Éco Entreprises Québec

Ecodesign
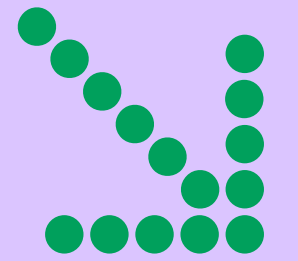# Guidelines
for Packaging

OCTOBER, 2024

VERSION 1

Reduction

Procurement

Recyclability

Table of content

This is an interactive document. The top toolbar and contents buttons allow you to navigate through the different sections.

Disclaimers

The Ecodesign Guidelines (EGs) for Packaging and Printed Paper are developed by ÉEQ and are non-prescriptive. The guide is based on the following: the ecodesign team's practical experience over the past 15 years, a review of several international guides cited in the bibliography, and a series of interviews conducted with around ten companies in 2023 to better understand their circumstances and the way they integrate ecodesign.

The reader is expressly advised of the following:

→ ÉEQ does not manufacture, distribute, or supply any products, including packaging and printed paper. ÉEQ accepts no responsibility for the use of the EGs, including, but not limited to, any decisions regarding ecodesign.

→ The EGs may not be used for marketing or certification purposes, including declaring that packaging or printed paper complies with the EGs.

→ For some materials, lab tests or pilot projects will be needed to determine how they perform in industrial infrastructure or the value chain.

→ ÉEQ does not warrant that the contents of the EGs are accurate, comprehensive, or up to date. In particular, but without limitation, ÉEQ does not warrant that the EGs will remain up to date with the latest knowledge in the field. Readers are invited to have all information relevant to their packaging and printed paper design independently cross-checked by experts.

→ The EGs are a simplification of the practices of various players in the value chain. The simplification is meant for readers who are unfamiliar with the topic. As such, it does not account for the great variability of practices in the field and may omit more technical aspects.

Objectives of the guide

Under the principle of extended producer responsibility (EPR), producers (companies) are at the heart of the curbside recycling system. From the perspective of the circular economy, they are fully responsible for the packaging and printed paper they put on the market, from design to recycling. ÉEQ helps producers reduce their environmental footprint by placing ecodesign and recyclability at the forefront of the steps it takes with its partners.

Depending on the context, the term "company" will be used in this guide as a synonym for "producer" as it is described in the Regulation respecting a system of selective collection of certain residual materials CQLR c Q-2, r 46.01 (SC Regulation).

The purpose of this guide is to help producers and their business partners better understand and implement ecodesign by:

→ defining ecodesign and explaining that it supports the waste management hierarchy (4Rs)

→ providing context on the environmental impact of packaging and printed paper, and demonstrating the economic, competitive, reputational, social, and environmental benefits of ecodesign

→ explaining the basic concepts of ecodesign, i.e., the functions of packaging and printed paper, the packaging system, usage scenarios, and the "right packaging"

→ approaching ecodesign through the principle of design thinking, and presenting the three ecodesign strategies of reduction, procurement, and recyclability, as well as the measures associated with them

→ proposing a company-based approach and a method for successfully implementing ecodesign

This guide is about the packaging (including containers) and printed paper that make up the objects accepted for curbside recycling, covered by the SC Regulation, and put in the recycling bin for residential collection. They are broadly defined as follows:

Packaging

All packaging made of paper, cardboard, plastic, glass, or metal and used to contain, protect, or wrap a product.

Printed paper

All printed paper and other cellulose fibres, whether or not they display text or an image.
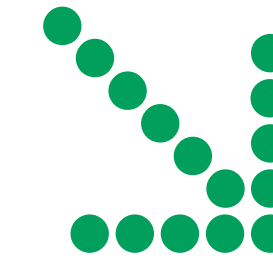
Target audience

The guide is primarily aimed at producers who put packaging and printed paper on the market.

By extension, ecodesign and recyclability also affect several other players in the packaging and printed paper value chain:

- Packaging manufacturers, suppliers, and distributors
- Curbside recycling players (collectors, sorting centres, voluntary drop-off points and ecocentres, processors, recyclers)
- Employer and industry associations and other organizations
- Creative and marketing agencies
- Printers
- Research sector (research centres, CCTT)
- Ecodesign consultants and packaging specialists

Definition of ecodesign

Firstly, it's important to understand the social, economic, and environmental background that shapes packaging and printed paper, as well as the characteristics of ecodesign and how it can contribute to the sound management of residual materials.

Background and definition

Today's packaging and printed paper reflect consumer culture. Although they are ubiquitous in our lives and necessary to protect, preserve, and transport the products we consume, society has a love-hate relationship with them. For years now, consumers have been putting pressure on merchants, retailers, and manufacturers to scale back the amount of material used in their packaging and printed paper and thereby lessen their impact on the environment.

In response to the pressure, companies are looking to make their packaging and printed paper lighter, more recyclable, and more functional to reduce their environmental footprint. Unfortunately, the environmental problems they cause are just the tip of the iceberg in the overall system of production and consumption.

Companies can turn to ecodesign to put better packaging and printed paper on the market and reduce their negative impact on the environment throughout their life cycle rather than simply shifting the burden to another stage.

> **Ecodesign is a holistic approach that takes environmental, social, and economic criteria into account when designing packaging and printed paper, while preserving their use value (roles and functions).**

Ecodesign can be applied to the process of selecting and improving packaging and printed paper as well as designing them. The approach generates value, considers reuse and repurposing, and encourages reflection on the place of single-use packaging in society.
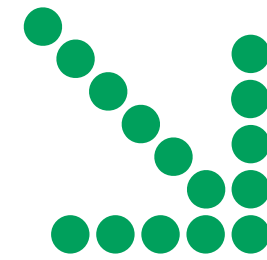
Waste management hierarchy (4Rs)

Ecodesign follows the hierarchy of methods to prioritize for sound waste management (4Rs). The ecodesign approach encourages reducing, reusing, and recycling packaging and printed paper which are the first three tiers in the waste management hierarchy (4Rs).

The Environment Quality Act (CQLR c Q-2) presents the following priority order for waste management.

In ecodesign, even if the packaging or printed paper has been designed for reduction or reuse, recycling should always be accounted for so that the maximum amount of material can be recovered.

Waste management hierarchy

1. **REDUCTION AT SOURCE**
2. **REUSE**
3. **RECYCLING** Including through biological treatment (composting or biomethanization) or land treatment
4. **VALORIZATION OF MATERIALS** Any other valorization operation through which residual materials are processed for use as raw materials substitutes
5. **ENERGY RECOVERY**
6. **ELIMINATION**
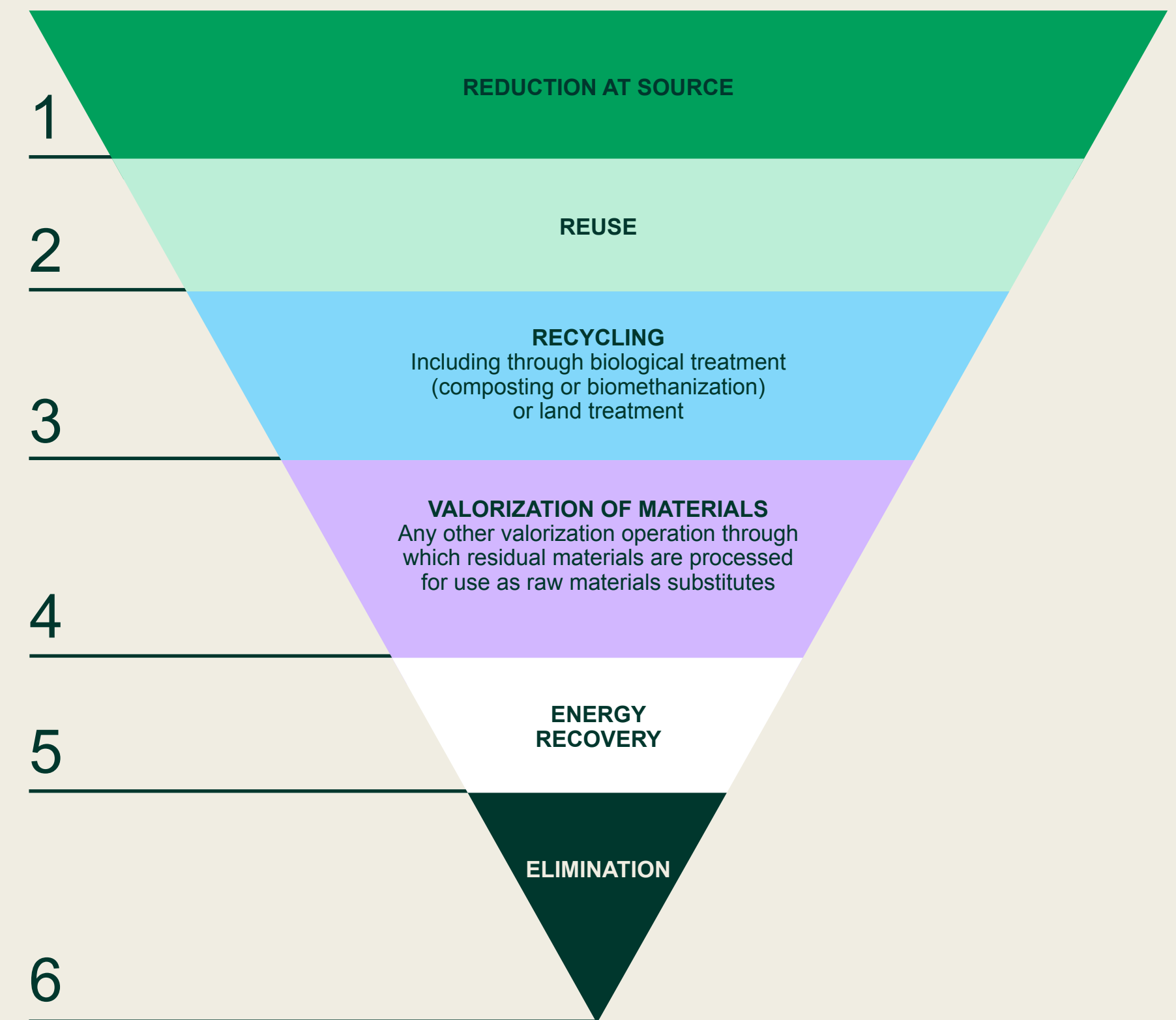
Importance of ecodesign

Each stage in the life cycle of a piece of packaging or printed paper can impact the environment, but these effects can be reduced through ecodesign and its numerous benefits.

