

# Mines in Quebec: Land use and value creation

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**AZIMUT**

English translation:  
Courtesy of PDAC

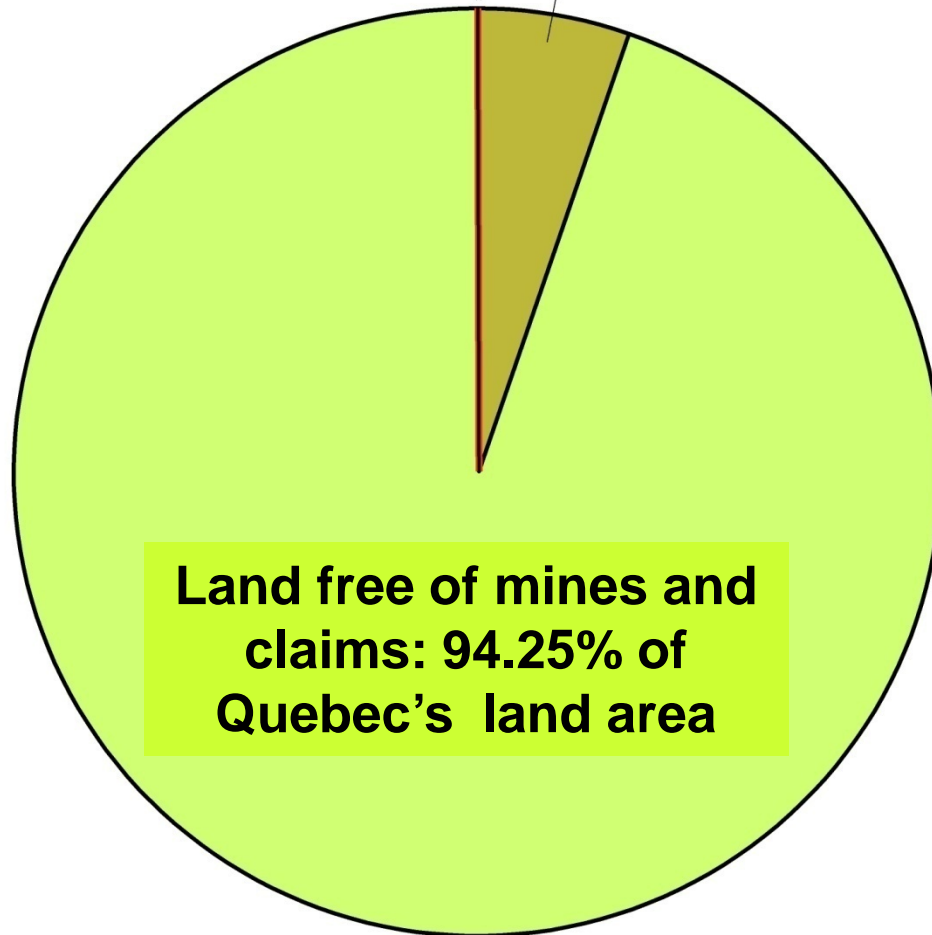
# Mines in Quebec

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A factual analysis is presented in order to answer three key questions on mines:

- 1) What is the land area used by mines in Quebec?**
- 2) What is the value created by mines compared to other segments of our economy?**
- 3) How many exploration claims are there for an active mine?**

**Active mines: 0.005% of land**  
**Closed mines: 0.03% of land**  
**Claims: 5.7% of land**



**Land free of mines and  
claims: 94.25% of  
Quebec's land area**

## **Mines in Quebec**

**\$7 Billion (GDP 2010)**

**2.8% of the economy**

**23.2% of exports**

# Land area used by mines

- 22 active mines totalling 90 km<sup>2</sup> or 0.005% of Quebec (\*)
- 99.995% of Quebec is not currently subjected to mining
- Average land area used: 4.1 km<sup>2</sup> per mine
- In 100 years of mining activity, a total of 325 mines have occupied 0.03% of the land (430 km<sup>2</sup>: 280 km<sup>2</sup> of mining infrastructure, 150 km<sup>2</sup> of mine tailings)
- 99.97% of Quebec has never been subjected to mining

