perennia
ideas • innovation • success

FACT SHEET

FOOD PACKAGING | ©Perennia 2021

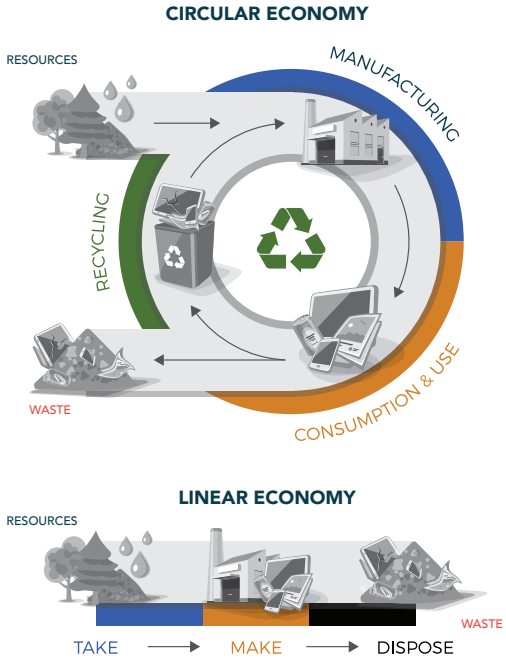
PACKAGING SUSTAINABILITY

There is an increasing awareness that our current food and beverage packaging practices are not sustainable. If left unchecked, the annual volume of plastic entering the ocean will almost triple, from 11 million tonnes in 2016 to 29 million tonnes in 2040, according to the Ellen MacArthur Foundation[1]. Small particles of plastics (microplastics) also present a huge problem that threaten ecosystems around the world. The toxins released from this land-based pollution can affect the world's crops. As we address climate change, society must reduce our environmental footprint by cutting greenhouse gases, reducing energy use and eliminating waste. To do our part, the food industry needs to provide consumers with choices that are responsible yet still fulfill the purpose of a food package: to safely protect the food while minimizing its footprint from "cradle to cradle" as we move from a linear economy to a circular economy.

Inspired by the planet's natural cycles, a circular food economy reimagines and regenerates the systems that feed us, eliminating waste, sharing economic prosperity, and nourishing our communities.

> "Creating a circular economy for food and packaging is essential to our planet's sustainability. It would lead to enormous reductions in CO_2 emissions, and represents a multi-billion dollar economic opportunity." From *Less Food Loss and Waste, Less Packaging Waste,* National Zero Waste Council Canada Research Report 2020[2].

To reduce food and packaging waste, innovation is required across the food system - supply chain management, package product design, marketing of food products and resource recovery - to lead us from a linear food packaging system to a circular one.



perennia
ideas • innovation • success

FACT SHEET

FOOD PACKAGING | ©Perennia 2021

FOOD STILL NEEDS PACKAGING!

Packaging keeps food and beverage safe and prevents food loss and waste. A report from the National Zero Waste Council (2020) asked the following questions: how do we understand the intersection of food loss and waste (FWL) with packaging? What types of food require packaging to retain value? Are some materials better than others? Can some food be sold without packaging?

Globally, about 1/3 of all food produced is wasted[3]. Lost energy and additional greenhouse gases add to the problem. In Canada, there are approximately 11.2 million tonnes of FWL, with a value of $49 billion.

"Food loss" = food that is not recovered from production, processing or distribution and storage.

"Food waste" = food fit for consumption but discarded by retailers, food service providers or consumers.

HOW CAN THIS PROBLEM BE TACKLED?

The entire life cycle of a package needs to be considered. What are all the inputs going into manufacturing as well as the end-of-life options? Simply replacing all plastics with other commonly used materials would create other problems[4]. It is estimated that more than four times the amount of other packaging materials would be needed to do the job that plastic currently does, and this replacement could result in double the energy requirements and more than double the impacts on global warming.

The PAC has launched a packaging assessment tool "PIP360"[5] to allow users to compare scores for recyclable, reuseable or compostable packaging. This helps prioritize pathways for improving circularity. You can score a specific package against alternatives to see the lowest impact option.

The answers lie in all parts of the food production, processing, packaging and recycling industries, as well as governments working together.

1. **Optimize sale of loose and bulk for suitable goods**
2. **Reduce or eliminate unnecessary food packaging**
3. **Increase recyclability and recycled content and improve recycling infrastructure**
4. **Improve composting and anaerobic digestion infrastructure**
5. **Accelerate development of new packaging materials including reuseable systems**
6. **Implement government legislation, where appropriate**

The Sustainable Packaging Coalition outlines these criteria[6] for a package to be sustainable:

Health and safety: through life cycle
Performance: must be maintained
Energy: sourcing, manufacture, transport, recycling
Source: renewable or recycled
Best practices: "clean" production
Design: optimize both material inputs and energy usage
Circularity: recovered and utilized in biological and/or industrial closed loop cycles

WHAT IS HAPPENING IN INDUSTRY TO COMMERCIALIZE SOLUTIONS?

More than 450 organizations have signed the "The New Plastics Economy Global Commitment"[1], led by the Ellen MacArthur Foundation in collaboration with the UN Environment Program (including Coca-Cola, PepsiCo, Unilever, Nestlé, Walmart and Amcor). In Canada the "Canada Plastics Pact" is a member of this group and includes stakeholders from industry, government and NGOs with a Canada-specific set of plastics reduction, recycling and elimination goals. **https://plasticspact.ca** These groups have committed to clearly defined reduction targets starting in 2025, which become increasingly ambitious over time. Companies are reducing materials, switching to bio-based materials and choosing fully recyclable options with increased recycled content.

