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Éco
Entreprises
Québec

Biodegradable and compostable plastic packaging: GREENer on the other side

Webinar ÉEQ + RCC

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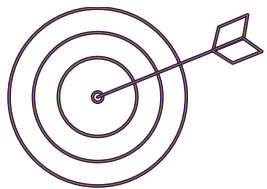
1.0 Background_

Trigger Element



Why this study is relevant?

- Extent of **environmental issues**
- Upheavals in **recycling industry**
- Spiking of **popular pressure** in cities, municipalities and around the world
- Change in **legislation**



Plastic Attack: un mouvement mondial qui fait des petits à Montréal



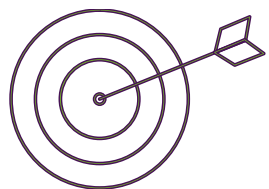
Ottawa interdira six types d'articles en plastique à usage unique



Quatre centres de tri risquent de fermer

Why this study is relevant?

- **Deep questioning** of plastic packaging
- Increased pressure on companies to **reduce/eliminate plastic packaging**
- Strong **perception** that biodegradable/compostable packaging are **less damaging**



Bacardi first in fight against plastic pollution with 100% biodegradable spirits bottle

21 octobre 2021 (Bermudes)

This revolutionary move by Bacardi is possible thanks to its close collaboration with Danimer Scientific, a leading developer and manufacturer of biodegradable products. Petroleum-based plastics used by Bacardi today will be replaced by Danimer Scientific's Nodax™ PHA, a biopolymer which derives from the natural oils of plant seeds such as palm, canola and soy.

<https://www.bacardilimited.com/media/news-archive/bacardi-first-in-fight-against-plastic-pollution-with-100-biodegradable-spirits-bottle/>



The Coffee Factor and Parkside partner for compostable packaging range

18 décembre 2020 (Royaume-Uni)

Flexible packaging solution provider Parkside and artisanal coffee roaster The Coffee Factory have partnered to launch a compostable packaging range. As part of this collaboration, The Coffee Factory has launched a compostable three-ply paper, metallised cellulose, biopolymer packaging for its ground coffee bags. The new packaging is part of Parkside Park2Nature range of solutions.

<https://www.packaging-gateway.com/news/coffee-factor-parkside-partner/>



Avantium claims plant plastic can decompose in one year

18 mai 2020 (Pays-Bas)

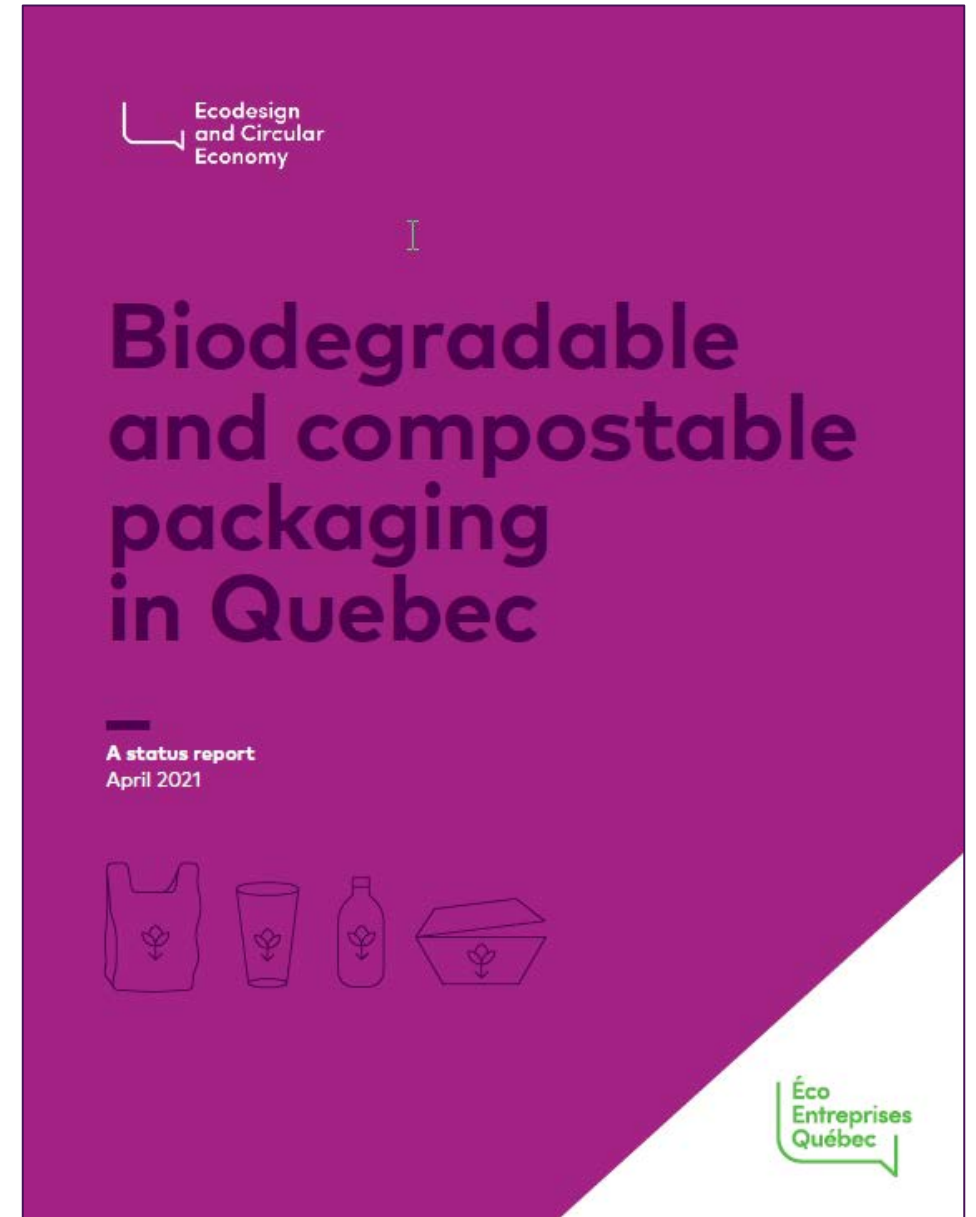
Dutch biochemical company Avantium has reportedly said that its new plant plastic material takes a year to degrade. The company is part of a pioneering project that aims to make all bottle packaging sustainable using paper. The project aims to launch 100% recyclable paper bottles, including a preliminary plastic barrier film...

