

## PERSPECTIVE

# The Packaging Industry: Between a Rock and a Hard Place

Packaging is everywhere. It's used for food, medications, personal care and grooming products, mail packages, ready-to-cook and fast-food meals, toys and hazardous products, to name but a few. We love and hate it at the same time. Designed to protect, it's quickly become a burden and source of pollution criticized by one and all. The packaging industry is truly caught between a rock and a hard place. It has to continue to play its role, but differently. It has a lot of work to do: it has to invest, and the pressure is enormous. On the one hand, it needs to act quickly due to the ban of some products (especially plastic-based) in the near future. On the other hand, it's highly visible, and its successes and failures will be under scrutiny.

### Why Package Things?

Packaging's primary function is to provide protection to prevent an item from being damaged. In the case of food in particular, it helps prevent the product from being damaged during shipping and handling. Packaging also serves to protect against bacteria and, in many cases, helps limit early spoilage, even extend food's shelf life. In this way, waste is also limited. In most cases, the packaging can make it easier to ship and store an item: the space it occupies is known, as are the impact resistance, weight and pressure parameters.

Packaging also helps divide a product into portions, i.e., create comparable units of product that are absolutely identical. The portions can be based on weight, predetermined dimensions or an exact number of units to make it easier to buy and to reduce handling by shoppers, which is likely to alter the item being sold.

Lastly, the packaging is also a "messenger." It shows the product's components and use and, if necessary, the instructions on how to install, maintain, and even assemble it. Packaging also helps differentiate products through the information it provides in addition to the logos and other markings that identify the brand and company. In the case of food, it indicates nutritional information and whether or not allergens are present. Although packaging is the source of a lot of controversy currently, it does have some essential qualities.

### Catching Up with the Facts

Packaging is everywhere, as mentioned at the start. The problem is that it's turning up more and more where we don't want to see it: in the environment and in the food chain. The point of this analysis is not to add to the studies showing the prevalence

of garbage on the planet, with plastic waste being the example most commonly cited. Evidence of pollution here and elsewhere in the world abounds, and not a day goes by without it being reported. That being said, beyond the conclusions on waste management and resource depletion, we need to see if these observations are leading to changes, too. They prove that we need to act now, and the intention here is to see how the packaging industry, companies in general, and governments and consumers are changing as a result.

### Packaging Industry Trends

Packaging designers are brimming with ideas. Companies that use packaging and consumers are also suggesting ideas, which makes the packaging industry a sector buzzing with excitement. Consulting and analyst firms are also contributing their two-cents worth, so much so that it's hard to talk about just "a few" trends. There have been a lot of developments—sometimes contradictory—in all directions.

Increasingly, plastic packaging is being replaced by other materials, such as paper, cardboard and glass. It's too early to talk about a tidal wave, but gradual changes are evident. The idea of adopting materials that take less time to decompose in nature is tempting (table 1 on page 2). Nonetheless, it may take more time than anticipated between the desire for change and actual change. It will take going through various phases; some people will refer to "tests," including shipping and storage. And other questions have to be asked about the life cycle of the product that needs to be packaged: Will it be shorter or not? In the case of food, we need to ask ourselves if there are any interactions that may alter its taste and compromise its safety.

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NOTE TO READERS: The letters k, M and B are used in texts and tables to refer to thousands, millions and billions respectively.

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**TABLE 1**  
**Decomposition time of some containers in nature**

	<b>DECOMPOSITION TIME</b>
Corn starch bag	2 weeks to 2 months
Paper	2 to 5 months
Milk carton (plastic and cardboard)	5 years
Candy wrapper	5 years
Tin can	50 to 100 years
Textiles	100 to 500 years
Aluminum can	200 years
Plastic packaging of a 6-pack of bottles	400 years
Plastic bottle	400 years
Plastic bag	450 years
Polystyrene	1,000 years
Glass bottle	4,000 years

Source: ConsoGlobe

We also need to question whether the original packaging can be used in more ways than one and if it can be returned for refund or used in other ways, an issue that some companies are already aware of. There are a lot of options beyond simply replacing the “protective shell” already being used.