Life cycle and impact

There is no such thing as packaging or printed paper with no environmental impact. Whether it's reusable and reused, recyclable, 100% paper, or made from post-consumer recycled plastic, every piece of packaging and printed paper has a footprint. However, the ecodesign approach fosters a better understanding of this footprint by providing an overview of the different stages in the life cycle of packaging and printed paper.

The stages are as follows.
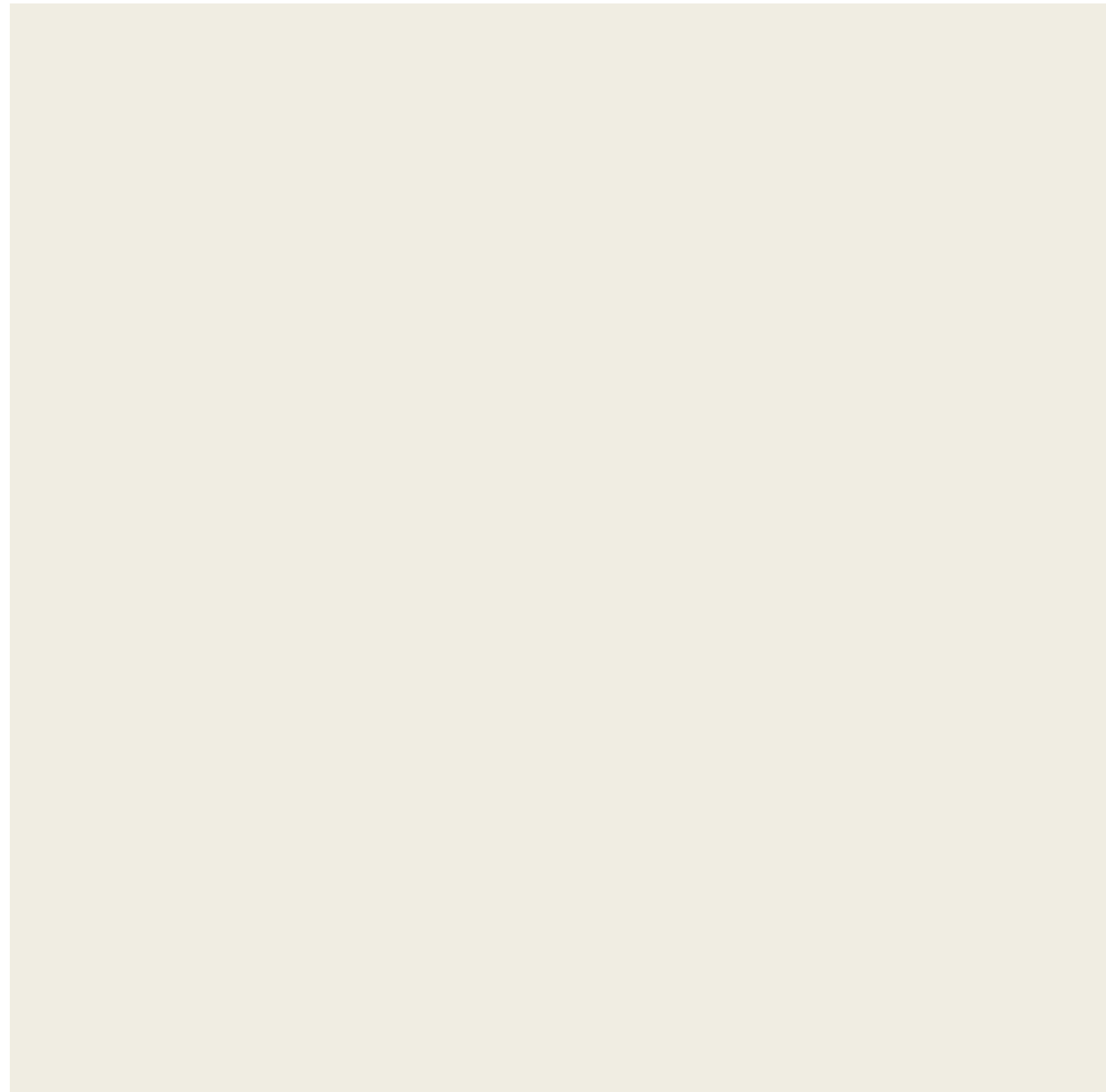
Procurement of resources

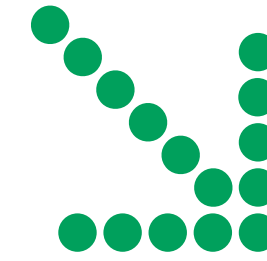Procurement refers to all the processes and technologies used to extract, exploit, and transform raw materials.

Manufacturing

Manufacturing refers to the processes and technologies used to manufacture packaging and printed paper and assemble and process products.

Distribution

Distribution involves storing, handling, and transporting packaged products.

Use and consumption

Use and consumption refer to the water and energy required when the consumer uses or consumes the product.

End of life

The end-of-life stage can involve a variety of options, such as reuse, repurposing, recycling, composting, valorization, and elimination. For packaging and printed paper, reaching the end-of-life stage does not necessarily mean that they or their materials have actually reached the end of their useful life.

Understanding packaging and printed paper and approaching them from a systemic perspective helps avoid simply shifting the environmental burden from one stage of the life cycle to another. The following graph illustrates burden-shifting in the carbon footprints of two packaging options. For example, it shows that option 2 is preferable in terms of manufacturing, but creates more GHG emissions at the resource extraction stage. That being said, option 2 still has a lower overall environmental impact.
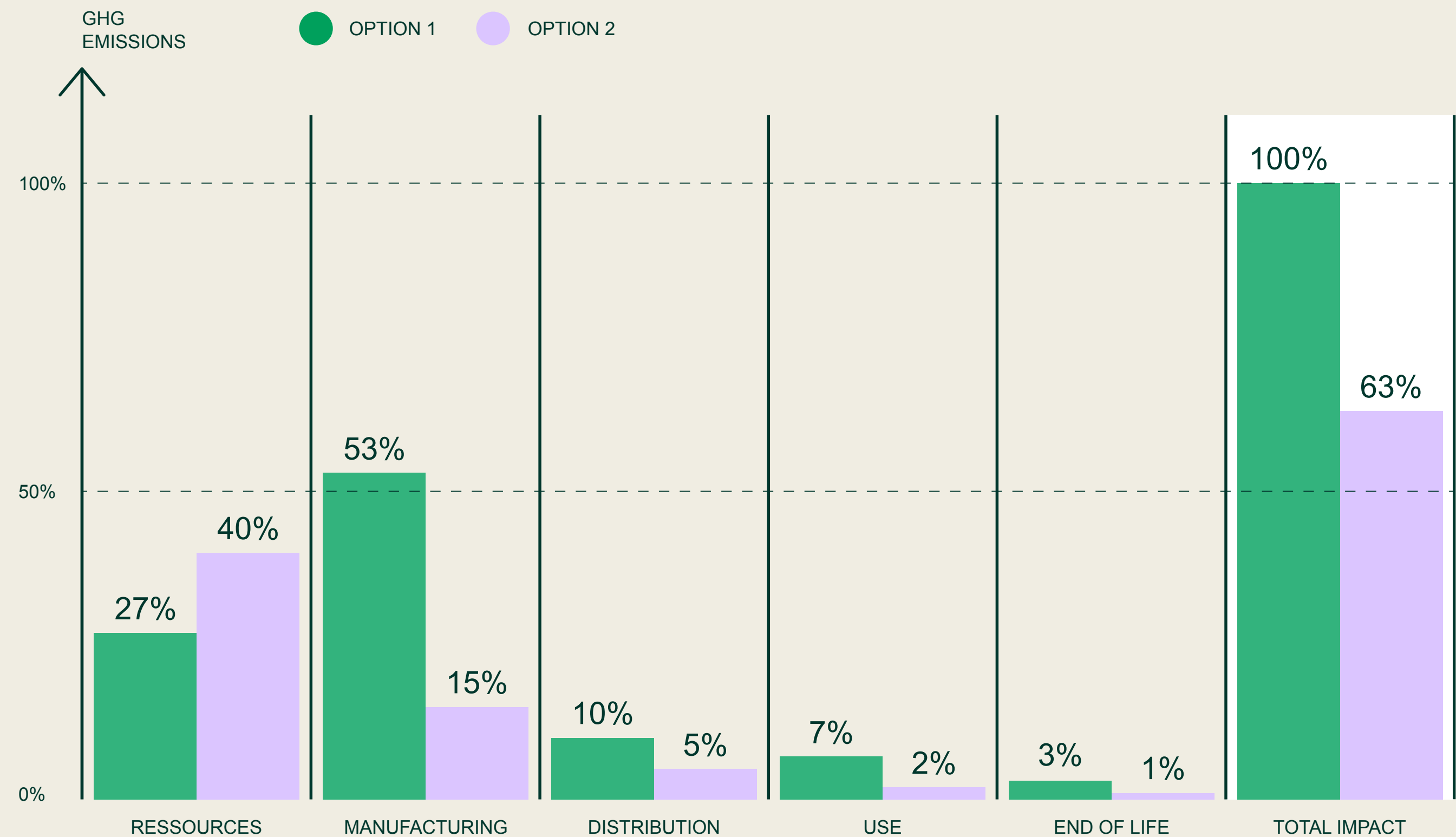
Together, life cycle thinking and the ecodesign approach involve juggling a plethora of factors and criteria; they require trade-off management that considers ways to adjust and optimize while retaining the usage functions of packaging and printed paper.