<https://www.packaging-gateway.com/news/avantium-plant-plastic-netherlands/>

Study objectives

Demystify what happens to compostable or biodegradable packaging:

- Little information on the subject
- Enable businesses to make informed choices
- Improve understanding of the issues at the end of useful life
- Explain the impacts on recycling and industrial composting/anaerobic digestion streams



Findings from Éco Entreprises Québec



Ecodesign guidance works

- Increase in questions
- Growing number of so-called biodegradable and compostable packaging options available to companies
- Confusion about sorting actions
- Confusion in terminology
- Misunderstanding of the ecosystem and the issues surrounding the end of life of compostable packaging



Legal obligations of companies with regard to containers, packaging and printed matter

- Reminder that this type of packaging is subject to the Schedule of contributions and must be included in the companies reporting





2.0 Team and Methodology_

EEQ and SOLINOV joined expertise

Research and writing team



Geneviève Dionne & Mario Patenaude

- Training of the packaging field's players
- Coaching for companies and tools offered
- Monitoring new packaging trends
- Contribution to research



Very good understanding of the packaging and curbside recycling ecosystem



Marie-Hélène Gravel

- Extensive experience in the management of organic and other fertilizing waste materials
- Treatment facilities design
- Exploitation and marketing of composts
- Contribution to research



Very good understanding of composting and anaerobic digestion ecosystem

Project stages



3.0

Main Results_

Overview of findings and highlights



Environmental claims : definitions and framework

What is the difference between biodegradable and compostable plastic packaging?

- Time of degradation
- Effect on the environment

Compostable plastics are biodegradable, but not all biodegradable plastics are compostable

Biodegradable

Compostable



Compatibility with processing streams

What happens with compostable packaging placed in:

Organic materials bin	Recyclable materials bin: (containers, packaging and printed matter)	Garbage	Litter
<p>Very difficult to differentiate from other plastics that are removed in order not to affect the quality of the compost</p> <p>—</p> <p>If it does not break down fast enough, it will be removed and sent to landfill.</p>	<p>Very difficult to differentiate from other plastics.</p> <p>—</p> <p>If sorted, it is removed and sent to landfill.</p> <p>—</p> <p>If not sorted, it is a source of contamination for conventional plastics.</p>	<p>At landfill, it is compacted and not exposed to the conditions required for composting, so it is treated as any other trash.</p>	<p>As it is not designed to turn into compost directly in nature, it becomes litter.</p> <p>—</p> <p>It needs specific conditions and processing steps to be able to break down.</p>
			



Environmental claims : framework

Self-declaration

- No independent third-party verification
- Almost non-existent verification process
- Reasonable doubt

Certification

- Verified by an independent third-party
- Laboratory conditions different than those used in the field

Bureau de normalisation du Québec (BNQ)



Biodegradable Products Institute (BPI) – USA



Journey of compostable packaging

Different missions



Table 1: Fundamental differences between the recycling and composting/anaerobic digestion streams

	Recycling stream	Composting and anaerobic digestion stream ¹⁹
Actions	Collect and sort containers, packaging, printed matter and newspapers into different categories of recyclable materials and prepare them for reuse.	Transforming food and green waste ²⁰ into compost or digestate through an accelerated and controlled biological decomposition process.
Objective	Reintroduce the recyclable material into the manufacturing process of a new packaging or product.	Return organic material to the soil, using compost or digestate as a conditioner.

