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Circular economy in northern Quebec territories

02105740.000

Circular economy solutions and recommendations for six communities

May 25th 2023





Presentation outline

- Project context
- Circular economy concept
- Description of the material flow analysis (MFA) in a northern context
- 12 circular solutions
- Action plans
- Recommendations



Project context

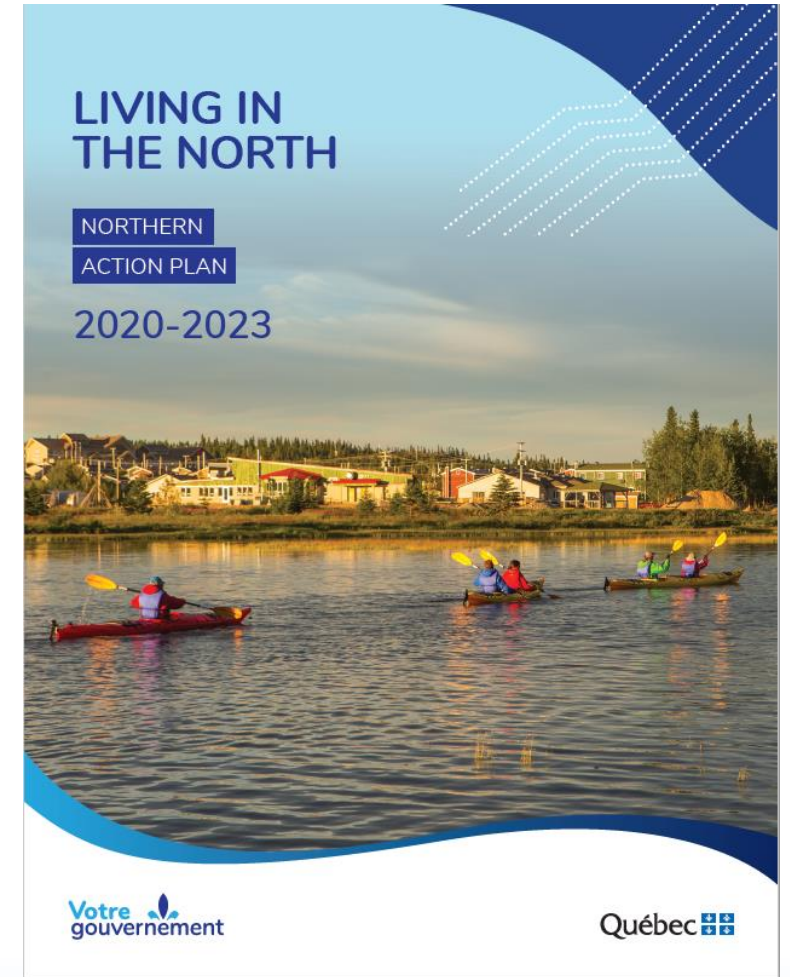
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2020-2023 Northern Action Plan

"Inventory stocks and flows of residual materials in the territory and propose optimization avenues to promote the circular economy"

(measure 4.3.1.4)



Partners



- **RECYC-QUÉBEC (coordinator)**
- **Ministère des Ressources naturelles et des Forêts (MRNF)**
- **Société du Plan Nord (SPN)**

This study is supported and financed by the Government of Quebec as part of the 2020-2023 Northern Action Plan, the 2019-2024 Action Plan of the Quebec Residual Materials Management Policy and the Mining Heritage component of the Natural Resources Fund.

- **Mandate given to Englobe following a public call for tenders issued in May 2021**

Objectives

- Raise awareness and mobilize **six northern communities and one mining company** located north of the 49th parallel to serve as a circular economy testing ground;
- Conduct a **material flow analysis (MFA)** to identify opportunities to reduce and optimize resources based on **circularity strategies** while contributing to community life, economic vitality and improving environmental quality.