For more in-depth analysis, the life cycle assessment (LCA) method can be used to determine and measure the environmental impact of a product or process over the course of its life cycle. The LCA is based on the main stages set out in the international standard ISO 140404. The results of an LCA can help prioritize which measures to take, while avoiding making improvements at one stage of the life cycle that have indirect repercussions on another.

When looking at packaging and products together, packaging accounts for just 10% of the environmental impact on average (CITEO, 2024). In general, the more processed a product is, the larger its share of responsibility for the environmental footprint will be compared to the packaging. Conversely, if a product undergoes less processing and consumes less energy and water, the packaging will be responsible for a larger share of the impact (CITEO, 2024). Given that, products and packaging must be considered holistically.

Switching to a different material is not always a good idea. The options need to be analyzed in depth to avoid selecting one that has no measurable benefits and simply shifts the environmental burden. Burden-shifting means that the environmental impacts of the proposed material are reduced at one stage of the packaging life cycle, but are increased at another. Consider the protective functions required of the packaging and ensure that the chosen material will fulfill them.

Example of burden-shifting in the carbon footprints of two packaging options

GHG EMISSIONS

● OPTION 1   ○ OPTION 2

	RESSOURCES	MANUFACTURING	DISTRIBUTION	USE	END OF LIFE	TOTAL IMPACT
Option 1	27%	53%	10%	7%	3%	100%
Option 2	40%	15%	5%	2%	1%	63%
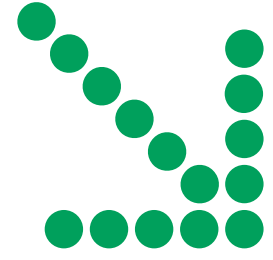
Benefits

Some companies may face barriers to ecodesign despite having the internal will to take action. Barriers might include a lack of financial and human resources or the need to make major changes to production. However, there are many competitive, reputational, economic, social, and environmental benefits that make this corporate commitment worthwhile.

Economic benefits

Better control of overall packaging system costs (procurement, transport, distribution, etc.)

- e.g., by reducing the amount of material required for the same packaging or printed paper while optimizing transport and storage (more lightweight, easier to stack, etc.).

Potential EPR fee reduction for packaging or printed paper that is more lightweight or made of different material from the original

- e.g., by reducing the amount of material in a packaging unit, which could lower weight-based EPR fees and potentially earn credits or bonuses to reward ecodesign efforts

Increased sales and better supply chain management

- e.g., by meeting the requirements of retailers that include environmentally responsible criteria in their supplier guides

Competitive and reputational benefits

Differentiation from the competition as an agent of change in the market

- e.g., by following regulations and anticipating future requirements

More interest and loyalty from consumers who want to make better choices

- e.g., by honestly communicating how an ecodesign approach can benefit consumer well-being and the environment

Social and environmental benefits

Better material resource management (raw materials, energy, water, etc.)

- e.g., by limiting pressure on resources in ways such as reducing the use of virgin raw materials, integrating recycled materials, and optimizing the production line (reducing waste and inefficiencies at the various stages of production in particular)

Lower health and safety risks

- e.g., by eliminating toxic and hazardous substances described in the Prohibition of Certain Toxic Substances Regulations (GC, 2012) and the Canadian Environmental Protection Act (GC, 1999) that may pose environmental or health and safety issues

Increased employee retention and sense of belonging

- e.g., by planning communication and training activities for internal teams on the company's environmental and social commitments, as well as its progress and achievements

Win-win relationships with suppliers and customers

- e.g., working with players in the company's value chain as a true business partner rather than just a service provider
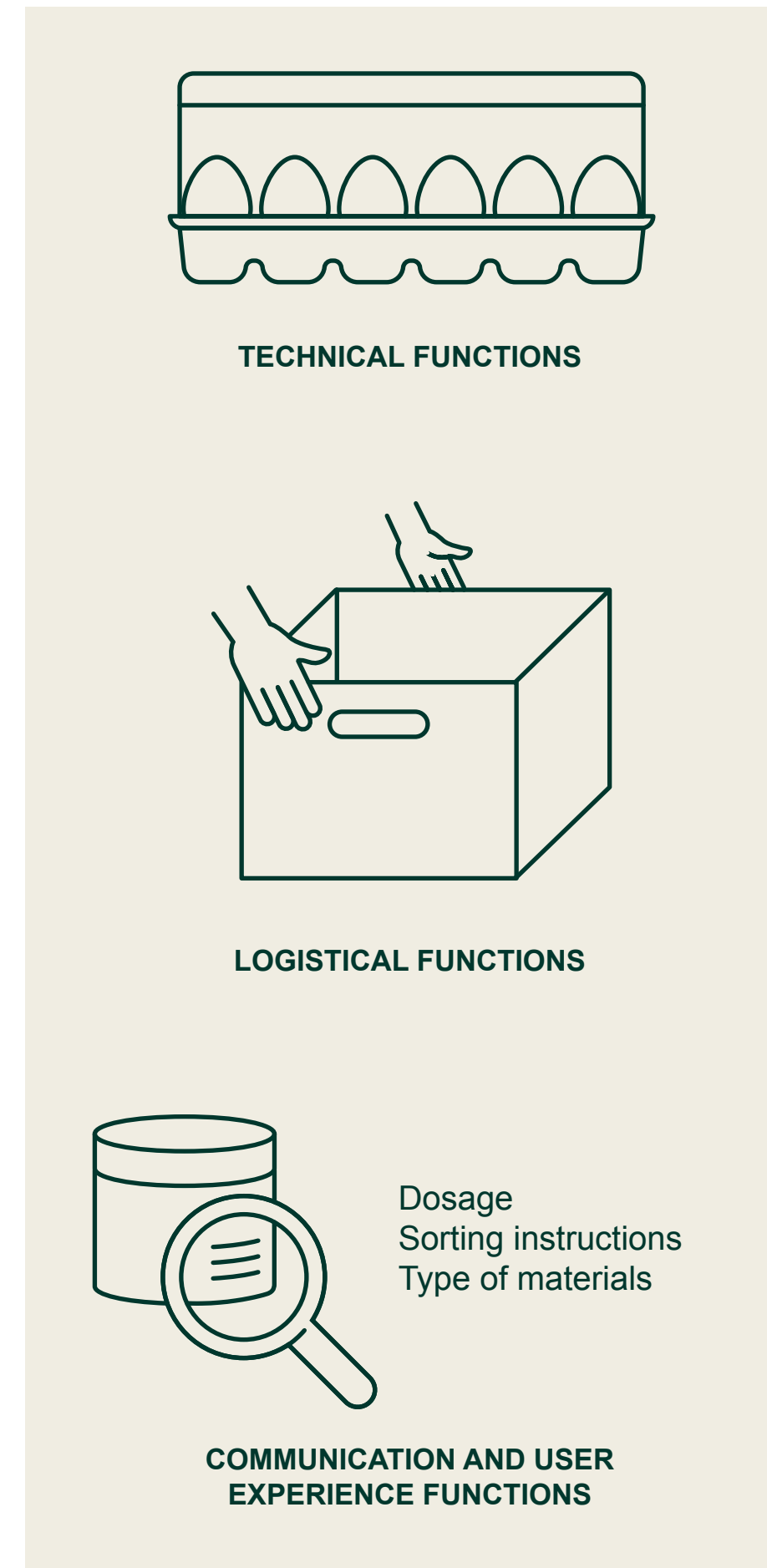
Ecodesign basics

Before learning about ecodesign strategies and developing your ecodesign project, action plan, or roadmap, it's important to have a solid foundation. This section presents the ABCs of the ecodesign approach.

Functions of packaging and printed paper

Packaging is sometimes perceived as superfluous or even useless. It gets criticized so much that we often forget that it performs essential technical, logistical, and marketing functions.

It's important to consider the **packaging-product pairing** when talking about the functions of packaging. The characteristics of the packaging must be compatible with the specific needs of the product (e.g., damage protection). One does not act without the other; it is a relationship of interdependence.

