STRUCTURAL PACKAGING SUSTAINABILITY CHECKLIST

A WORLD WITHOUT PACKAGING WASTE

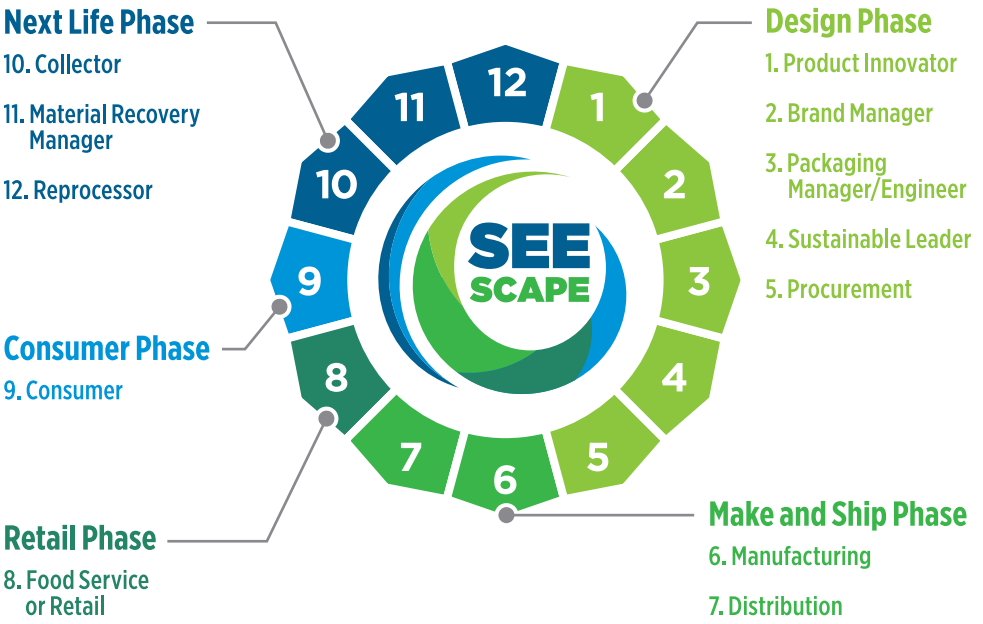
The Design Process

The Circular Economy is restorative and regenerative by design. This approach is reshaping the traditional model of **"take-make-dispose"** in order to design waste out and especially applies to packaging. **PAC SEESCAPE** incorporates the three pillars of sustainability – Social, Environment and Economic – into the design process.

The Collaborative Team

The **PAC SEESCAPE MODEL** is symbolically based on the face of a clock and King Arthur's famed round table with no head. It has 12 hour hands that represent a collaborative team of stakeholders throughout the packaging value chain who play a key role in designing for packaging sustainability. Everyone who sits there has equal status.

The team's objective is to keep packaging as a valuable resource in a continuous closed loop system rather than have it disposed in landfill, become litter or marine debris.



The Checklist

This checklist provides a quick reference guide to help you make better packaging sustainability decisions. The checklist follows the priority order of the hierarchy of waste management. Before you begin, ask yourself:

- **What are the sustainability goals and innovation goals of my company and customer? How can the packaging contribute to these goals?**
- **Do I have all the information I need to make the right choices?**

1. **SOURCING** — What will the packaging material(s) be made from?
2. **REDUCE & OPTIMIZE** — How will the package be used?
3. **REUSE**
4. **RECYCLE**
5. **COMPOST** — How will the package be discarded for its next life?
6. **COMMUNICATION** — How will the sustainability message be told?

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SOURCING

1. Does the packaging material pose any risks toward human health?
2. Can the current non-renewable packaging material be replaced by renewable sources?
3. Can the packaging incorporate or increase recycled content?

- ✓ **Comply** with market and regulatory requirements for performance, product stability and safety
- ✓ **Verify** environmental claims (i.e., responsible forest management, recycled content) with third-party certification

SUSTAINABLE FORESTRY INITIATIVE
SFI-00001

RECYCLED
Made from recycled material
FSC® C000000

- ✓ **Check** that use of post-consumer recycled (PCR) plastic or fibre doesn't come with unfavorable environmental trade-offs

Where the material is sourced and shipped may result in greater greenhouse gas emissions relative to virgin material.