Partners' criteria for the selection of the communities and the mining company



- a northern village in Nunavik
- a Cree community in Eeyou-Istchee
- a non-native community in Baie-James
- a coastal municipality in Côte-Nord
- a village in Basse-Côte-Nord (served by boat or plane)
- a community linked to the mining company
- a mining company located north of the 49th parallel





Main project steps requested by the partners

1. Sensibilization: regional and local governments, target communities and mining company
2. Selection of communities and mining company
3. Discussions with local stakeholders in the selected communities and with relevant stakeholders from the mining company
4. Methodology and preparation of fieldwork
5. Material flows analysis in the 6 communities + mining company (characterization, quantification)
6. Development and evaluation of circularity scenarios for every community and for the mining company
7. Conclusions and recommendations

Circular economy concept

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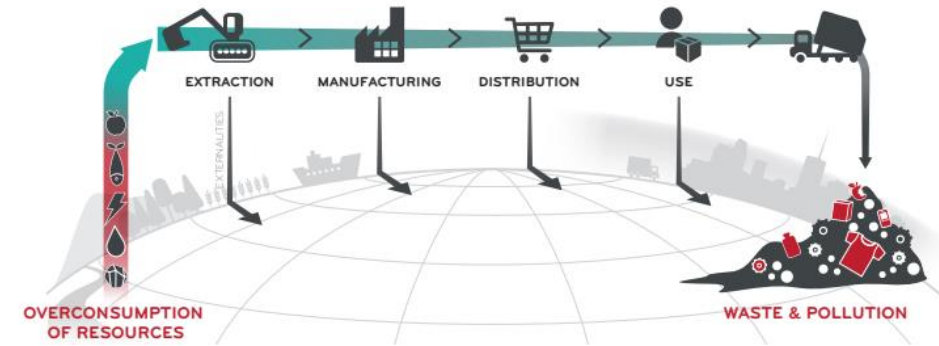


Circular economy concept

A linear economy will consume resources without considering the earth's capacity of providing these resources

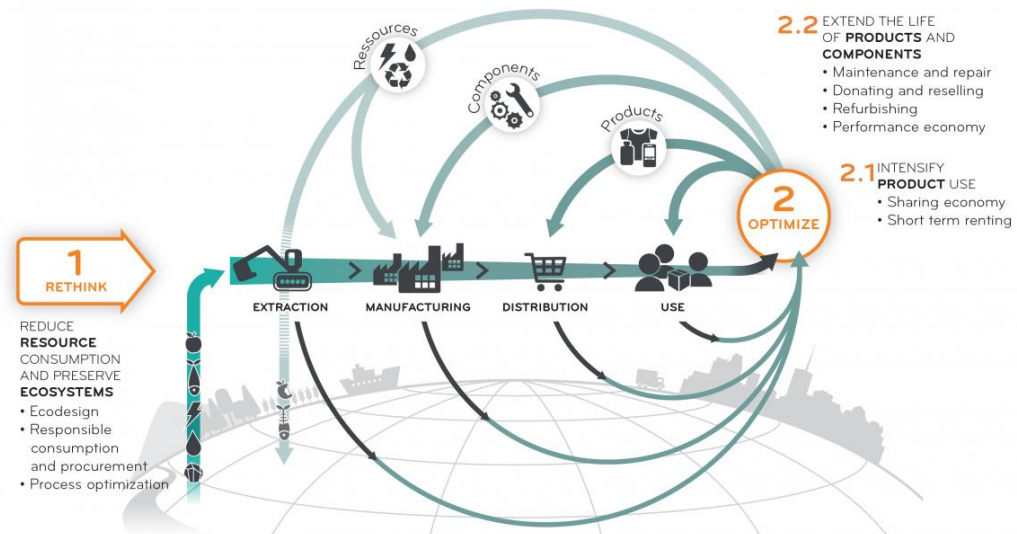
A circular economy will, optimize the use of resources at each stage of a products' or a services' life cycle.

LINEAR ECONOMY



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CIRCULAR ECONOMY



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12 circular solutions

1. Ecodesign
2. Responsible consumption and procurement
3. Process optimization
4. Sharing economy
5. Short term renting
6. Maintenance and repair
7. Donating and reselling
8. Refurbishing
9. Performance economy
10. Industrial ecology
11. Recycling and composting
12. Recovery



Description of the material flow analysis in northern context



Participants

Six northern communities and one mining company, all located north of the 49th parallel, participated in the project :

- Chapais
- Chevery
- Inukjuak
- Longue-Pointe-de-Mingan
- Mistissini
- Fermont
- ArcelorMittal – site de Mont-Wright



Objectives

Conduct an MFA and residual materials characterization for each participant in order to :

- Identify opportunities to reduce and optimize use of resources
- Identify solutions promoting circular economy
- Prepare a personalized action plan



MFA Methodology

The methodology used by Englobe focused on four themes :