TECHNICAL FUNCTIONS

LOGISTICAL FUNCTIONS

Dosage
Sorting instructions
Type of materials

COMMUNICATION AND USER EXPERIENCE FUNCTIONS

Technical functions: to preserve, protect, and contain

→ Acts as a barrier against moisture, light, gases, germs, and bacteria, preserving nutrients, extending shelf life, and preventing contamination to avoid food loss and waste

→ Prevents and reduces the risk of product damage, theft, and tampering

→ Prevents spills, leaks, and fumes that could affect human health or the environment

Logistical functions: to facilitate handling, transport, and storage

→ Helps the various parties involved coordinate the logistics of the packaged product throughout the supply chain, from production to the consumer

Communication and user experience functions: to inform, sell, and promote

→ Facilitates handling and optimizes consumption or access to the product by offering measuring caps, adapted formats, simple and efficient opening and closing mechanisms, etc.

→ Carries information (mandatory, standardized, and otherwise) such as:

- mandatory information such as the nutrition facts table, list of ingredients, and dosage
- product features, instructions for use, warranty, sorting instructions, etc.
- reputation-related messages, such as a certification or information on recycled content
- messages related to company's values and positioning

Packaging system

When taking an ecodesign approach to a packaged product, it's vital to be familiar with its entire life cycle in order to integrate environmental criteria in an optimal way. Different types of packaging are needed for transporting, marketing, and consuming or using products.

Primary or sales packaging:

This is the type of packaging that comes into direct contact with both the product and the consumer. It's also commonly known as the "consumer unit." It contains, preserves, and protects the product; conveys, presents, and sells the product's attributes to consumers (serving as a base for print or a label); and facilitates consumer handling (ITEGA, 2023).

- For example: A tube of toothpaste and its box are primary packaging.

Secondary or grouped packaging:

This type of packaging combines several primary packaging units to form a "sales unit." It can also be used as an in-store display. It groups small products together in a single package to facilitate handling, provides additional protection (often against impacts and damage), and can function as a shipping case or a display stand (ITEGA, 2023).

- For example: The grouped box containing a number of boxed toothpaste tubes is the secondary packaging.

Tertiary or transport and logistics packaging:

This is packaging used to group large quantities of products for transport and handling. This type of packaging is important due to its protective characteristics, which can help prevent loss and damage that can have a greater environmental impact.

- For example: Wood, cardboard, or plastic pallets that hold a number of secondary packages of toothpaste tubes separated by cardboard and wrapped together with stretch wrap are tertiary packaging.

Every packaging level needs to be considered, since any change in the primary packaging is likely to have an impact on the rest.

To improve efficiency, lower energy consumption, and reduce the environmental impact, the packaging system can also be reviewed based on preferred means of transport, distance to cover, weight and volume, and stackability (before or after processing).

PRIMARY PACKAGING
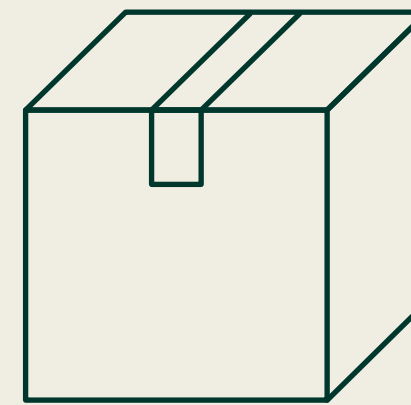
SECONDARY PACKAGING
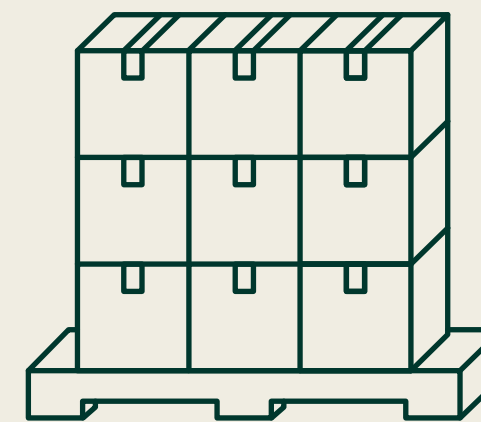
TERTIARY PACKAGING
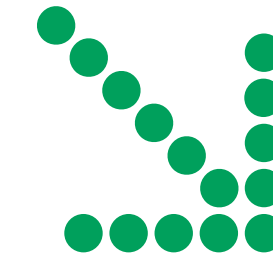
Usage scenario

Packaging plays a much more active role than functional objects in supporting consumers and enhancing their experience. From being purchased and used to being sorted at the end of its useful life, packaging can have a significant positive or negative effect on the user's experience. Factors include legibility and ease of finding information on the label, clarity on how to use the product (instructions for use, appropriate dosage, etc.), product restitution rate to avoid waste, and the system for opening and closing the packaging.

The usage scenario goes beyond just the end user's experience—it also considers the users of secondary and tertiary packaging, such as the warehouse workers who handle them.

The usage scenario step involves ensuring that the packaging will be accessible to different groups, such as children, left-handed people, the elderly, and people with motor difficulties.

As such, it's a key component that companies can test in a variety of ways, such as conducting consumer surveys and pilot testing products.

Concept of the "right packaging"

When approaching packaging from an ecodesign perspective, it's important to look for the "right packaging" rather than the perfect packaging. The number of components and quantity of packaging materials can sometimes be reduced without causing loss, damage, storage problems, or food waste. Choosing the right packaging is a question of trade-offs. The best packaging is the one that achieves the desired function with the lowest environmental impact (ITEGA, 2023).

The "right packaging" is a balance between underpackaging and overpackaging.

Underpackaging

Overpackaging is excess packaging that does not better protect or preserve the product, resulting in wasted resources. Overpackaging does not fulfill the product's essential functions (technical, logistical, and communication). Eg.: company 1.

> It's important to consider production, distribution, and marketing before reducing or eliminating packaging components. If the packaged product is damaged or broken due to inadequate protection, it will usually have a far greater impact than the packaging itself.

Overpackaging

Overpackaging is excess packaging that does not better protect or preserve the product, resulting in wasted resources. Overpackaging does not fulfill the product's essential functions (technical, logistical, and communication). Eg.: company 2.
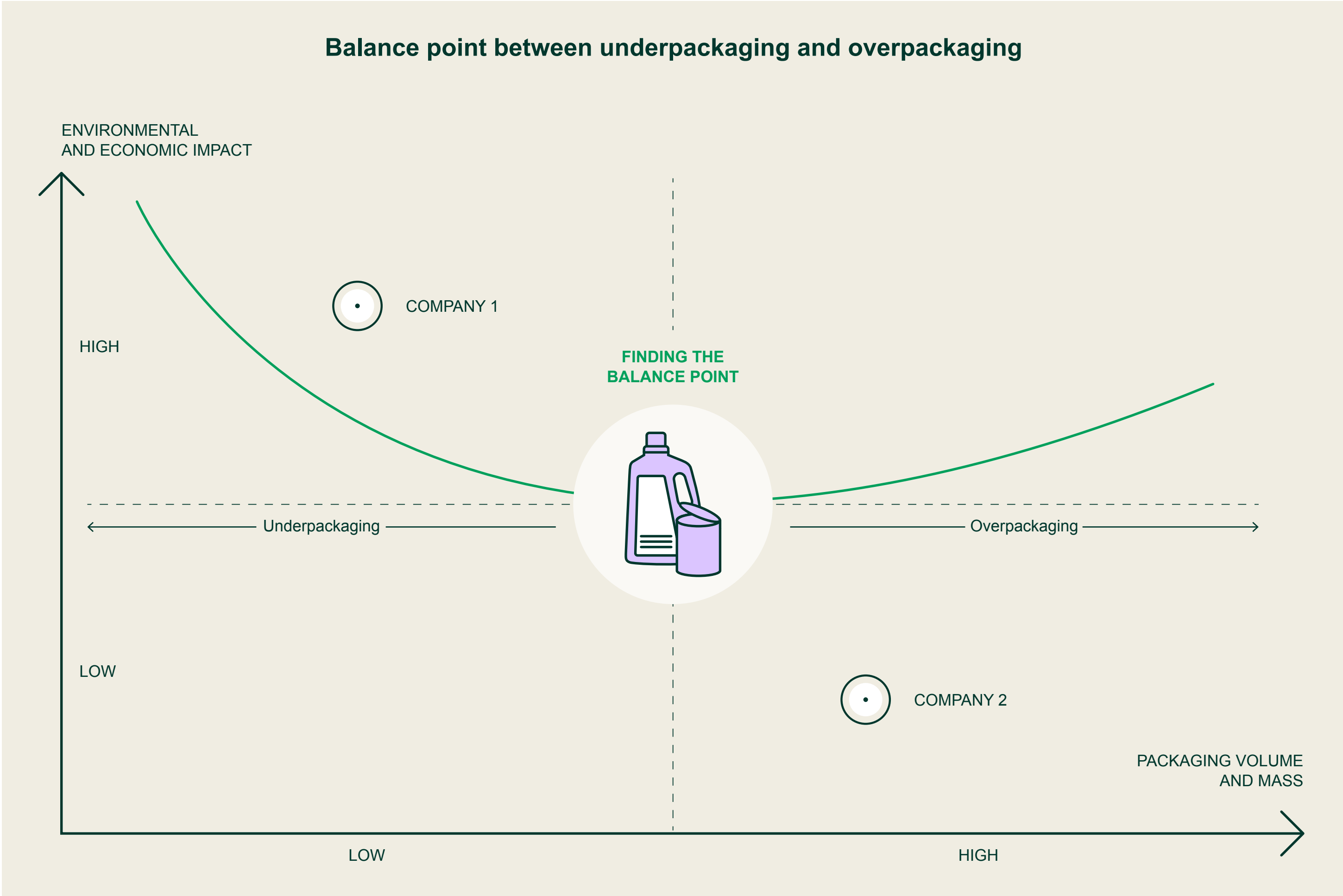
> Avoid using packaging solely to increase product visibility or appeal. Overpackaging can also be due to overestimating a product's need for protection.