Journey of compostable packaging

Removal of unwanted materials

- The removal does not distinguish between unwanted materials and compostable packaging
- A large proportion of plastic packaging (even compostable) will be removed and sent for disposal



Compostable plastic is booming in Canada — but it may still end up in landfills

Nov 30, 2020 9:35 AM By: Marc Fawcett-Atkinson, Local Journalism Initiative Reporter



Plastic grocery bags. (via File photo)



Trash collectors in Langley City will start refusing to pick up organic waste mixed with plastic. (File photo by THE CANADIAN PRESS)

Organic waste mixed with plastic will be left at the curb, Langley City warns

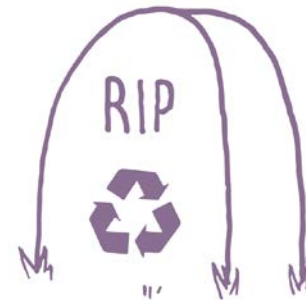
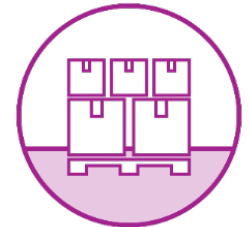
Plastic contamination of green bins called 'exceptionally high and unacceptable'

LANGLEY TIMES STAFF / May. 11, 2021 2:00 p.m. / LOCAL NEWS / NEWS

Ecodesign : To oversee innovation in packaging

Key elements

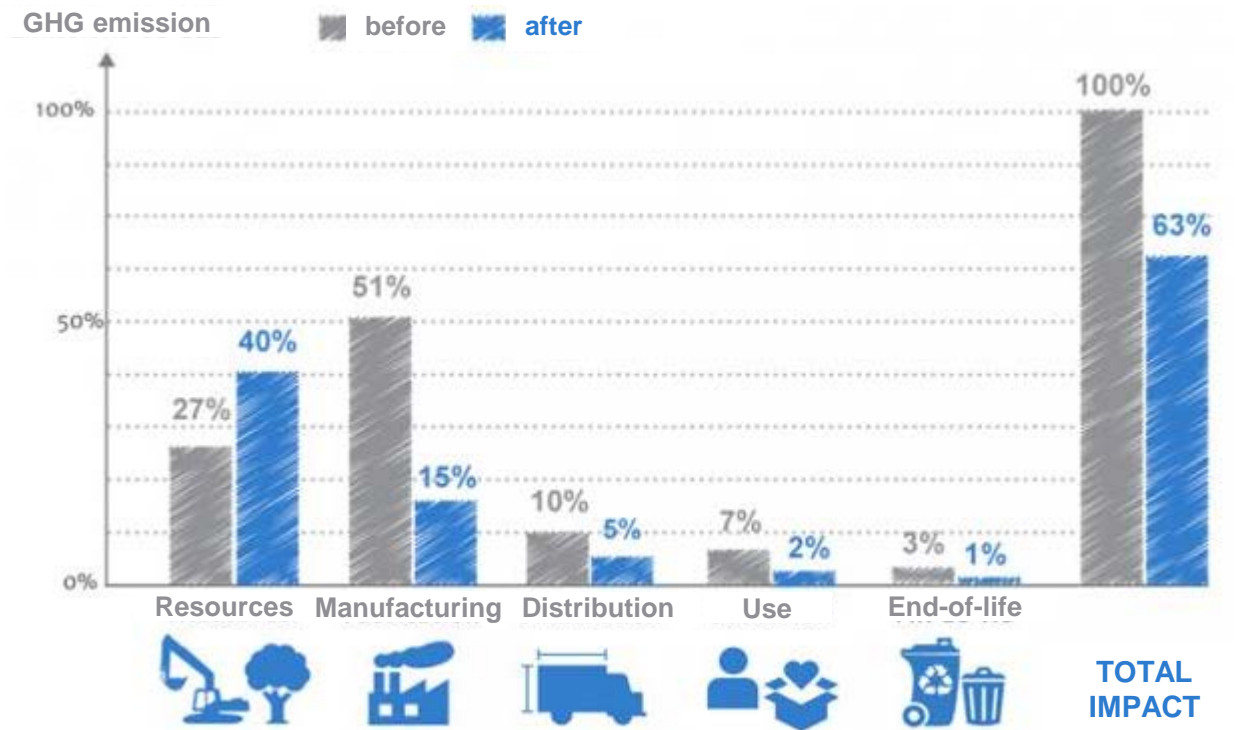
- Responding to the specific needs of the product
 - Protect and preserve
 - Inform
- Thinking about end-of-life from the design stage
 - Reduction at source, reuse, recycling to close de loop