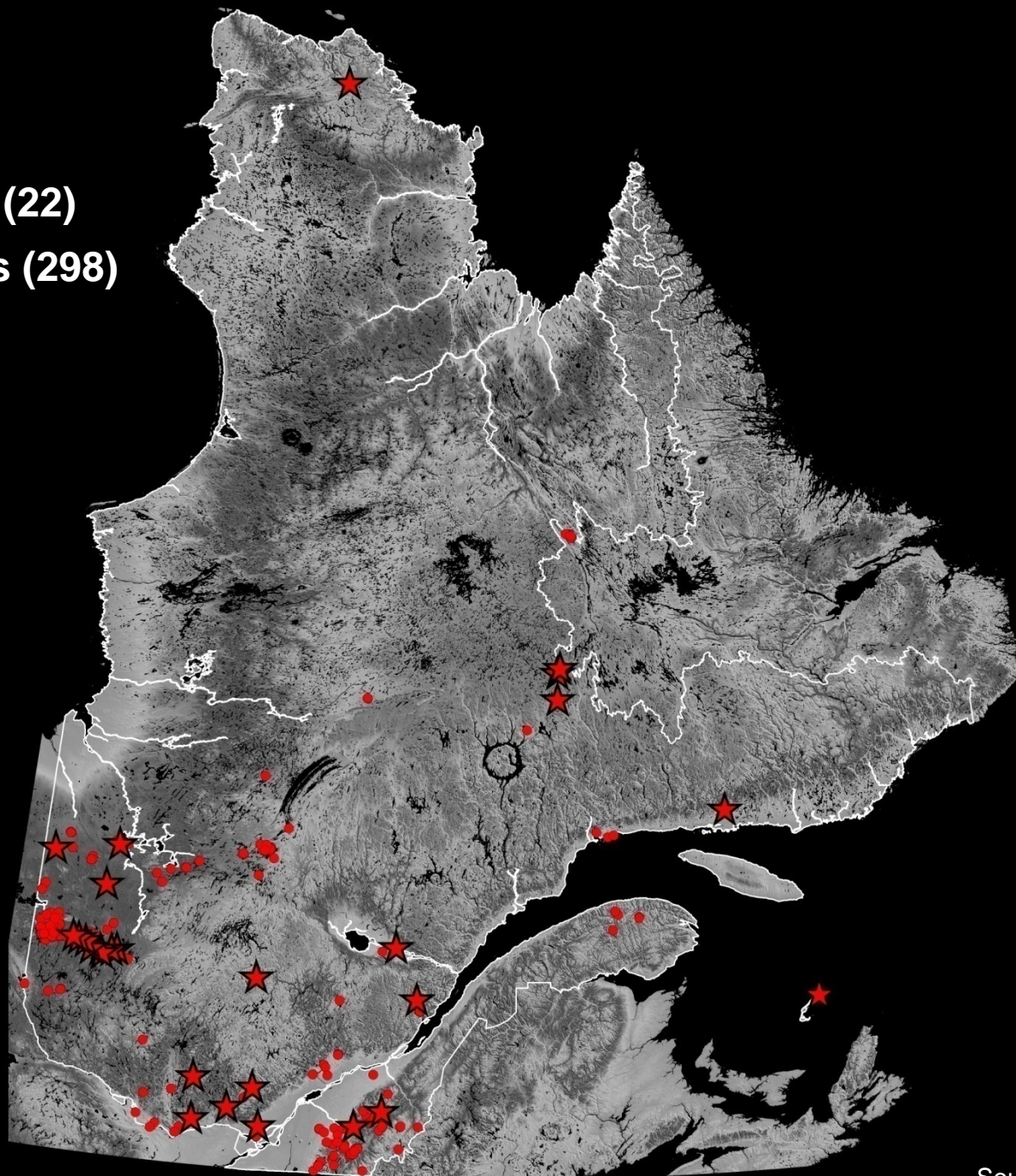
(\*) Land area of 90 km<sup>2</sup> is calculated from the 27 active mines in 2011. In 2012, this number was 22, and although those 22 active mines add up to less than 90 km<sup>2</sup>, the 2011 total was used for this study.





