergone advance studies, there are over 30 other potential projects in the study area. These are currently at different stages of progress.

Chibougamau sector

In the Chibougamau area, in addition to the Inmet Mining Corporation, which plans to create a new exploration program to improve the production of the existing Troilus mine, private mining companies Apella Resources and Blackrock Resources are currently working on independent mining projects. The Blackrock Resources iron-vanadium-titanium project is particularly promising for the region. It is currently not possible to obtain specific information about this project's resources ore reserves, but Jean Rainville explained that the project is comparable to large-scale iron mines and it will make it possible to process and ship nearly 5 tonnes/year of iron ore.[12] The iron concentrate will be shipped to Quebec City by train to then be routed to China. However, Mr. Rainville pointed out that this project would not be possible without a rail link between Chibougamau and Quebec City.

[12] Jean Rainville, Blackrock Resources, Interview conducted May 5, 2010.

4.2 Forestry sector

4.2.1 Current situation

Current rail demand was estimated based on a consultation with managers of forestry companies in Chibougamau and Chapais. A summary of the data available is presented in table 4.4.

Table 4.4 Annual use of rail transport by forestry companies, by product shipped

Company	Cars
Barette-Chapais	1,350 cars of saw timber 600 cars of wood chips
Chantiers-Chibougamau	240 cars of saw timber 240 cars of beams 1, 000 cars of wood chips
Total	**3, 430 cars per year**

4.2.1.1 Barrette-Chapais

For the past few years, Barette-Chapais, a company specializing in saw timber, has sent an average of 600 cars of wood chips and 1,350 cars of saw timber to the Quebec City and Montreal markets via the Triquet-Faribault line. Given the poor quality of rail service, especially because of the transport time, Barette-Chapais ships 85% of its wood chip production and 20% of its saw timber production by truck. If rail service improves, the quantities sent by rail could be greater.[13]

4.2.1.2 Chantiers-Chibougamau

Chantiers-Chibougamau produces and ships by rail 1,000 cars of wood chips pwer year, as well as construction materials, including 240 cars of timber and 240 cars of wooden beams.[14]

[13] Rock Beaulieu, Barette-Chapais, Interview conducted Jaunary 18, 2010.
[14] Frédéric Verreault, Chantiers-Chibougamau, Interview conducted January 28, 2010.

However, for Chantiers-Chibougamau, shipping products by train is important because the demand for LEED constructions is rapidly growing across the continent. In order to increase demand for regionally produced and manufacture progress, thus supporting the use of local resources and reducing the ensuing environmental impact, LEED standards generally require that a quantity of the materials used in the construction be transported by train within a 2,400 kilometre radius of the construction site.

4.2.2 Forecast situation

According to Barrette-Chapais and Chantiers-Chibougamau, current production levels should be maintained in coming years. Their demand for rail service therefore is not expected to decrease. However, if the quality of the network and the service were improved, thus increasing the speed and flexibility of the shipments, these companies would leave trucking for rail transport.

However, these companies find themselves at the low point in the forestry crisis that is currently affecting all of Quebec and it is possible that production will increase in coming years. Demand for rail transport is therefore expected to be constant at the very minimum.

4.3 Fuel distribution

A telephone interview with a representative of Esso, which provides gasoline, diesel and heating oil to the region's mining and forestry industry, confirmed data on the industries' current fuel needs. In effect, Esso distributes between 30 million and 40 million litres of fuel per year to the industries and other organizations, and 90% of this fuel is transported by rail.[15]

4.4 Financial and environmental benefits of rail transport

While a number of shippers prefer trucking for freight transport because of its greater flexibility, rail is a competitive solution, especially in terms of unit cost and environmental impact. The Triquet-Faribault line is particularly beneficial economically, because rail performs particularly well over long distances.

[15] Dany Gagnon, Esso Service Inc., Interview conducted January 28, 2010.

As Faribault is approximately 675 kilometres away from Quebec City and 820 kilometres from Montreal, using the railway is very advantageous for regional businesses.

In addition, a description of the Canadian freight rail logistics system prepared for the review of rail freight service in November 2009 reports that rail can be more competitive than trucking, even over shorter distances. In general, transportation of very large and/or very heavy volumes of bulk products is more efficient by rail than by truck.

A US study conducted by the *Transportation Research Board* in 2002 compared fuel and environmental costs of three modes of freight transportation.[16] The fuel costs of trucking are 2.11 times greater. In terms of environmental impact, trucking emits between three and five times as many pollutants over a given distance (table 4.5).

Table 4.5 Comparison of fuel and environmental costs of the three primary modes of transportation, by tonne-miles

	Cost	**Fuel Use**	**CO^2**	**NOx**
	Cents	*Gallons*	*pounds*	*pounds*
Water	0.97	0.002	0.20	0.53
Rail	2.53	0.005	0.64	1.83
Truck	5.35	0.017	1.90	10.17

Source: Grier, 2002.

[16] Grier, D. V. 2002. *Comparison of Inland Waterways and Surface Freight Modes*, *TR NEWS 221*, Transportation Research Board.

5. DIAGNOSTIC ANALYSIS

The current rail transport supply and demand analysis in the study area identified the following strengths, weaknesses, opportunities and threats:

5.1 Strengths and weaknesses

Strengths

- Access to a vast territory that is rich in mineral and forestry resources: the Triquet-Faribault line is the only link between Nord-du-Québec and the rest of North America.
- Reducing the number of heavy vehicles in circulation: shipping a certain volume of freight by rail helps improve highway safety and prolongs the life of the roads.
- Better transportation costs: regional shippers and transportation users benefit from lower costs as compared with trucking, especially over long distances.
- Better environmental performance: rail transport reduces greenhouse gas emissions as compared with trucking.
- Rail transport has fewer legal requirements for transporting oversized loads.