- Energy
- Water
- Extracted materials (within the MFA limits)
- Consumption products

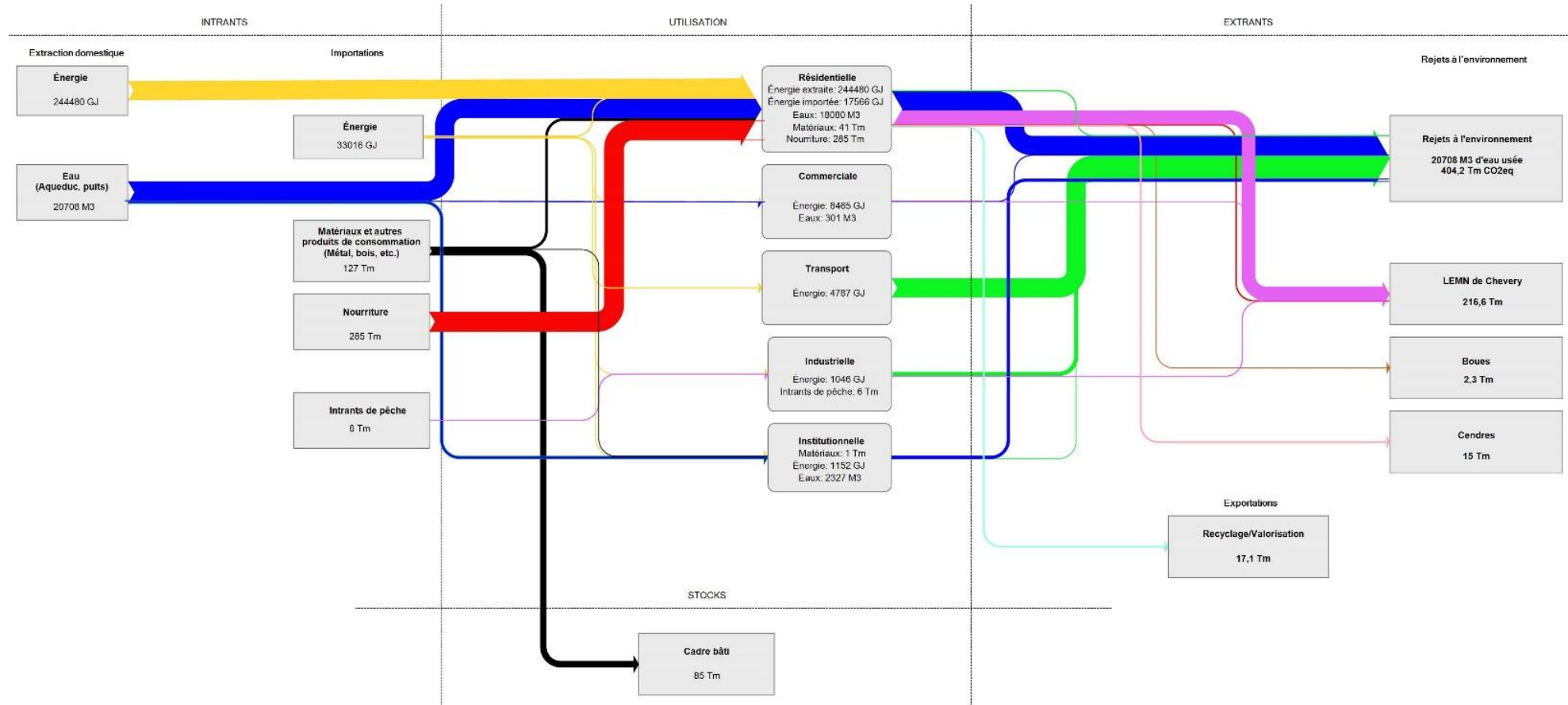
The MFA is based on information collected by :