Balance point between underpackaging and overpackaging

ENVIRONMENTAL AND ECONOMIC IMPACT

HIGH

COMPANY 1

FINDING THE BALANCE POINT

Underpackaging

Overpackaging

LOW

COMPANY 2

PACKAGING VOLUME AND MASS

LOW

HIGH

Ecodesign guidelines

This section presents practical ecodesign strategies and the steps involved. It also proposes a comprehensive approach for integrating ecodesign in corporate settings.

Rethinking for better ecodesign

Ecodesign is an opportunity to **rethink** packaging and printed paper, the product, and the system as a whole (handling, transport, consumption, end-of-life management, etc.). This concept takes a holistic approach to the design process to best consider the user and the environment.

The purpose of traditional design is to identify and meet the basic criteria of a project: performance, ergonomic, regulations, marketing, etc. The aim is to understand the root of a problem and the context behind it in an effort to address the cause rather than the symptoms.

Design thinking, meanwhile, focuses on the user and attempts to create something viable (economic), feasible (technical), and desirable in response to a problem or a true need.

Lastly, ecodesign proposes a holistic approach to the design process. It considers the environmental footprint

of design choices, manufacturing, marketing, etc., while maintaining or improving the function of the product, packaging, or printed paper.

Ecodesign also helps to bring the market innovative solutions that follow technological developments or new consumption and distribution patterns (e.g., e-commerce and bulk sales,

which have become prevalent in recent years). Packaging and printed paper need to adapt to changing realities and consumer expectations, and ecodesign can contribute to that.

It's important to always keep the concept of the "right packaging" in mind: using the right quantity of materials to ensure that the product is adequately protected while

avoiding overpackaging. The concept also involves choosing the most suitable material, the right packaging and printed paper manufacturing process, and the appropriate means of transport.

Ecodesign: a holistic approach

TRADITIONAL DESIGN: PERFORMANCE, ERGONOMIC, ECONOMY, SECURITY, SEMIOTIC, AESTHETIC, MARKETING, REGULATIONS

DESIGN THINKING – Focused on the user: DESIRABILITY, CREATIVITY, FEASIBILITY, EMPATHY, RATIONALITY, VIABILITY

ECODESIGN FOR PACKAGING AND PRINTED PAPER – Focused on the user and the environment: REDUCTION, PROCUREMENT, RECYCLABILITY, RETHINKING

Ecodesign strategies

Reduction, procurement, and recyclability are the three main ecodesign strategies for packaging and printed paper. These three strategies include a multitude of ways to select, begin, or improve an ecodesign process for packaging or printed paper.

In all cases, producers must decide which steps to take based on their organizational commitments and priorities for packaging and printed paper. How are these commitments set out in a strategic vision? Does the company have an action plan or roadmap? What are retailer and consumer requirements? Etc.

Ecodesign strategies for packaging and printed paper

REDUCTION

- Product-to-package ratio
- Eco-inking
- Reuse

PROCUREMENT

- Recycled content
- No toxic substance
- Local, reponsible and renewable

RECYCLABILITY

- Materials targeted by SC Regulation
- Monomaterials
- No small components
- No carbon black pigmentations
- Minimal label coverage
- Etc.

REDUCTION

PROCUREMENT

RECYCLABILITY

RETHINKING

Reduction

In addition to being the first method in the waste management hierarchy (4Rs), reduction is a step towards the "right packaging": packaging that is adequate, efficient, and designed with the right amount of material. Reduction also means lowering the amount of (particularly single-use) packaging and printed paper that gets put on the market, as well as simplifying packaging and printed paper with more restrained designs that keep only the functions that are essential for the product or the consumer. This strategy includes the following measures:

Improve the product-to-package ratio

→ **Reduce the weight or volume of primary, secondary, or tertiary packaging.**
Primary packaging can be optimized by reducing the mass of the packaging, eliminating components that aren't needed to protect the product, etc.
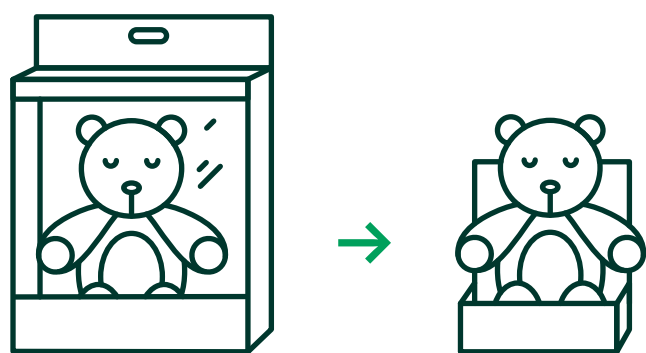
Secondary packaging can be optimized by increasing the number of primary packaging units each contains, combining functions (retail-ready or shelf-ready), and reconsidering the need for cushioning materials, where appropriate.

Tertiary packaging can be optimized by increasing the number of secondary packaging units each contains with a better palletization plan, as well as reconsidering the need for protective materials (corner protectors, straps, etc.) and the quantity and thickness of nonessential pallet wrap.

→ **Change product formulation or processing.**
When a liquid such as soap, a cleaning product, or toothpaste needs to be packaged, the water content can be reduced to offer a concentrated or solid format. By concentrating the product, the primary packaging can either be reduced in size or come with more portions per unit.
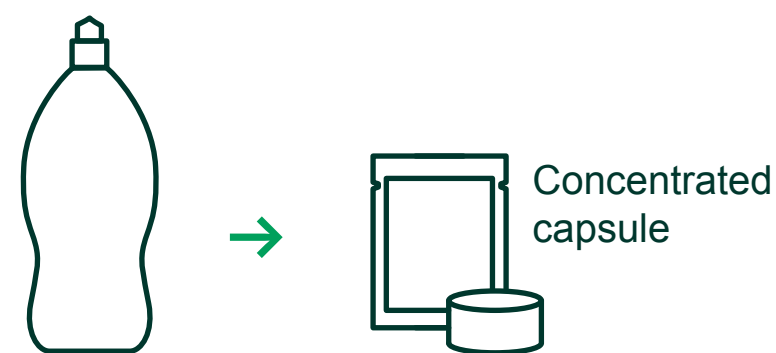
Concentrating the contents will also have a positive impact on the secondary and tertiary packaging, which will be able to carry more product. Any change to this effect will require a well-thought-out communication strategy to let consumers know to adapt their usage behaviour accordingly.

→ **Reduce nonessential headspace.**
Headspace in packaging may be necessary depending on the nature of the product and the equipment used during the filling and processing stages. Headspace should be addressed by improving the filling rate, compressing the product (densification or compaction), or concentrating it (see previous point on changing the product formulation). For this strategy to succeed, filling and processing equipment may need to be reviewed if it cannot minimize the headspace.
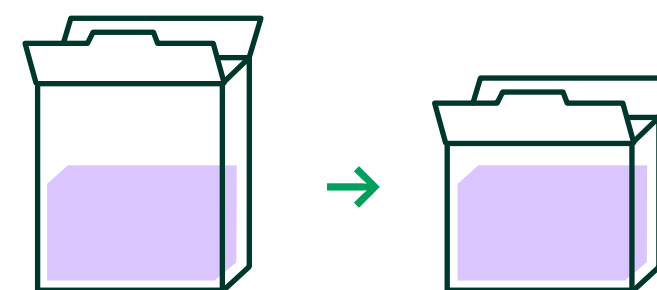
Reduce the amount of ink used with eco-inking

Eco-inking is a method that minimizes ink use without detracting from the visuals. The term "eco-inking" is used when less ink is used on the same substrate, i.e., the existing packaging or printed paper. Eco-inking improves packaging and printed paper by:

→ optimizing the coverage rate (four-colour process vs. spot colour and half-tone colour)

→ optimizing visuals and fonts (bold and reverse printing)

→ eliminating wasteful practices such as printing in places that will be cut away or not visible

Design for reuse

Reusing or repurposing packaging extends its useful life, avoids the need to produce new packaging, and reduces its environmental impact.

For example, packaging used for refilling (large formats, concentrated products) or that can be reused at filling stations (bulk).

When communicating about reduced packaging or printed paper, follow the ISO 14021 standard for self-declared environmental claims. According to the standard, among other requirements, claims must be based on data that are accurate, non-misleading, supported, verified, and can be validated on request (ISO, 2016). Here are a few examples.
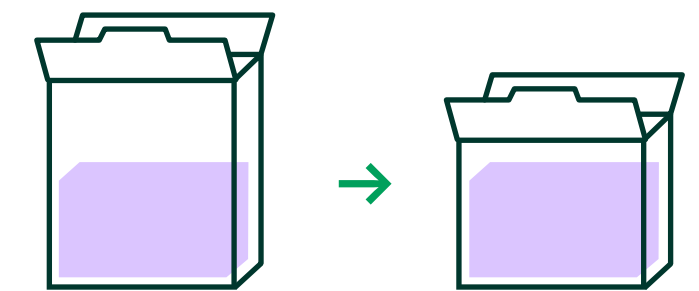
LESS PACKAGING, SAME QUANTITY!
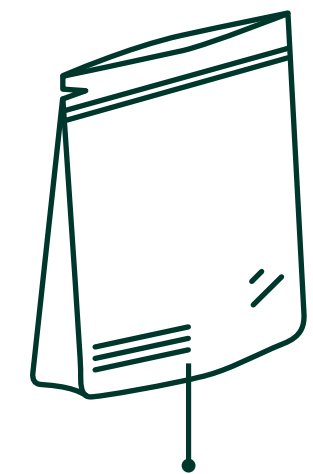
NEW BAG, NOW WITH 9% LESS PLASTIC

Concentrated capsule

Procurement

When looking to establish a more circular system for the materials that result from our production and consumption patterns, the provenance of materials must be traceable and transparent. To that end, the composition of packaging and printed paper needs to be better understood and conveyed.