Ecodesign : To oversee innovation in packaging

Key elements

- Life Cycle Thinking and LCA: reducing overall impacts and resource use
 - Systemic view
 - Managing compromises
- Ensure transparency and traceability right from the time of procurement
 - Resource management





4.0

Issues and Recommendations_

Not to stand still

Recommendation 1

Better framework for environmental claims and better alignment of laboratory conditions for compostability certification and those used in the field.



Packplay 2 ; 2017

Use of the terms "biodegradable" and "compostable" is subject to oversight, but it is imperfect and incomplete

Confusion and doubt

- Environmental claim that is not verified by a third party
- Voluntary certification carried out in laboratory under conditions different than those in the field
- Compostable plastic packaging is difficult to differentiate

Recommendation 2

Tracking of this progress by including compostable packaging as an actual category in province-wide characterization studies.



We can expect a significant increase in the amount of compostable packaging

On the market and in collection streams

- New strategy for organics - Stratégie de valorisation de la matière organique of government of Québec
- Bans that drive innovation towards compostable solutions

Recommendation 3

Firm position in favour of packaging recycling.

Recommendation 4

Charter for organics and unified list of accepted/rejected materials/packaging.



State on the management method to prioritize for compostable packaging

According to 3R-RD hierarchy

- Compostable packaging cause problems in all 3 processing streams:
 - Recycling = contamination
 - Composting/anaerobic digestion = removal are not sufficiently broken down
 - Disposal = deprived of the required conditions for decomposition
- No harmonized list of materials accepted

Recommendation 5

Restricted to specific applications.

Recommendation 6

Included in EPR and eco-modulation.

Recommendation 7

Clear legal framework so that packaging being marketed is reusable, recyclable or made of recycled content.



Journey of compostable packaging is closely tied to unwanted materials management

Industrial composting and anaerobic digestion stream

- Mission
 - Produce quality compost that can be returned to the soil
 - Not to manage packaging or to sort materials
- Removed unwanted materials (compostable plastic or not) are sent for disposal

Recommendation 8

Document the impact on the quality of compost/digestate used in soil amendment and study the environmental impact of residual microplastics on soils.



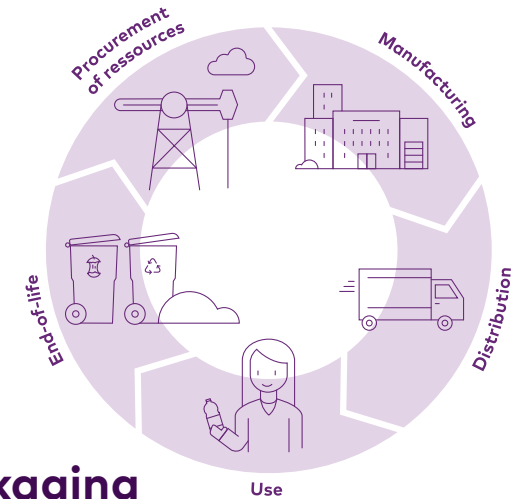
The purpose of composting/anaerobic digestion is to return organics into its production cycle

In the form of compost and digestate

- Compostable packaging does not add value to compost.
- Even if plastic is removed, small fragments may remain.
- The environmental impact of these residual microplastics as a source of soil contamination is of increasing concern to experts.

Recommendation 9

Democratize access to ecodesign for companies that place packaging on the market.



Oversee innovation in packaging

Key factors

- Meet the specific need of the product
- Think about the end of life from the design stage
- Reduce impacts and use of resources
- Ensure transparency and traceability right from the time of procurement

A row of blue recycling bins is parked on a street. The bins are in the foreground and middle ground, receding into the distance. The background shows green trees and a residential setting. A white circle is superimposed over the middle of the image, containing the word "Questions?".

Questions?

A row of blue recycling bins is shown in a residential setting. The bins are lined up along a sidewalk, with trees and a fence in the background. A white circle is overlaid on the image, containing the text 'Thank you' in a bold, white, sans-serif font.

Thank you