Several factors, including demand, are influencing the way packaging is changing. Demand has been rising in recent years due to a number of phenomena. First, there are demographic reasons, including population growth.

We also need to take into account the percentage of one-person households in Canada, which increased from 7% in 1951 to 28% in 2016. In other words, four million people were living alone in 2016. The demand for individual portions has changed over the years and, as a result, the need for packaging has also evolved. For example, more material is needed to produce six individual portions than for one portion containing the same amount of product. Another factor stirring up demand for packaging products is the growing popularity of meal options or ready-to-eat foods (in grocery stores, fast-food restaurants, etc.) that need to be packaged.

In addition, the surge in online shopping has increased the use of containers of all types, especially when it comes to food, with e-commerce a growing reality. We are talking about grocery and restaurant food products as well as boxed meal kits. Due to Canadians’ desire for speed and convenience, delivery is increasingly preferred over picking up food in person. This requires containers other than the reusable shopping bags that consumers use in grocery stores. According to an [article](#) that appeared in *L’actualité Alimentaire*, delivering food has other requirements that increase the need for packaging. The cold chain must be maintained to prevent bacteria from forming, which requires the use of ice packs and thermal insulation. Multipurpose packaging also needs to be considered to separate

purchases and keep fresh food away from non-perishables and household cleaning products.

In contrast, there appears to be some movement to reduce the proliferation of packaging. Some companies, especially in the food and personal care product sectors, are increasingly offering container “refund” programs. This type of experiment is being tried most notably in France.

Furthermore, new lines of green packing are beginning to appear. Their aim is to minimize the resources used, maximize their practicality (volume, shipping, physical or temperature impact, storage, etc.) and anticipate an eco-friendly end of the product’s life cycle. For this reason, the use of single materials is growing to reduce mixed-materials packaging that is more difficult to recycle. Renewable or bio-sourced materials (paper, cardboard, wood, pulp, etc.) as well as recycled and recyclable materials are being put forward. The circular economy has succeeded with 100% recycled or reusable packaging. The “plastic-free” trend is spreading. Still, food safety remains a major issue. Another challenge is satisfying consumers who, for the most part, don’t want to lose any of the benefits in terms of the current standards.

New technologies are playing a role here as elsewhere, and there is as yet no end in sight to links being created between packaging and the virtual world. To do this, we can already use tools like codes ([QR code](#)). People are also talking about radio frequencies, Bluetooth connections and even augmented reality, not to mention developments in the food industry in which sensors would be capable of informing consumers about a food’s level of ripeness.

Research is also focusing on extracting characteristics from materials that were of little value until now but which could be useful in packaging. Obviously, there are not only success stories in this field; materials considered biodegradable have sometimes proved to be rather resistant to decomposing in nature. The disappointment associated with some materials and bio-plastics hasn’t helped to make them more popular. A lot of work that needs to be done in this regard.

New materials have been perfected, including a supposedly biodegradable plastic made from lobster shells or containers made from sawdust that could be used to hold water. Work has even been done on food packaging that is both edible and biodegradable! Innovation is happening, but it remains to be seen how these products can be adopted by both companies and consumers and at what cost.

### Industry Players

The packaging sector relies on companies active in many different areas. The first one that comes to mind is plastic products. The product’s qualities (flexibility, versatility, weight, strength, etc.) have made it a leader. As for the manufacturing

of packaging materials and products, there are glass and glass container manufacturers and factories that produce cardboard, paper, cardboard boxes and cardboard containers, paper bags, and metal containers (cans, tins, aluminum-lined bags and other metal containers, such as barrels). Table 2 provides an overview of the number of Quebec facilities. It was impossible to calculate the number of packaging machinery manufacturers, but there are well and truly a lot of them (bagging, boxing, sealing presses, etc.). It's worth noting that table 2 also shows the categories that include companies neither necessarily nor primarily dedicated to producing commodities or containers for product packaging.