Weaknesses

- Insufficient availability: the number of hours of service available per week does not meet the clients' current needs.
- Inadequate infrastructure: the quality of the infrastructure limits the speed and flexibility of the service.
- Poor cooperation between network manager and clients.
- Decrease in rail use by local businesses: causes prices to increase and decreases market share; businesses in the region are therefore less competitive.

5.2 Opportunities and threats

Opportunities

- Recent investments in handling and transhipment infrastructure: these investments improve the quality of intermodal service, which improves the justification for maintaining regional networks.
- Significant potential demand: the recent results of technical studies and surveys by mining companies in the Otish Mountains area show very good potential for mining development.
- The Government of Quebec plans to extend Highway 167 to the Otish Mountain region, which will promote the development of new mining projects.

Threats

- Rail transport is used by the mining industry, whose volumes of ore to transport fluctuate based on economic cycles, which makes the service's short-term profitability unpredictable.
- Regional development is based on industries that are partly dependent on the railway for structure and development.
- Communities in the study area are dependent on the mining and forestry industries: direct and indirect employment are sensitive to any factor that is likely to hinder the competitiveness of these businesses, especially increased transportation costs.

5.3 Development issues

Nord-du-Québec and the Chibougamau-Chapais sector present an undeniable potential for development, especially in mining and forestry. While the forestry industry is in a periods of restructuring, the mining industry shows positive signs in terms of new deposits in the short and medium term.

Regarding the forestry industry, Chantiers-Chibougamau and Barette-Chapais have made major investments to improve their productivity, despite difficult market conditions. Rail transport is of vital importance to their activities.

Regarding mining, there were over 30 businesses in the area in 2008 with a total of 40 projects, six of which are in an advanced stage of development. Interviews with the people in charge of these projects showed the importance of rail transport for their projects, especially in terms of maintaining competitive transportation costs in both the construction and operation phases.

Moreover, the Blackrock Resources project (5 tonnes per year of iron ore) absolutely requires the use of the railway to ship the ore to Quebec City and, from there, to China.

On the other hand, considering the mineral potential of Nord-du-Québec, the number of mining projects in the future may be considerable.

Consequently, from the perspective of sustainable economic development, maintaining and improving the only rail line providing access to this region is absolutely vital. It would be even more costly if it had to be rebuilt one day.

6. BUSINESS CASE

6.1 Nature and scope of service problems

In general, the rail service problems on the Triquet-Faribault line and the Cran and Chapais subdivisions are related to the level of service provided by CN. This is considered minimal by the users, both in terms of infrastructure and the number of days of operation.

The number of days of operation per week reduced from 5 to 2 in recent years. Given this service decrease and the maximum operating period of 8 hours per working day, planning shipments is complex.

Regarding the railway, its alleged poor condition due to a lack of maintenance means that its maximum safe speed is 25 km/h, which does not encourage the use of rail transportation.

On the other hand, the transport fees required by CN would increase at an average of 4% per year, which is greater than inflation. For the past few years, CN would apply additional fees for waiting times when unloading a container at its final destination.

In summary, according to CN clients, poor quality of service and inadequate pricing are caused by the carrier's monopoly position in this region of Quebec.

6.2 Nature and scope of negative impact

The current conditions of the mining and forestry sectors result in the Triquet-Faribault line remaining under-used. However, the alleged poor condition of the infrastructure and inadequate service also limits the use of rail transportation. A regional business even pointed out that it has to use trucking for 85% of its wood chip production and 20% of its saw timber because of the excessive time it takes to ship by rail.

It is also important to point out the concerns of the population regarding a possible transfer from trains to trucking. This would have the immediate effect of increasing the number of trucks on the road. The implications of this situation involve primarily user safety, but are also related to maintaining the quality of the roads.

In the medium term, the six mining projects likely to use rail transport in the construction or operation phase will produce not-negligible quantities of ore. The business representatives interviewed said they were all concerned about the maintenance of the rail network. In the case of Blackrock Resources, the use of the Triquet-Faribault line to ship 5 tonnes of ore per year is absolutely essential and requires a rail line that is in good condition.

In the long term, it goes without saying that the minera potential of Nord-du-Québec means that the number of mining projects in coming years could be considerable.

Considering the significant potential of mining and forestry development, maintaining and improving the infrastructure and related services of the only rail link to Nord-du-Québec is a regional priority.

6.3 Proposed solutions

Then Triquet-Faribault is of vital importance to the development of Chibougamau, Chapais and Nord-du-Québec. In this regard, the government could:

- Support CN in its investments to improve the quality of the infrastructure, especially in maintaining and upgrading the Triquet-Faribault line and the speed of the service it provides;
- Support shippers in resource regions, including Nord-du-Québec and Chibougamau-Chapais.

Possibilities for increasing the use of the railway include:

- Having transportation equipment available at the right time;
- Increasing service frequency;
- Improving client service so it is more attentive to needs (greater availability of personnel);
- Improving rail car supply, i.e. cars dedicated to transporting specific wood and mineral products are available;
- Increasing daily service hours;
- Making transport time more consistent and uniform.