- ✓ **Label** recycled content by clearly identifying the percentage of total recycled content, including PCR content if applicable

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REDUCE and OPTIMIZE

1. Can the packaging be reduced or optimized to use less material but without any unforeseen consequences (e.g., increased damages)?
2. Can the size, weight, or thickness of the package be reduced?
3. Are there extra layers or components that are unnecessary?
4. Can the product be changed to reduce overall packaging needs (e.g., compaction)?
5. Has e-commerce and transport packaging been considered? Is the case count optimized? Are there unnecessary empty spaces within the package?

- ✓ **Consider** entire packaging system

Life Cycle Assessment (LCA) is a common tool used to help understand environmental impacts throughout a product's entire life cycle, including its packaging.

- ✓ **Explore** packaging changes with supplier or third-party testing lab before implementing them
- ✓ **Measure** performance and consider potential trade-offs to ensure that packaging changes are more sustainable
- ✓ **Ensure** that packaging provides adequate protection during transport
- ✓ **Remove** extra space on the pallet and in the truck (also known as cube utilization)

Ensure packaging changes do not compromise its ability to protect the product, maintain freshness and extend shelf life for food. Examples shown on other side.

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REUSE

1. Is it possible to reuse the packaging?

- ✓ **Check** whether there is current infrastructure to support a reuse system
- ✓ **Determine** whether packaging encourages reuse behaviour with consumers

Ontario's The Beer Store boasts a 97.5% return rate of all refillable beer bottles sold in Ontario – these bottles are reused an average of 15 times before being recycled into new glass bottles.

- ✓ **Educate** consumers on the reusability of the packaging; often environmental benefits of reusable packaging assumes multiple uses

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RECYCLE

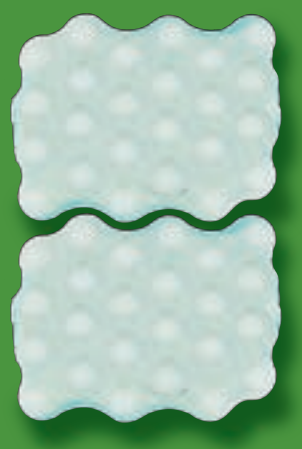
Can the packaging be collected, separated, or otherwise recovered from the waste stream through an established recycling program for reprocessing or use in manufacturing or assembling another item (i.e., an end market)?

- ✓ **Refer** to PAC's Packaging Fact Sheets and the Association of Plastic Recyclers' Design® Guide for Plastics Recyclability
- ✓ **Engage** with partners to establish stronger end markets and reprocessing infrastructure

! *Packaging materials that have unstable end markets are susceptible to varying acceptance in recycling programs, or worse, material bans.*

! *Multiple material combinations or components that are difficult to separate make packaging too complex to be recycled. Refer to Recycling Watch Outs on other side.*

* *Staggered configuration of a multi-pack of beverage bottles removed the need for a stabilizing tray or pad. This improved the packaging's recyclability while reducing material costs and maintaining its stackability for storage and shipping.*



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COMPOST

1. **Can the packaging be disassembled? Does it contain organic residuals?**
2. **Can the packaging be recycled? If not, assess its breakdown in the following environments: industrial composting facilities, backyard composters, anaerobic digesters, landfills (anaerobic environment)**
3. **Are there risks associated with this packaging after its use (i.e., litter, hazardous contaminants, consumer confusion in how it ought to be disposed)?**
4. **Does the packaging meet standards that allow it to be composted (e.g., BPI certification, ASTM standards)?**

- ✓ **Verify** that the disassembly of the product is user-friendly enough that consumers will follow recommended action and conduct consumer testing accordingly
- ✓ **Develop** take-back programs so that products can be processed in the environment for which they were designed (e.g., BPI certified products in industrial composting facilities)
- ✓ **Consult** with municipalities to understand what can be processed in existing infrastructure
- ✓ **Test** packaging to ensure it will not become a hindrance in existing recycling and organics diversion programs

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COMMUNICATION

1. **Are you clearly communicating what consumers should do with the used packaging?**

- ✓ **Use** the Mobius loop to indicate recycling in accordance with the Canadian Competition Bureau and FTC Green Guides
- ✓ **Check** local recycling and composting guidelines to verify data and back up your claim

! *It is important to qualify claims. Refer to Additional Resources on other side.*

- ✓ **Test** your packaging with consumers to determine if they understand how the packaging should perform and be prepared for recycling or composting

REFERENCE TOOLS

PAC's Packaging Fact Sheets provides guidelines for different packaging types. Some examples shown below.