**TABLE 2**  
**Quebec's packaging industry: Number of facilities in June 2019**

	<b>NUMBER</b>
Wood container and pallet manufacturing	96
Corrugated and solid fibre box manufacturing	26
Folding paperboard box manufacturing	18
Other paperboard container manufacturing*	17
Paper bag and coated and treated paper manufacturing*	28
All other converted paper product manufacturing*	14
Plastic bag and pouch manufacturing	44
Plastic film and sheet manufacturing	38
Polystyrene foam product manufacturing	16
Ethylene foam and other foam product (except polystyrene) manufacturing	15
Plastic bottle manufacturing	20
All other plastic product manufacturing*	244
Glass manufacturing*	20
Glass product manufacturing from purchased glass*	44
Metal can manufacturing	1
Other metal container manufacturing	19
All other general-purpose machinery manufacturing*	143
Industrial machinery, equipment and supplies merchant wholesalers*	892
Other paper and disposable plastic product merchant wholesalers	157
Other support activities for transportation	227
Industrial design services	145
Graphic design services*	480
Packing and labelling services	84

\* Packaging only represents a fraction of these industries.  
 Sources: Statistics Canada and Desjardins, Economic Studies

Some service companies are also associated with the industry. They include merchant wholesalers of cardboard packaging and suppliers of all kinds of containers and packaging material. There are also companies whose primary function is packing and labelling. Some are associated with shipping, such as the crating and processing of goods in order to move them. Industrial design services can help design new containers, while graphic design services can come up with their outer shell. There's a number of operations involved, and the companies working in these areas are many.

### Companies in the Hot Seat

The growing dissatisfaction with overpackaging and protests in favour of the environment are evident. Citizens are demanding that companies come up with solutions. The food industry, in particular, is sitting in the hot seat. On the one hand, it's a heavy user of packaging, on the other, it's a part of consumers' daily lives.

There are signs that things are changing: some food manufacturers are trying to develop biodegradable and compostable materials and containers themselves to sell their products (e.g., substituting a paper bag for a plastic bag). The share of recycled material in the packaging that does not come in direct contact with the food is on the rise (e.g., a cardboard box protecting a food pouch). The companies carrying out research in their own laboratories are often major corporations, which have the means to finance the research to develop other solutions. This is hardly the case for small and medium-sized enterprises (SMEs), which have to deal with packaging material wholesalers or that use the services of public or university research centres to develop alternatives to their existing containers.

Some commodity producers regard this as a business opportunity. In particular, the paper industry sees an attractive development opportunity and has no intention of just standing there and doing nothing. The challenge remains being at the vanguard of the changes rather than playing catch-up and of proposing standards and alternative solutions so as not to be relegated to being a follower.

Moreover, container manufacturers are wondering more and more which alternatives to offer. For several years now, some have been offering new, greener products based on the criteria mentioned earlier. Disposing of the packaging, once it's done its job, is increasingly becoming a concern for the companies that produce it. Should it be reused? Or is recycling it locally better? Or is it better to allow it to decompose, bearing in mind the predominant North American climate? The choices are many.

As for companies that use packaging, some have launched initiatives to put the shoulder to the wheel. This issue will be addressed later in the text.

### Change: A Real Adventure!

Changing packaging requires preparation. Those who have studied the problem in recent years have identified various challenges. The amount of material used must be minimized, disposal after use planned for as discussed above, sizes optimized to make the best use of space in a truck or container, the weight monitored, and the practical, functional, and even aesthetic qualities of the former products retained. One of the problems—and not the least—is that the new packaging has to be produced at a competitive cost.