- Surveys
- Visits
- Residual materials characterization



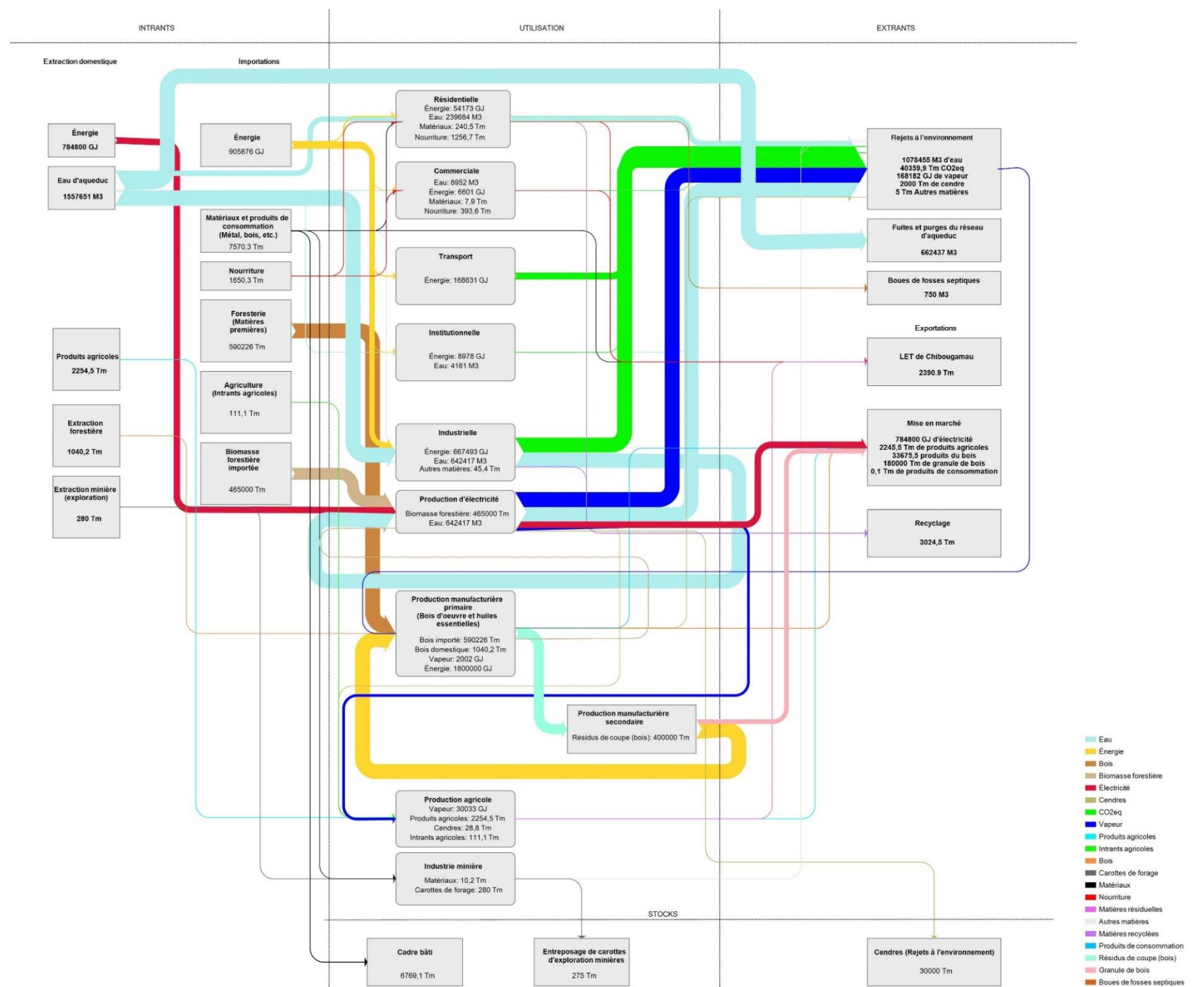
Linear flow

Chevery's flow



Circular flow

Chapais' flow



12 Circularity solutions

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12 circularity solutions

1. Ecodesign
- 2. Responsible consumption and procurement**
- 3. Process optimization**
- 4. Sharing economy**
5. Short term renting
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- 7. Donating and reselling**
8. Refurbishing
9. Performance economy
- 10. Industrial ecology**
- 11. Recycling and composting**
- 12. Recovery**



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Responsible consumption and procurement

- Electrification of municipal vehicles
- Demolition permits with recycling and deconstruction requirements