# Mines

- ★ Active mines (22)
- Closed mines (298)



500

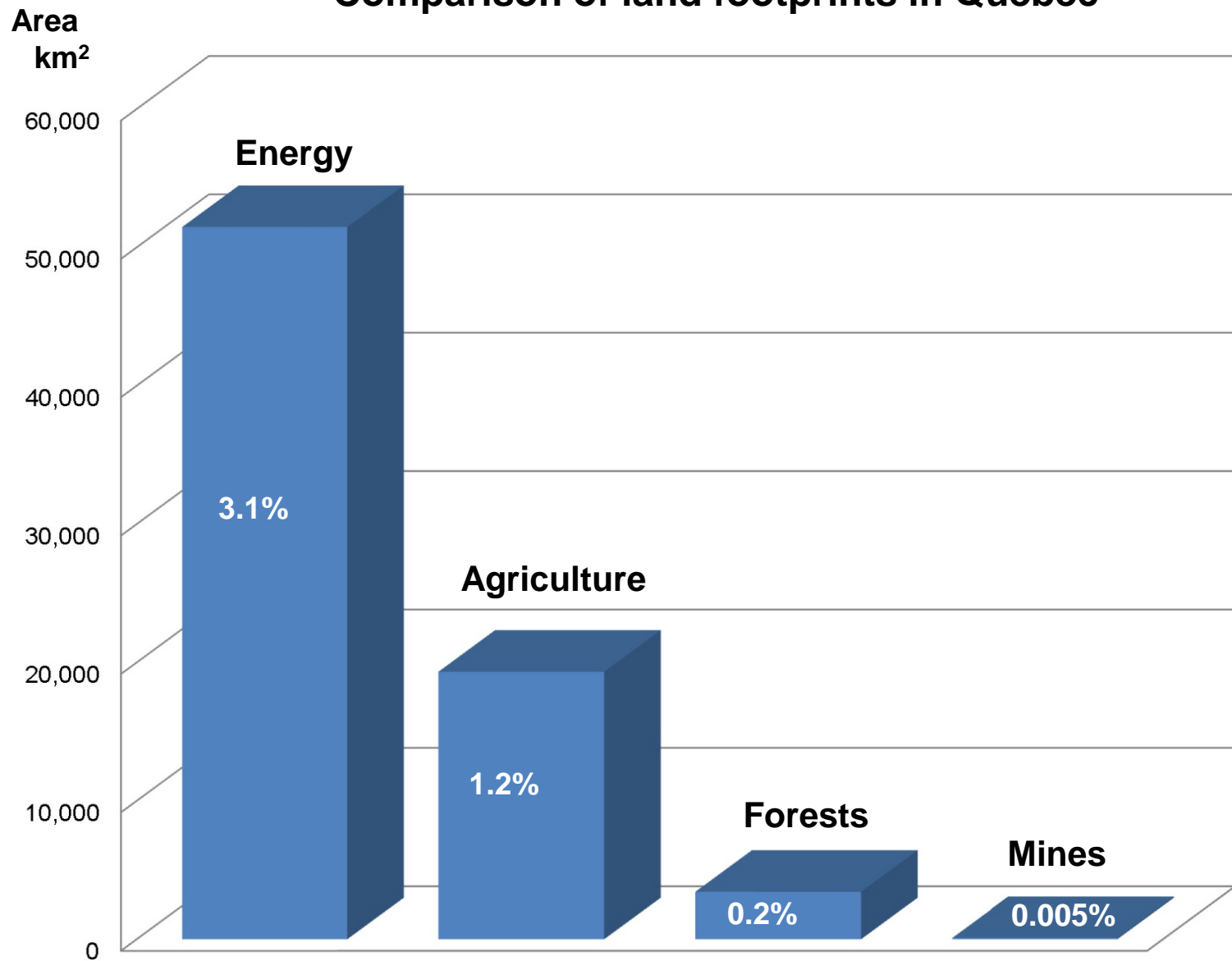
km

# Value added by mines

- The value of mining is compared to three other sectors of the economy that also use the land:
  - Hydroelectricity
  - Agriculture
  - Forests
- The value added by the economic sector is calculated per unit area (in \$ per km<sup>2</sup> per year) based on the 2010 GDP
- Mines, hydroelectricity, agriculture and forests are vital and complementary components of the Quebec economy, each with their specific social and environmental challenges: there is no competition between these sectors!