Having a good relationship with suppliers makes it easier to set joint ecodesign criteria for a project. For an ecodesign approach to succeed, it's important to establish a dialogue with suppliers and select those that demonstrate knowledge, leadership, and high performance in managing their environmental footprint. This strategy includes the following measures:

→ **Integrate recycled content** (ideally post-consumer) to give new life to recovered materials, avoid the impact of extracting virgin raw materials, and strengthen market demand for recycled materials.

→ **Eliminate the use of toxic, harmful, and hazardous substances** (e.g., PFAS, BPA) by requiring data on the composition of materials, formulations, and components throughout the supply chain and making informed decisions accordingly.

→ **Prioritize local procurement** by checking the provenance of materials and comparing suppliers. Manufacturing in Quebec or neighbouring regions offers a number of advantages: supporting the local economy, shorter transport routes, more traceable supply chain materials, and compliance with Quebec and Canadian laws and standards.

→ **Choose environmentally responsible suppliers** with sustainability commitments (e.g., ESG indicators, responsible procurement, energy efficiency, environmental management) or environmental certifications (e.g., ICI on recycle+, LEED, ISO, B Corp).

→ **Favour materials from sustainable or renewable sources** that are certified (e.g., through certifications such as FSC for fibers).

Convey procurement practices by displaying an environmental label backed by a recognized certification program, among other things. The use of such a label implies that pre-established requirements are met and the claim is verified by an independent third party.

PACKAGING MADE FROM 100% RECYCLED PLASTIC

100% FROM WELL-MANAGED FORESTS
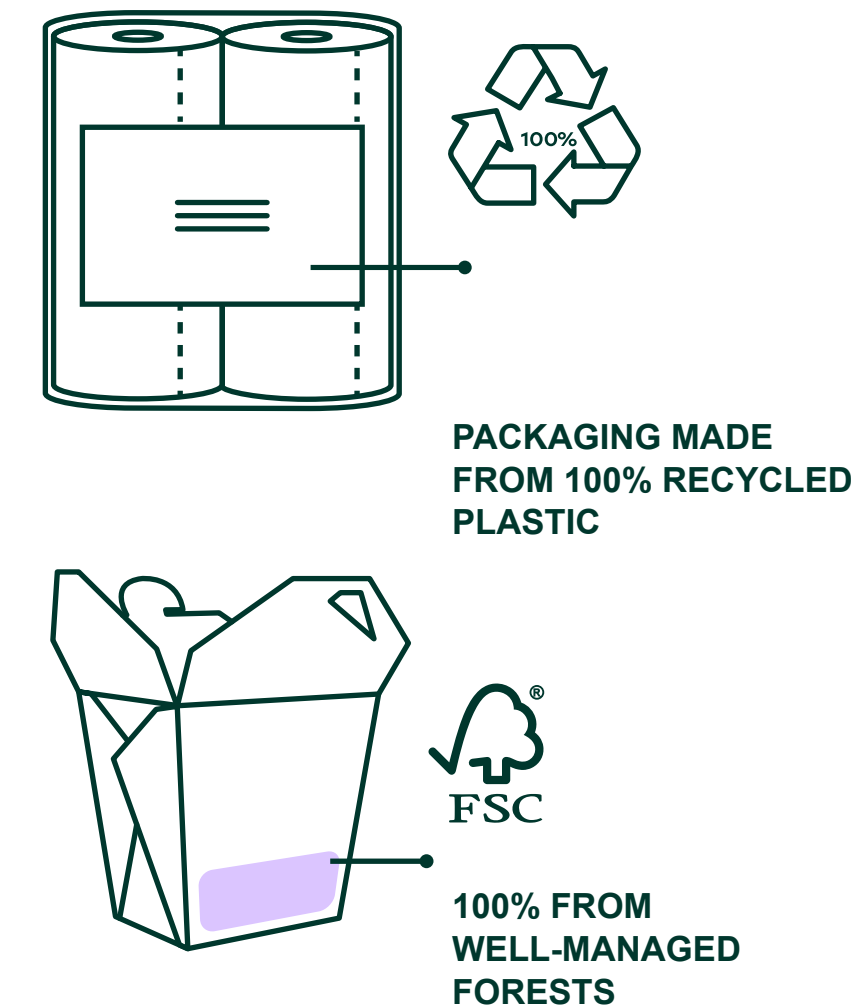
Recyclability

Right from the design stage, it's important to think about scenarios that maximize the value of packaging and printed paper at the end of their useful life, while considering their recyclability potential and their compatibility with existing collection and recycling infrastructure.

At end-of-life, collected packaging and printed paper will be processed and recycled if a recycling stream has been established. It's vital that users sort the packaging and printed paper correctly by placing them in the recovery bin so they can be collected, sorted, and sent to processors/recyclers to be recycled into new packaging and printed paper or other products. This strategy includes the following measures:

→ **Prioritize packaging and printed paper made of materials targeted by the recovery and recycling rates** in the SC Regulation, i.e., cardboard, printed paper, fibre packaging, PET rigid plastic, HDPE rigid plastic, other rigid plastic, flexible plastic, glass, ferrous metals, and aluminum.

→ **Avoid packaging, printed paper, and components made of materials that cannot be recycled**, such as PVC, degradable and compostable plastic, wood, cork, ceramic, and porcelain.

→ **Favour monomaterials** (packaging and printed paper made from a single material) to facilitate collection and sorting and avoid contamination of the material destined for processing and recycling.

→ **Where possible, avoid small items and packaging components** (with two sides under two inches), as they will likely pass through sorting centre separation equipment and contaminate other materials. Otherwise, small items should ideally stay attached to the main part of the packaging.

→ **Avoid using black plastic packaging** with carbon black pigment (or other non-detectable pigments), as it absorbs infrared light from optical sorting equipment (in sorting centres), preventing it from being captured by positive sorting.

→ **Minimize label coverage** to enable sorting center optical sorter to identify the material of the packaging body.

The recyclability of packaging and printed paper is affected by a number of characteristics related to the main part of the packaging (materials, pigmentation, dimensions, barriers and coatings, additives, and direct printing), the label (materials, coverage rate, adhesive, and ink) and associated elements (closure systems, pump, film, sealant, security seal, etc.). To find out more, consult the packaging recyclability guidelines.

Convey recyclability by displaying clear, precise sorting instructions on packaging to encourage users to sort them correctly. Sorting instructions can be a short statement, a clear pictogram, or a combination of the two.
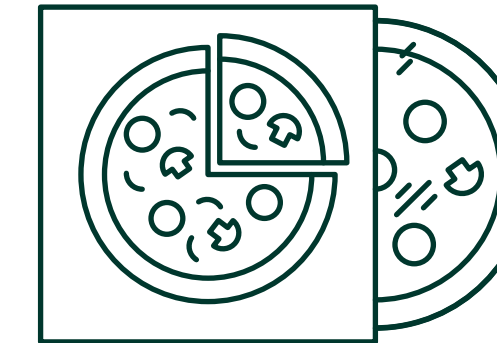
EMPTY CONTENT AND SEPARATE MATERIALS

FOR EASIER RECOVERY

• **Note**: As Quebec's curbside recycling is modernized, the list of accepted materials will gradually be extended. These changes could affect consumer sorting.

Ecodesign in corporate settings

A company's willingness to take an ecodesign approach to its packaging can be influenced by various internal and external factors: current and forthcoming regulations, funding programs, corporate social responsibility (CSR) commitments, employees' environmental mobilization, consumer pressure, retailer purchasing criteria and policies, etc.

These can be important deciding factors for embarking on an ecodesign process and for positioning in your market sector.

Organizational commitment

Firstly, an ecodesign approach should be an integral part of the company's strategy. Organizational commitment is key to ensuring that ecodesign guides packaging decisions.

Depending on the size of the company and its sector, these commitments can be implemented through various multidisciplinary teams, including CSR, sustainable development, packaging engineering, purchasing, and marketing. Targets and objectives, which form the basis of ecodesign projects, can be included in documents such as sustainable development policies, action plans, and CSR strategies.

Benefits of a formal commitment from leadership

→ Improve legitimacy and guidance for packaging ecodesign projects

→ Integrate ecodesign into the company's vision and mission to increase its impact

→ Place ecodesign at the centre of business processes to rally initiatives around common objectives, rather than addressing them on a case-by-case basis

→ Respond to pressure from consumers and retailers

→ Simplify and clarify communication between teams and leadership

→ Make ecodesign projects more efficient and relevant

The maturity level of a company's packaging ecodesign approach will depend on a number of factors:

→ **The size of the company and the departments involved in packaging ecodesign**: The more departments and employees there are, the more likely it is that the company will need the structure of policies or action plans to carry out an ecodesign project, to ensure that the teams involved are united around common organizational objectives and commitments.