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Chevery



Longue-Pointe-de-Mingan



Mistissini

3

Process optimization

- Transportation logistics
- Drinking water and wastewater management

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Chevery



Inukjuak

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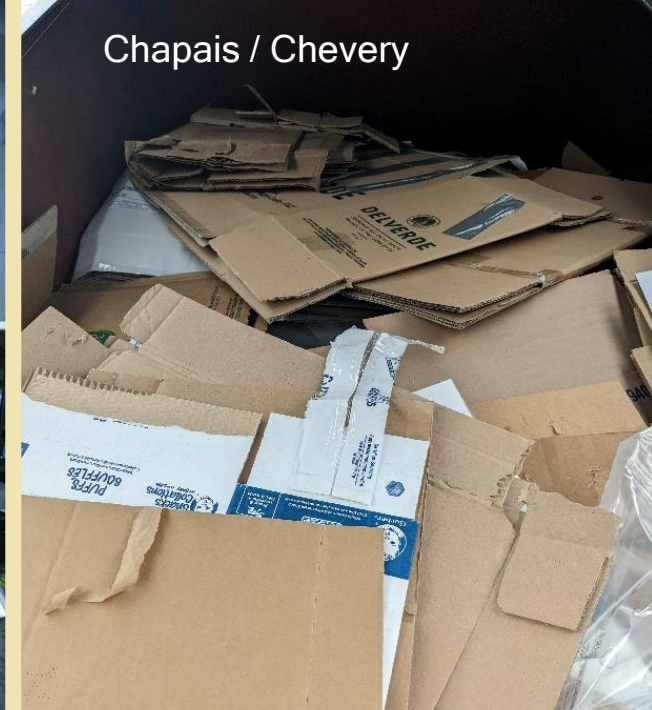
Sharing Economy

— Sharing equipment and tools

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Fermont / Mistissini



Chapais / Chevery



Chapais / Chevery

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Donating and reselling

- Creation of a space for donation and reuse (volunteer)
- Circuit allowing reuse of wooden pallets

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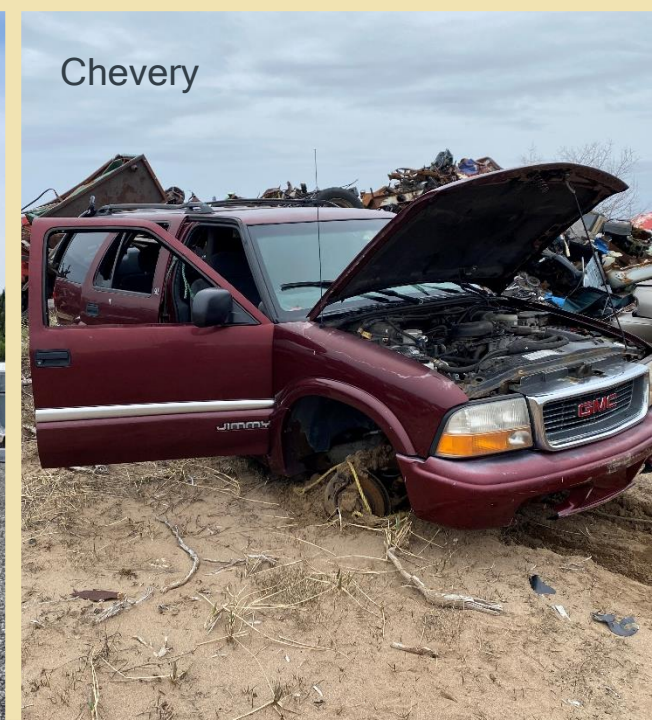
Fermont



Longue-Pointe-de-Mingan



Mistissini



Chevery

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Industrial ecology

- Using waste as raw material
- Network workshops

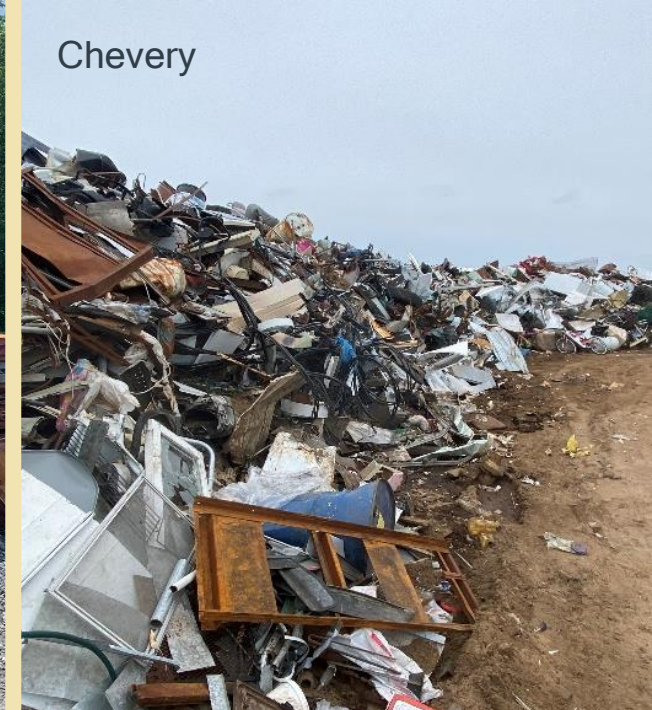
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Recycling and composting