Note: The values shown are rough order-of-magnitude estimates based on the available data

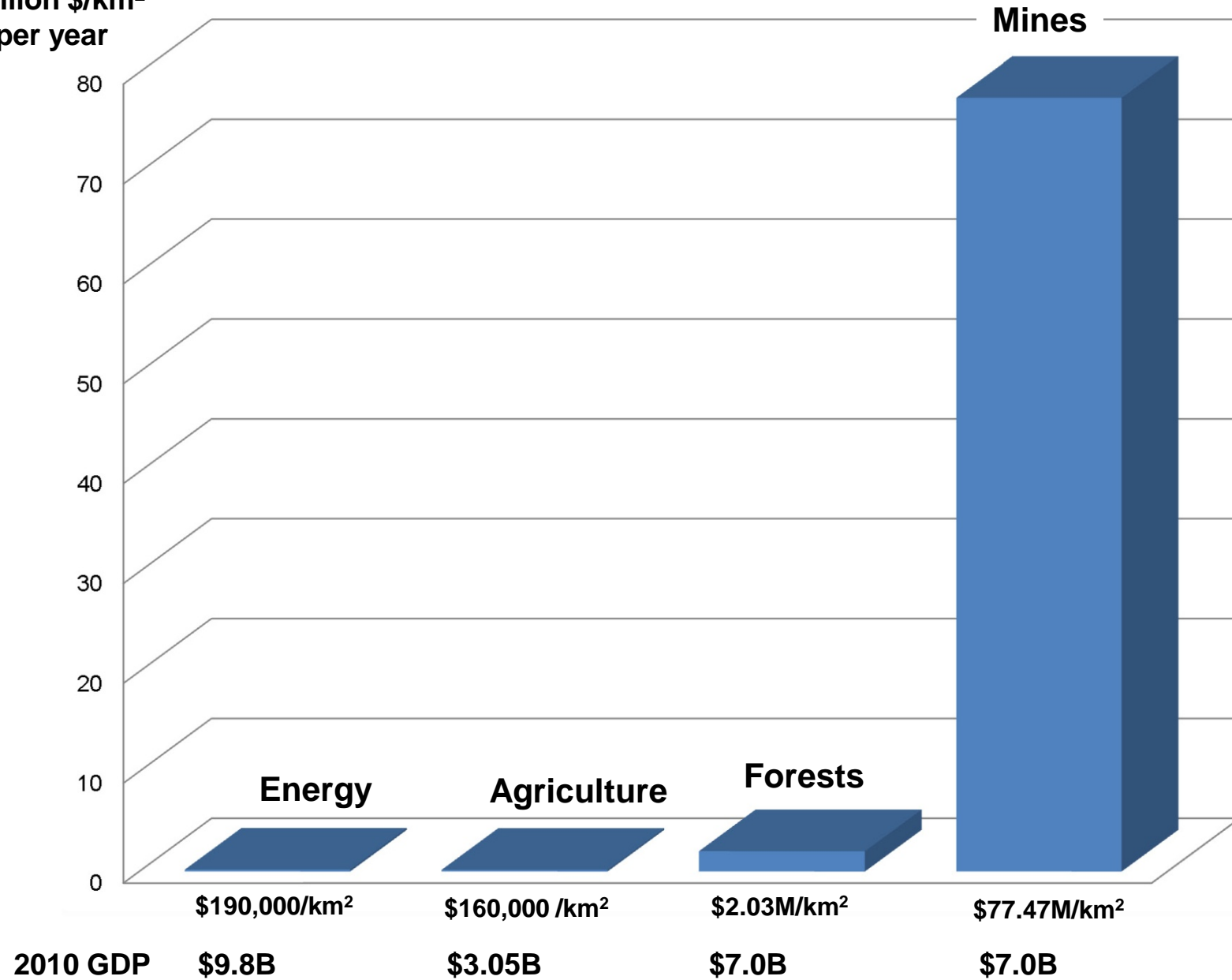
## Comparison of land footprints in Quebec