It has to align with the rest of the production and the other products in the line. Preparing users can't be overlooked either, especially if the changes require behavioural changes. Sometimes, a new supplier needs to be found and uninterrupted supply ensured. Lastly, packaging operations, which are usually mechanized or automated, may require different equipment or a change in output based on the new container(s). Clearly, you can't just switch packaging at the drop of a hat.

The food sector, for its part, is faced with a number of dilemmas. How to reconcile less packaging with very high safety standards? How to reduce packaging and waste when many containers help protect against food loss and some even help extend food's shelf life? Even groups such as the David Suzuki Foundation recognize that a minimal amount of packaging is needed to preserve freshness and extend shelf life. However, we still need to rethink the way we currently do things.

**Evolving Regulations and Practices**

Changes are now being felt as far as our legislatures. Single-use plastics will be banned in the European Union as of 2021 and the aim is to reduce plastic packaging for ready-to-eat foods. In Canada, the federal government also wants to ban bags and other, everyday disposable items by 2021. The list of target items is not yet set. The hope is that companies will take responsibility for the plastic leaving their plants, from production to disposal. At the same time, the Quebec government is working on a plan to extend deposits to include glass containers, as well as plastic and metal bottles. A strategy regarding plastic is being prepared. In some cities in Canada, including Montreal, single-use plastic bags are prohibited. Each month brings its share of packaging products that have been banned by municipal authorities around the world.

It's true that plastic seems to be the main offender, but more and more aspects of packaging are being examined more closely by regulatory authorities and consumer groups. For example, some of the inks used on paper and cardboard packaging are suspected of leaching chemicals, which will require that new standards be enacted.

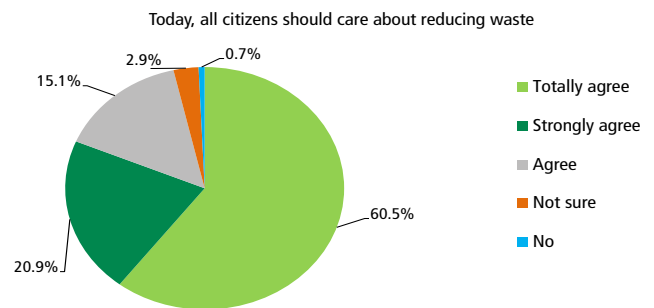
The number of initiatives launched by companies to limit packaging and overpackaging is increasing. In the food industry, some grocery stores allow consumers to bring their own containers. Moreover, it's not new that many stores no longer offer plastic or paper bags to shoppers, preferring instead to sell reusable bags.

**And the Consumer?**

The consumer is also part of the equation. Packaging is designed according to consumer needs and requirements to ensure that the goods are delivered and sold as expected. Still, when you survey Quebec consumers, they say they're in favour of "zero waste." This is the finding of the *Baromètre de la consommation responsable*, published annually

by the Université du Québec à Montréal School of Management Sciences. Graph 1 shows the response to the statement "Today, all citizens should care about reducing waste." More than 96% of the respondents agreed with this statement. Currently, when zero waste is far from real, this requires a change in behaviour. We saw that packaging and product manufacturers as well as stores were adjusting. What are consumers doing?

**GRAPH 1**  
Enthusiasm for zero waste evident among Quebecers



Sources: Université du Québec à Montréal School of Management Sciences

They were asked about, and generally agreed with, proactive and avoidance measures, according to the *Baromètre* (table 3). Concerning packaging, the actions that garnered the highest percentages were as follows: avoid overpackaged products (58.0% agreed) and refuse plastic bags at the checkout (56.5%): these are avoidance measures. Proactive measures included using their own containers at the grocery store (41.5%), using large containers for food (40.6%) (versus individual portions in particular) and consuming products in bulk (38.0%).