In some cases, edible films may offer a solution or in re-useable packaging such as Loop's "zero-waste" system that allows consumers to send back packaging for cleaning and re-use. Identifying an option with a small energy footprint and a zero-waste end-of-life is not straightforward, but the packaging industry is working hard to provide better alternatives.

perennia
ideas • innovation • success

FACT SHEET

FOOD PACKAGING | ©Perennia 2021

FLEXIBLE PACKAGING CONUNDRUM

Flexible packaging can be a simple monolayer bag like the bread bag, but frequently is a more complex multi-layer structure that is difficult to recycle. Examples include coffee bags, stand-up pouches and potato chip bags. This format offers functionality such as barrier properties, and in some life cycle assessments, comes out ahead of other options despite its limited recyclability. At present, flexible packaging is no longer accepted for recycling in Asia (China handled more than half of the world's recycling waste for 25 years, until a ban in 2018) and our infrastructure to handle it in North America is minimal – so landfill is the default option. However, industry groups (MRFF[7], CEFLEX[8]) are working on how to handle flexibles in the recycling stream. In the EU, currently, 1/7 of flexibles are now recycled. Recent developments in technology have also enabled packaging companies to develop monolayer recyclable films that can make high performing pouches - a breakthrough that will allow circularity for this format. The Continuous Improvement Fund of Ontario gives a Canadian perspective on this priority issue[9].

COMPOSTABLE VS. BIODEGRADABLE

Compostable materials are considered superior to biodegradable because although they are both supposed to break down in nature, to be compostable, a material must be able to break down into organic matter which returns nutrients to the soil in a safe and timely manner. To be truly compostable a package must be tested and certified and should be compatible with real-world (e.g. municipal composting facility) conditions. It should also not interfere with the operation of the composting facility, e.g. compostable bags may get caught in equipment. Talk to the waste management team in your area!

Biodegradable materials have no limit on the amount of time to break down into their natural components – and if a biodegradable material has plastic in it, it may leave behind microplastics that can end up in the food chain. On top of that, if it looks like plastic, it is confusing for consumers to know where to put it, and it may have negative impacts on the composting and/or recycling stream. Petroleum-based plastic can release previously dormant fossil carbon into the environment[10]. The complexities associated with biodegradable additives introduced into petroleum-based plastics are outlined in a position paper by the Sustainable Packaging Coalition[11].

QUESTIONS FOR YOUR PACKAGING AND LABELLING SUPPLIERS AROUND SUSTAINABILITY

- Is the package using as little material as possible while still doing its job?
- Is your packaging material commonly recyclable? Are any modifications such as colourants, UV barriers or oxygen barriers compatible with the recycling stream? For flexible packaging, such as a stand-up pouch, is a mono-material version available to allow for recycling? What about other components of packages such as the label or handles?
- Does the package also contain recycled material? Depending on the material, you may be able to achieve different amounts and still maintain functionality. HDPE cereal liners (Annie's) uses 35% recycled content (HDPE); paperboard may be able to achieve 100% recycled content.
- Are directions for recycling clear on the label? Consider using the "How to Recycle" tool by the Sustainable Packaging Coalition – recently expanded into Canada **https://how2recycle.info/join** or ensure you have a good understanding of what is accepted in your sales regions and spell it out for consumers.
- If your package is compostable, is this under conditions found in commercial composting facilities? You can check for Biodegradable Products Institute (bpi) certification here: **http://products.bpiworld.org/** or ask the supplier to provide proof of their claim.
- For further packaging sustainability questions see the PAC's checklist: **https://www.pac.ca/wp-content/uploads/2020/06/pac-checklisten-smart-1.pdf** and check out their **PIP360 tool**.

perennia
ideas • innovation • success

FACT SHEET

FOOD PACKAGING | ©Perennia 2021

REFERENCES AND FURTHER READING

[1]https://www.ellenmacarthurfoundation.org/news/global-commitment-2020-progress-report-published

[2]https://www.documentcloud.org/documents/6937805-FLWpackagingSUMMARY.html

[3]http://www.fao.org/food-loss-and-food-waste/en/

[4]https://plastics.americanchemistry.com/Education-Resources/Publications/Impact-of-Plastics-Packaging.pdf

[5]Packaging Innovation Pathway to 360° Tool https://www.pacpip360.com/

[6]https://sustainablepackaging.org/wp-content/uploads/2017/09/Definition-of-Sustainable-Packaging.pdf

[7]https://www.materialsrecoveryforthefuture.com/wp-content/uploads/MRFF-Pilot-Report-2020-Final.pdf

[8]https://guidelines.ceflex.eu/resources/

[9]https://thecif.ca/understanding-flexible-packaging-for-recycling/

[10]http://www.nzwc.ca/focus/design/Documents/NZWC_DesignforCompostability.pdf

[11]http://greenblueorg.s3.amazonaws.com/smm/wp-content/uploads/2017/06/The-SPC-Position-against-Biodegradability-Additives-for-Petroleum-Based-Plastics-4.pdf

Lau, W.W et al., 2020. Evaluating scenarios toward zero plastic pollution. Science: 369(6510):1455-1461. DOI: 10.1126/science.aba9475