Quebec's land area: 1,667,441 km<sup>2</sup>

## Value added by unit area

Million \$/km<sup>2</sup>  
per year





# Sectoral comparison

	Land footprint (km <sup>2</sup> )	Comparison with mines	
		Area	Value created/km <sup>2</sup>
● Mines	90		
● Forests	3,432 <sup>(a)</sup>	38 times more	38 times less
● Agriculture	19,333 <sup>(b)</sup>	215 times more	485 times less
● Energy	51,474 <sup>(c)</sup>	572 times more	410 times less

(a) Area harvested annually

(b) Area under cultivation, 2006

(c) Hydroelectricity

# Mines in Quebec

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- Very small land use: 0.005%
- Huge value added per unit area:  
\$77.5 million per km<sup>2</sup>

\$7.0B GDP

23.2% of exports

# Mines in Quebec

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'Non-renewable' resources = **Replaceable resources**

- It is often said that mineral resources are 'non-renewable' because they do not regenerate themselves in the short term
- But the depletion of a mine is a local depletion, not global
- Exploration yields new discoveries that will replace existing mines: **exploration is one of the components of sustainable development**

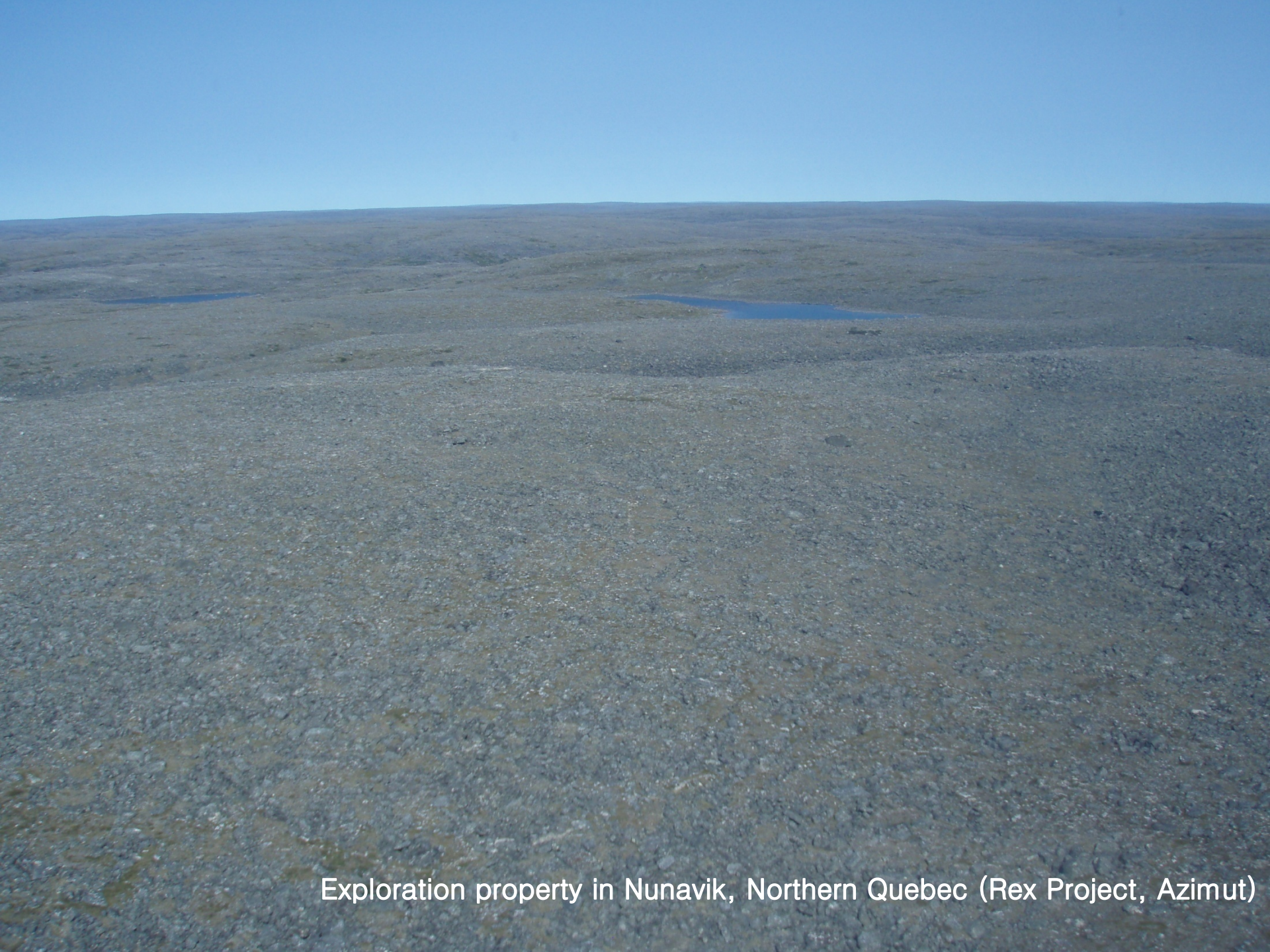
# Mines in Quebec

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- In relation to other economic sectors, mines use a small geographical area, however they produce great value per unit of area
- Because of their small size, deposits are hard to find in Quebec's immense territory
- If the land available for exploration and the number of claims go down, the probability of discovery goes down as well
- **Access to the land is crucial, and the impact is very small**







Exploration property in Nunavik, Northern Quebec (Rex Project, Azimut)



# Claims and mines in Quebec

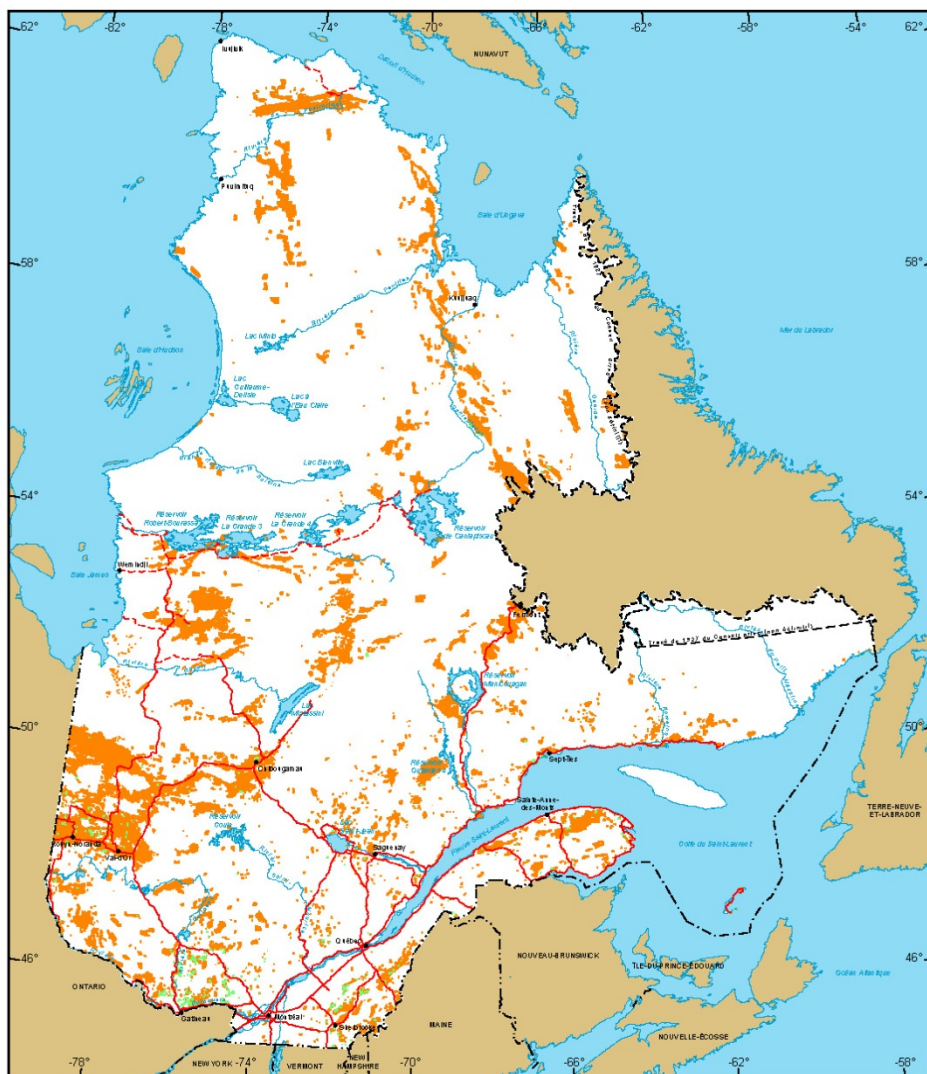
- 205,191 active claims totalling 95,400 km<sup>2</sup> or 5.7% of Quebec (as of 09/04/2013)
- 94.3% of Quebec is free of claims
- Quebec claims in 2013:
  - Virtual boundaries, indisputable
  - Temporary validity, renewable every 2 years
  - Exploration: little or no impact on the environment
  - > 95% of claims located on public land
- A claim is **NOT** a mine:
  - 22 active mines and 205,191 active claims means:
  - 1 mine per 9,300 claims or only 1 mine per 147,000 claims if 100% of Quebec was claimed