→ **The sector and the products to package**: For example, in the food and cosmetics sectors, regulations and product preservation present constraints that can complicate packaging choices and limit ecodesign strategies.

→ **Packaged product marketing by private labels vs. external brands**: Retailers generally have more control and flexibility on ecodesign for their private label packaging. They may have limited leverage to require their external brand suppliers to modify their packaging. However, it is becoming increasingly common for retailers to give their external brand suppliers packaging ecodesign requirements.

Packaging strategy

The purpose of a packaging strategy is to transform organizational commitments into clear criteria that can be passed on to supply chain players. It helps define needs, objectives, and performance indicators for measuring the impact of ecodesign projects.

A good packaging strategy can also help reduce unnecessary spending on material, financial, and human resources. It can be applied to selecting or developing packaging.

Benefits of a packaging strategy

→ Evaluate the costs and benefits of implementing different ecodesign strategies early for better financial planning

→ Conduct market and competitive research to learn about the packaging available on the market and the choices suppliers offer

→ Foster dialogue with suppliers to ascertain how the available options align with the organization's ecodesign objectives

→ Aim for scenarios that maximize the value of packaging at the end of its useful life, particularly its recyclability potential and its compatibility with existing collection and recycling infrastructure

→ Develop a marketing approach based on the company's mission to justify packaging choices and avoid greenwashing
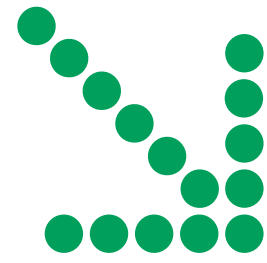
Trade-off management

Depending on their circumstances, companies have to find trade-offs to meet product needs (e.g., protection, preservation), costs, regulatory requirements, retailer demands and, ultimately, organizational commitments to packaging-product ecodesign.

Above all, the essential functions (technical, logistical, communication and user experience) of packaging should always meet the needs of the packaged product. Choosing or designing the "right packaging" for a product must prevent damage, loss, and waste, which often have a greater environmental impact than the packaging itself (see the "Life cycle and impact" section).

As curbside recycling is being modernized with an EPR approach, producers are becoming responsible for the packaging and printed paper they put on the market, from design to end-of-life management through recycling. Given that, it's essential that they be made from materials that have a recycling stream already established or in development.

Ecodesign strategies can then be chosen according to requirements (regulatory, competitive, financial, etc.) based on the company's priorities.

By skilfully navigating these trade-offs, companies can select or develop packaging that reduces their environmental impact.

Examples of common trade-offs

→ **Environmental impact vs. cost:** Although choosing materials and processes based on ecodesign can sometimes seem more expensive, it's vital to carry out a cost analysis that includes all the relevant parameters. Pay particular attention to indirect costs such as storage, handling, and transport, which can have a significant impact. For example, ecodesigned packaging could involve optimizing the palletization plan, resulting in more products delivered per truck or more products per storage area.

→ **Product protection vs. material reduction:** Packaging needs to be able to protect the product throughout the transport chain, from manufacturing to use, including in-store merchandizing, distribution, and sometimes even

delivery. Given that, it's necessary to strike a balance between underpackaging and overpackaging without compromising product protection. Lighter packaging may reduce transport-related carbon emissions, but it may also no longer be strong enough to adequately protect the product.

→ **Recyclability vs. product preservation:** Some packaging is designed to act as a barrier to maximize food protection and preservation (e.g., by adding coatings and lamination or increasing opacity), which can also make it more difficult to recycle. While it's vital to choose packaging that provides adequate protection and preservation, it's also important to avoid over-packaging when it's not necessary. Solutions that meet both recyclability and product preservation needs are becoming more widely available. It's best to conduct a detailed assessment of existing options.

Trade-offs inevitably imply abandoning certain criteria that were considered important at the start of the ecodesign process. That being said, ecodesign is a

work in progress, not a final destination. Companies can continue to improve and integrate new criteria with future packaging iterations. Ecodesign works best when it's well thought out and implemented gradually, moving towards the "right packaging" one step at a time. While there's no such thing as perfect packaging, the "right packaging" is the one that fulfills its function with the lowest environmental impact.

Steps to integrate ecodesign

To successfully implement packaging ecodesign and achieve organizational objectives, the ecodesign approach must be taken into account right from the start and throughout the product development process.

First, it's important to identify all the departments in the company that contribute to packaging development. Their involvement may vary depending on the size of the company, its sector, and the type of product that requires packaging.

The roles of different departments in a company:

→ **Management** ensures that the ecodesign project aligns with the company's strategic vision. It's generally responsible for achieving organizational objectives, supporting the project team, and equipping it to reach its goals.

→ **Procurement** participates in selecting materials and suppliers, as well as sending technical requirements and environmental criteria. Its choices are important and can help establish responsible supply chains.

→ **Marketing** outlines the ecodesign project's positioning according to marketing constraints, retailer requirements, and consumer expectations, and is responsible for conveying the right key messages on the packaging. Marketing must also ensure that the project is feasible within the existing production chain.

→ **Communications** conveys information about initiative efforts and determines ways of promoting them to the relevant groups, be they employees, customers (retailers), or consumers.

→ **Research and development** uses ecodesign to structure innovation, bring added value to the company, and develop the solutions of the future.

→ **Engineering** selects materials, establishes specifications for suppliers on current projects, and participates in the validation steps prior to marketing.
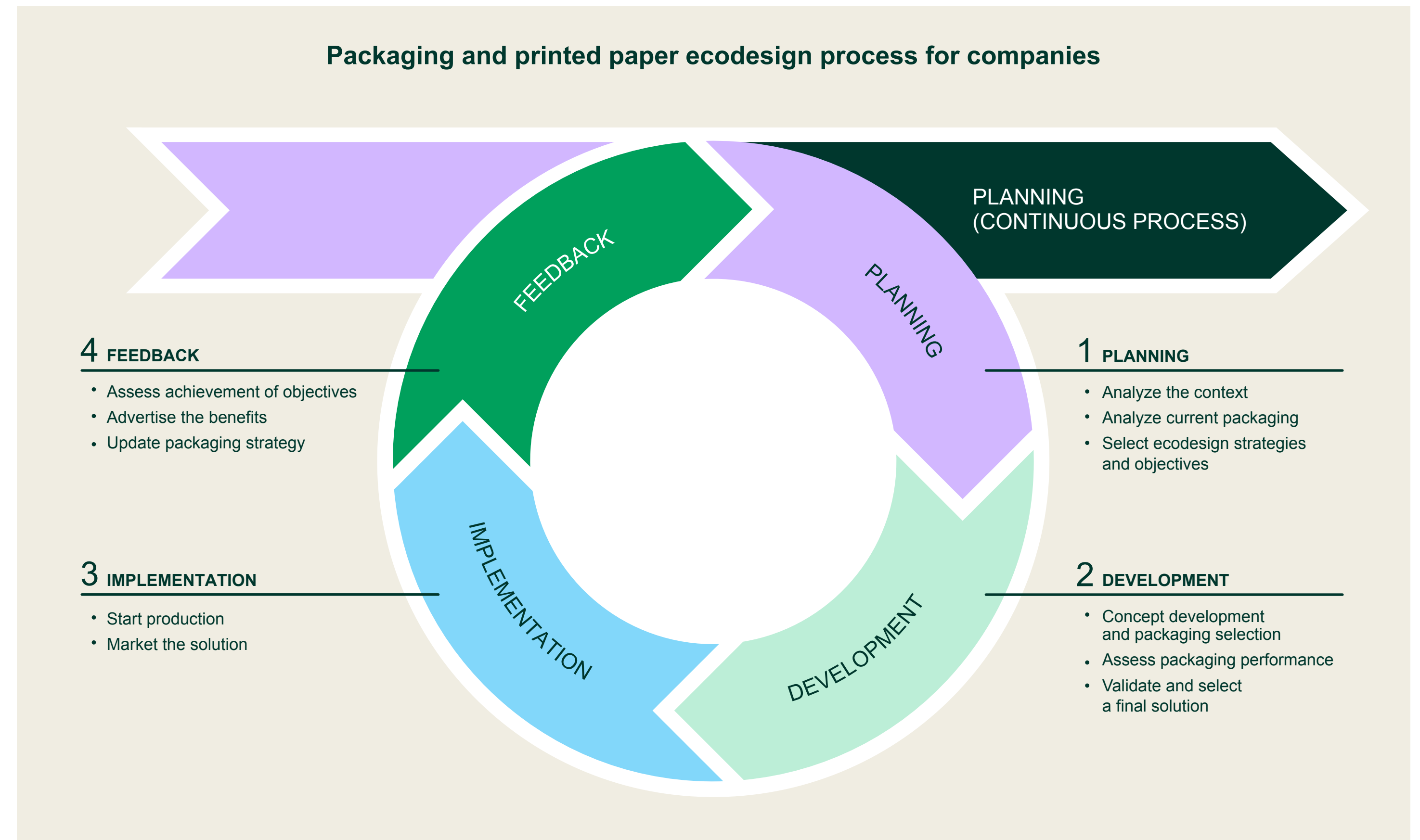
→ **CSR/Sustainable development** coordinates team social and environmental activities and is responsible for documenting the targets achieved and the indicators measured for internal and external reporting.