Coloured Opaque PET:

- Accepted at curbside but significantly downgrades value of PET and limits end use applications

PLA ('Compostable') Plastic:

- Can cause confusion with recycling stream
- Insufficient quantity available to warrant separate recovery

Black Plastic Containers:

- Difficult to sort; must be done manually
- Extremely difficult to sort into specific resins at end market limiting end users

Hot Beverage Polycoated Cups:

- Variable collection program acceptance
- Cup and lid need to be separated

Single-Serve Hot Beverage Pods:

- Limited acceptance at curbside
- Lid and organic material must be separated

Multi-Material Laminates:

- Flexible packaging market is growing
- Difficult to collect and sort at most Material Recovery Facilities
- Need viable and scalable end market

Non-PET Clamshells:

- Look-alike plastics challenging where manual sorting is used
- Ensure label/ink adhesive can be easily removed

Full Shrink Wrap Label:

- Full labels can confuse optical sorting
- Partial or perforated labels are preferred

PACKAGING OPTIMIZATION EXAMPLES

Packaging plays an important role to preventing food waste. Some fresh produce packaging features an added strip or lidding film that helps to extend shelf life, such as an extra 2 to 4 days for strawberries, while maintaining the recyclability of the packaging. The cost savings from the reduction of food waste typically outweighs the cost of the added packaging feature.

Compaction changes the formulation to allow for a more concentrated version of the product. This reduces packaging and allows for more product to be shipped in the same space.

ADDITIONAL RESOURCES

The International Safe Transit Association provides packaging standards for shipping and transport. Visit ista.org for more information.

For more information on Design for Recycling, visit plasticsrecycling.org/apr-design-guide/ or recycle.com/mrf-flow-study/

Under section 10.7 of Environmental Claims: A Guide for Industry and Advertisers, the Canadian Competition Bureau states: *"It would not be false or misleading to make an unqualified claim of 'recyclability' if at least 50% of the population in the area where the product is sold have convenient access to these recycling facilities. If the facilities to process and reuse recycling do not exist for the majority, this claim and the use of the Mobius loop symbol on such a container could be considered false or misleading."*

Under section 260.12 and 260.13, the FTC's Green Guides state: "By itself, the [Mobius loop] symbol likely conveys that the packaging is both recyclable and made entirely from recycled material. Unless the marketer has substantiation for both messages, the claim should be qualified. The claim may need to be further qualified, to the extent necessary, to disclose the limited availability of recycling programs and/or the percentage of recycled content used to make the package."

TRADE-OFF CONSIDERATIONS

What if the packaging changes result in other trade-offs (e.g., higher material costs, higher carbon footprint, decreased chance of being recycled)?

It is important to first align your packaging decisions with your company's sustainability goals, set a benchmark, and then create a strategic plan with your management team to address trade-offs over a specified timeframe. Remember: collaboration and long-term thinking will increase your chances of success.

How do I balance sustainability with other important packaging considerations (e.g., branding requirements, tamper-evident and safety features, regulatory information)?

Designing with sustainability in mind requires a holistic approach. Identify 'hot spots' for packaging improvements; prioritize benefits and impacts internally before working externally with your suppliers to explore other options.

RECYCLING WATCH OUTS

Packaging often involves multiple components that can impact the recycling process. See #4.

Body Material	Common packaging forms/resins are more likely to be accepted at curbside collection programs; clear body material will retain higher value when recycled
Size & Shape	For containers, packaging dimensions and its ability to hold 3D shape affects likelihood of material being captured for recycling
Barrier & Additives	Additives degrade the quality of recycled plastic resins and should be avoided
Closure & Liner	Use same body material if possible; instruct consumer to empty remaining contents and replace cap
Sleeves & Labels	Avoid full sleeve labels or use perforation; use recycling-friendly labels
Ink & Adhesives	Ensure inks do not bleed in water and label adhesives are recycling-friendly
Attachments	Avoid or instruct consumer to separate before recycling