# Claims and mines in Quebec

- Active mines have a total geographic area that is 35 times less than the populated area in Quebec (3,189 km<sup>2</sup>, in 2006) and 1,060 times less than the area covered by claims
- The claims are almost all located outside of populated areas (comprising 0.2% of Quebec) and in sparsely populated areas



## Titres miniers au Québec



**Titres miniers actifs**  
 Nombre : 205 191  
 Superficie : 9 540 053 ha  
 Pourcentage du territoire : 5,7%

**Titres miniers en demande**  
 Nombre : 2 410  
 Superficie : 171 080 ha

### Métadonnées

**Projection cartographique**  
 Conique de Lambert avec deux  
 parallèles d'échelle conservée  
 (46e et 60e)

1/10 000 000  
 0 200 km

### Sources

Données minières, MRN, 2013  
 Référence cartographique, MRN, 2011  
 (BDGA 1M, BDGA 5M)

### Réalisation

Ministère des Ressources naturelles  
 Direction des titres miniers et des systèmes  
 Note : Le présent document n'a aucune  
 portée légale.

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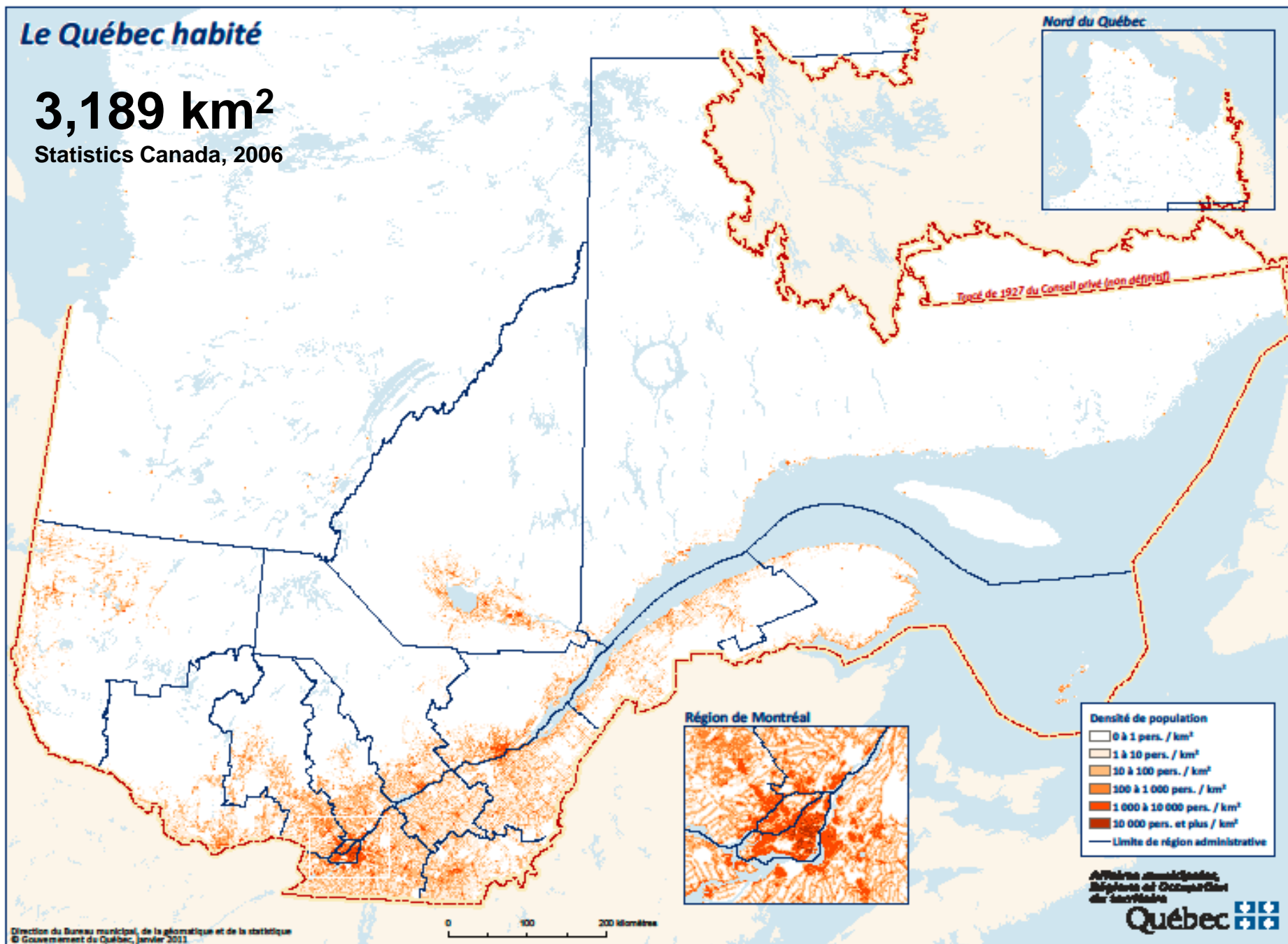
Ressources  
 naturelles  
 Québec

# Claims in Quebec (as of 09/04/2013)

## Le Québec habité

# 3,189 km<sup>2</sup>

Statistics Canada, 2006



# APPENDIX

- **Azimut Exploration** is a Quebec mineral exploration company specializing in mineral potential assessments and the generation of new exploration projects. The company is the largest claim holder in Quebec, mainly in the regions of Nunavik and Eeyou Istchee.
- **Jean-Marc Lulin**, geologist, President and CEO of Azimut since 2003.
- Holder of a PhD in Economic Geology, Dr. Lulin has worked as a professional in the mining industry for nearly 30 years and has acquired comprehensive international experience. He has developed a widely recognized expertise in mineral potential assessments, risk analysis and global issues in the mining industry.

As chief geologist at SOQUEM (1992-1995), Dr. Lulin initiated and ran a provincial-scale mineral potential assessment program for all of Quebec. He has visited more than 190 mines and mining projects in 16 countries. He was president of the *Association de l'exploration minière du Québec* (AEMQ) in 2011-2012, and has represented the exploration industry at the *Table des partenaires du Plan Nord*, established by the Government of Quebec.



# References

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