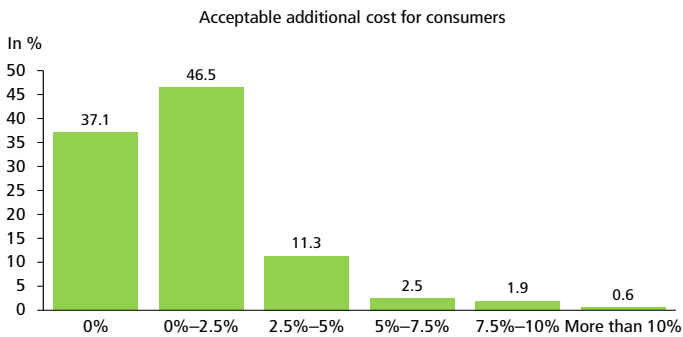
**TABLE 3**  
Zero waste: Quebecers' proactive and avoidance measures

IN %	AGREEMENT WITH THE IMPORTANCE OF THESE MEASURES
<b>Proactive measures</b>	
Adopt certain practices to avoid wasting food	68.7
Select quality products	66.4
Sort my waste	64.9
Give to my family and friends to encourage the use of the products	51.5
Use big containers for food	40.6
Shop in bulk	38.0
Use my own containers at the grocery store	41.5
Buy second-hand products	31.7
<b>Avoidance measures</b>	
Reduce unnecessary purchases	71.3
Do not replace items that still work	70.2
Avoid overpackaged products	58.0
Refuse plastic bags at the checkout	56.5

Source: Université du Québec à Montréal School of Management Sciences

A [study](#) was conducted by the Agri-Food Analytics Laboratory at Dalhousie University and published in June 2019. Titled “The single-use plastics dilemma: Perceptions and possible solutions,” the study revealed that 71.2% of Canadian consumers supported “a ban of all single-use plastics used for food packaging.” These findings are in keeping with those mentioned earlier. Although the subject of the study was not exactly the same, we can sense the desire for change. Still, the Dalhousie study revealed that people are not as enthusiastic about opening their wallets to pay for costlier alternative green packaging. In Quebec, 83.6% of the respondents would not want to pay more than 2.5% extra (graph 2). The Canadian average sits at 83.3%.

**GRAPH 2**  
**Alternative green packaging for food products: Few Quebecers are ready to pay more**



Source: Dalhousie University Agri-Food Analytics Laboratory

The food industry is truly sandwiched between the desire to avoid polluting and the desire to reduce food waste. At the present time, the solutions to replace conventional packaging are sometimes costly. According to Sylvain Charlebois, a professor and researcher at Dalhousie University, green, compostable packaging can cost 20% to 50% more than plastic.<sup>2</sup> The researcher also noted that, for many people, packaging has no real market value. This is a significant challenge.

**Everyone Has to Do Their Part**

Existing environmental considerations require that the packaging industry here and globally set a new course. Whether it’s material producers, container designers, researchers, users or consumers, everyone is being asked to change the way they do things. The bans introduced by municipalities, schools and various levels of government are driving the shift. Against this backdrop, companies are in the hot seat, and the food sector, in particular, is under the microscope.

Change doesn’t mean simply switching: We have to think beyond simply packaging a product for delivery and sale. What will

happen to the packaging once it has served its purpose? That is the problem that needs to be solved. The answer is complicated because it requires serious thought and a lot of decision-making. Practices are gradually evolving, but no half measures will be allowed. Moreover, it will take investment to develop solutions and market them. There’s much work to be done in this area.

As for consumers, they’re clamouring for eco-friendlier solutions. Many have changed some habits over time (grocery bags, recycling, composting, etc.), but it would be surprising if the changes that will occur in the coming years don’t put their ability to adapt to the test. The packaging industry has a huge job ahead of it, and the pressure is enormous. On the one hand, it needs to act quickly due to the ban of some products (especially plastic-based) in the near future. On the other hand, it’s highly visible, and its successes and failures will be under scrutiny.

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<sup>2</sup> Sylvain CHARLEBOIS, *Accros au plastique, - L’industrie agroalimentaire peine à trouver des solutions de rechange*, La Presse+, June 9, 2019.