- Ecocentre
- Mechanical and domestic composters

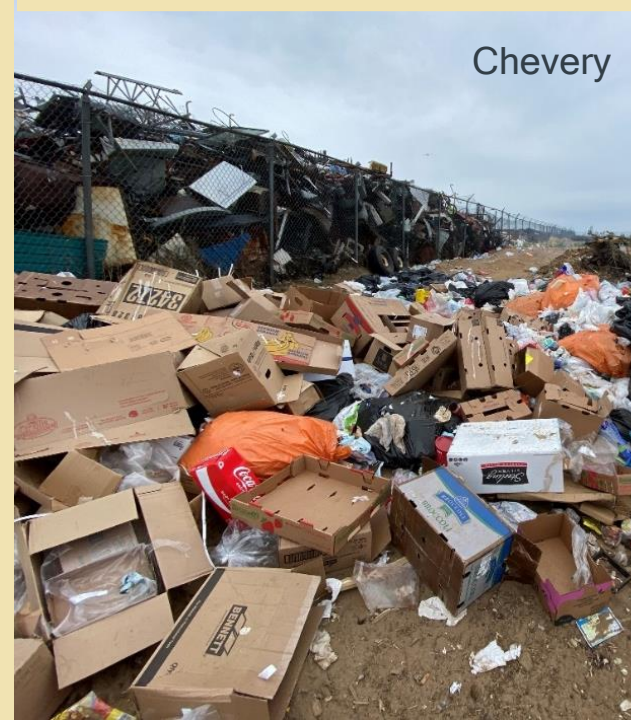


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Recovery

- Wood recovery (mainly pallets)
- Municipal biosolids recovery
- Development of recovery solutions for certain materials such as ash, metals, mining waste, fishing line and cardboard

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Action plans



Examples of proposed actions

Chapais

- Collecting and processing organic matter
- Development of wood recovery solutions
- Development of ash recovery solutions
- Recovery of residual granular materials

Mistissini

- Improvements to the ecocentre
- Improve management of the products targeted by the EPR
- Optimizing compost production
- Creation of a space for donation and reuse
- Development of wood recovery solutions

Inukjuak

- Developing the new northern landfill (NL) and closing the existing NL
- Setting up an ecocentre
- Recovering cardboard
- Collecting and processing organic matter



Examples of proposed actions

Longue-Pointe-de-Mingan

- Collecting and processing organic matter
- Development of wood recovery solutions
- Short term renting of a wood chipping equipment
- Electrification of municipal vehicles
- Promoting source separation of glass containers

Fermont

- Developing the new trench landfill
- Recovering cardboard
- Collecting and processing organic matter
- Development of wood recovery solutions
- Opening a used goods store

Chevery

- Collecting and processing organic matter
- Improving the management of recyclable materials and returnable containers
- Improving the transportation barge
- Recovering and exporting metals



Conclusion and recommendations



STRATEGY		NUMBER OF SOLUTIONS PRESENTED IN THE STUDY
1	Ecodesign	11
2	Responsible consumption and procurement	19
3	Process optimization	19
4	Sharing economy	15
5	Short term renting	12
6	Maintenance and repair	15
7	Donating and reselling	14
8	Refurbishing	8
9	Performance economy	9
10	Industrial ecology	15
11	Recycling and composting	21
12	Recovery	18

- The study identified 175 circular economy solutions for 6 communities and a mining company.
- Of these 175 solutions, 105 were unique and specific to one of the communities or mining company.
- 23 priority actions were identified proposed to the participants as well as 16 lower priority actions.



Territory similarities

- Reduced accessibility
- Ressources imports
- Absent or incomplete recovering services
- Landfill infrastructures adapted to local realities



Similar actions

- Collecting and processing organic matter
- Setting up or improving an ecocentre including drop of points of products targeted by the EPR
- Wooden pallets management
- Improving recyclable materials collection



Q&A

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