It's also important to identify the external stakeholders that contribute to packaging development, such as suppliers of raw materials and packaging, product processing companies, testing and validation laboratories, design agencies, printers, ÉEQ, etc.

The aim is to work together so that everyone can contribute their skills to the packaging design project.

Here are the recommended steps for integrating packaging ecodesign in corporate settings, based on an approach developed in collaboration with the Institut de technologies des emballages et du génie alimentaire (ITEGA), a research institute dedicated to food and packaging technologies.

Packaging and printed paper ecodesign process for companies

PLANNING (CONTINUOUS PROCESS)

4 FEEDBACK
- Assess achievement of objectives
- Advertise the benefits
- Update packaging strategy

1 PLANNING
- Analyze the context
- Analyze current packaging
- Select ecodesign strategies and objectives

3 IMPLEMENTATION
- Start production
- Market the solution

2 DEVELOPMENT
- Concept development and packaging selection
- Assess packaging performance
- Validate and select a final solution

Planning

Développement

Analyze the context

→ Assess the company's current commitment to packaging ecodesign.

→ Find out about current and forthcoming environmental regulations, as well as available subsidies.

→ Understand the pressure from grassroots organizations and consumers.

→ Understand Quebec's curbside recycling system, recycling infrastructure, and current and future distribution markets.

Analyze current packaging (if applicable)

→ Conduct a thorough review of existing packaging to determine its strengths and weaknesses.

→ Understand the functional requirements of packaging (e.g., protection/preservation).

→ Take the opportunity to review packaging when products are changed.

Select ecodesign strategies and objectives

Identify and prioritize measures that stem from ecodesign strategies, based on the company's commitments and values. The strategies are grouped into three main categories: reduction, procurement, and recyclability.

→ Set achievable and measurable objectives based on the ecodesign requirements that are being prioritized and the organization's situation. Objectives can be environmental (e.g., increasing the proportion of recycled content), technical (e.g., optimizing palletization), or even commercial (e.g., updating the brand to target a new market share).

→ Determine performance indicators to meas

Develop concepts or select packaging

→ For packaging design, **create concepts** based on company objectives and selected ecodesign strategies. The feasibility of adopting certain ecodesign requirements can be assessed during the product development process, and that assessment can be iterative. It may take multiple packaging concept performance assessments to arrive at the final design.

→ When **selecting** packaging from a supplier, opt for the packaging that best matches the chosen ecodesign strategies and the objectives that have been set. Suppliers can help find the right solution for the product's needs and are often able to provide advice on the latest innovations in the sector, working with companies as allies. However, it's important to assess solutions based on objectives and avoid ideas that seem better than they really are.

Assess packaging performance

→ Test packaging concepts and prototypes to make informed choices based on observed performance: assess product compatibility, functionality, filling, consumer perception and acceptability, recyclability, etc.

Validate and select a final solution

→ Validate performance levels based on observation.

→ Select the packaging solution that offers the best compromise among the various requirements and performance criteria that have been established and assessed.

Implementation

Feedback and continuous improvement

Start production

→ Implement the solution and its production line. At this stage, remain vigilant and make adjustments should any problems arise.

Market the solution

→ Distribute and market the solution.

Assess achievement of objectives

→ Review the ecodesign approach in collaboration with the internal and external stakeholders involved.

→ Measure the achievement of objectives based on the selected performance indicators.

→ Document successes, lessons learned, and recommendations for the next packaging redesign.

Advertise the benefits

→ Advertise the environmental, social, and economic benefits of the ecodesign approach, both internally (e.g., organizational reporting) and externally (e.g., annual report, website, or social media).

→ Participate in educating consumers to avoid preconceived ideas and help them understand packaging choices based on objectives and the needs of the product.

Update packaging strategy

→ Consolidate what was learned from the ecodesign approach with the CSR team and senior management to update the packaging strategy and help establish objectives for the next packaging redesign.

Glossary

4Rs principle

Principle that encourages sound management of residual materials by placing strategies in priority order: reduction, reuse, recycling, other forms of valorization, and elimination (Translated form OQLF, 2023b).

Circular economy

A system of production, exchange, and consumption based on strategies that optimize resource use at every stage of the product life cycle, with the aim of reducing environmental impact and improving individual and communal well-being (Translated from OQLF, 2023b).

Composting

Controlled biological process by which organic matter is degraded under aerobic conditions (in the presence of oxygen). The result is compost, a stable, hygienic product (Environment Canada, 2013; RECYC-QUÉBEC, 2024).

Curbside recycling

A recovery method that collects residual materials for reuse. Curbside recycling is carried out by voluntary drop-off at a collection point (point of sale, drop-off bin, container, ecocentre, or waste sorting and recovery centre) or by curbside collection (Translated from RECYC-QUÉBEC, 2024).

CSR

Corporate social responsibility

Design thinking

A project management or problem-solving approach that focuses on people and their needs, combining technical skills and creativity to develop innovative products or services that are technologically feasible, economically viable, and desirable to an eventual user (Translated from OQLF, 2021).

Ecodesign

A holistic approach that takes environmental, social, and economic criteria into account when designing packaging or printed paper, while preserving their use value (roles and functions) (ÉEQ, 2024).

Eco-inking

Practice aimed at reducing or optimizing ink use in packaging design and document printing, mainly for environmental and economic reasons (Translated from OQLF, 2023b).

ÉEQ

Éco Entreprises Québec

EGs

Ecodesign guidelines

End of life

The stage in a product's life when it can no longer be used or ceases to function and cannot be repaired. At the end of its life, an item can generally be recycled or valorized. It can also be discarded (Translated from OQLF, 2023b).

Extended producer responsibility (EPR)

Approach where certain companies, usually due to regulatory obligation, ensure that the products they put on the market are properly managed at the post-consumption stage (Translated from OQLF, 2023b).

Food waste

Phenomenon by which food intended for human consumption is degraded, lost, or discarded, which occurs at all stages of the bio-food chain, from production to consumption (Translated from OQLF, 2023b).

GHG

Greenhouse gas

HDPE

High-density polyethylene

Headspace

Space in packaging that is unused or, more rarely, filled with gas. Too much headspace is misleading for the consumer, who may believe that there is more product in the packaging than there actually is. Headspace can be caused by the equipment used during filling or processing. That being said, it's essential in certain cases, such as the packaging of liquid products that produce foam during the filling process (Translated from OQLF, 2023b).

Life cycle

All the stages in the life of a product, process, or service (Translated from RECYC-QUÉBEC, 2024).

Life cycle assessment (LCA)

Analysis to determine and measure the environmental impact, social consequences, or cost of a product or process throughout its life cycle (Translated from OQLF, 2023b).

Life cycle thinking/life cycle perspective

Consideration of the life cycle of products, processes, and services in the individual and organizational decision-making process, in an effort to reduce their negative effects on the environment or society (Translated from OQLF, 2023b).

Overpackaging

Practice of providing a product with excess packaging or packaging whose shape is considered unsuitable because it does nothing to better contain or protect the product (Translated from OQLF, 2023b).

Packaging

Containers and other items made of paper, cardboard, plastic, glass, or metal and used to contain, protect, or wrap a product.

PE

Polyethylene

PET

Polyethylene terephthalate

PFAS

Perfluoroalkyl and polyfluoroalkyl substances are a group of over 4,700 structurally related organic compounds with a fluorocarbon chain. They are synthetic chemical substances that have high chemical and thermal stability and can repel water and oils. They persist in the environment and can accumulate in the body over time (Government of Canada, 2023b).

Post-consumption

Stage in the life cycle following the final consumption of certain products that consists of reusing the products or their materials to manufacture other products, disposing of them, or incinerating them (Translated from OQLF, 2023b).

PP

Polypropylene

Printed paper

Paper and other cellulose fibres that may or may not display text or an image.

Producer

Any person who commercializes, puts on the market, or otherwise distributes packaging and printed paper in Quebec that is covered by the SC Regulation (Government of Québec, 2023).

Product-to-package ratio

The ratio of the total mass of all the components of a packaging to the mass of the packaged product. The lower the ratio, the more optimized the packaging is.

Recyclability

Ecodesigned packaging and printed paper that is collected in the recovery bin, sorted at a sorting centre, and recycled through an established market (ÉEQ, 2024).

Recycled content

Proportion or quantity of recycled materials replacing virgin materials in a product or packaging.

Recycling

Process where a residual material is transformed in order to be used as a raw material for manufacturing a new product (Translated from OQLF, 2023b).

Reduction at source

Approach that consists of preventing or reducing the production of residual materials at the design, manufacturing, and consumption stages of products (Translated from OQLF, 2023b).

Responsible procurement

Procurement method that considers environmental, social, and economic criteria with a view to sustainable development (Translated from OQLF, 2023b).

Reusable packaging

Packaging that has been designed, created, and put on the market so that it can be refilled or reused several times during its life cycle for the same purpose (CITEO, 2022).

Reuse or repurposing

Approach that consists of a residual material or consumer good being used again without its properties being changed (Translated from OQLF, 2023b).

SC Regulation

Regulation respecting a system of selective collection of certain residual materials

Sorting centre

Company that sorts residual materials, particularly recyclables and construction, renovation, and demolition waste, for recycling or valorization (Translated from RECYC-QUÉBEC, 2024).

Underpackaging

Practice of providing a product with packaging that is considered insufficient because it doesn't adequately protect or preserve the product (Translated from OQLF, 2023b).

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Questions?
Contact us!

The Ecodesign and Ecomodulation team is here to support you

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