Plastic packaging: beyond the blame game

The topic of plastics has turned into nothing short of a global movement. As a result, the packaging landscape is changing – with sustainability and recyclability being important drivers – and with it the role of manufacturers.

According to the U.N., more than 99 percent of plastics are produced from chemicals derived from oil, natural gas and coal – non-renewable resources. Roughly half of the plastic products manufactured are designed for single use. And a lot of plastic is not recyclable given its complexity and chemical make-up. Slow to biodegrade, plastic has been getting into places where it shouldn't for decades and clogging up our built environment.

The situation has brought about a global movement largely driven by consumers, NGOs and governments who are determined to see plastic usage reduced, plastic reused and made more recyclable. And where possible, alternatives made from renewable sources. As a result, retailers, restaurants and manufacturers are being asked to take more responsibility for the entire life cycle of their products, including the plastic packaging at the point of disposal.

MASS MOVEMENT FOR CHANGE

The energy and momentum that have gathered around the plastics issue has led to an array of scientific research, product innovations, global and local initiatives and concrete legislative action – all with the goal of ending plastic pollution. In Bali and Mumbai, beach cleaning events have drawn thousands of people, all pulling together to clean up their landscapes. Bans on single-use plastic are now in place all over the world.

But despite these efforts, many of which are heroic and making a difference, what is clear, is that the problem cannot be solved without support along the entire supply chain.

RECYCLING WOES

Today's plastics and plastic packaging have become very complex, including multiple layers of more than one type of material. While great at their job, safeguarding food and beverages, they are difficult, and often impossible to recycle; chemical make-up also makes many plastics unrecyclable. The U.N. Environment organization estimates that only 9 percent of all plastic waste ever produced has been recycled; with 12 percent having been incinerated, and the rest – 79 percent – having accumulated in landfills, dumps or the natural environment.

It is true that many countries lack the waste management structures to deal with plastics properly and as a result are acutely suffering from the environmental ramifications of this, particularly in Asia, parts of Africa and South America. It is also true that the bulk of collected plastics from places like the U.S. and Europe were, and to some extent, still are being shipped (largely to Asia) for processing and turning into usable plastic and products when possible; however, because so little is recyclable, many plastics are burned or buried.

In January 2018, feeling the burden of its own environmental goals, coupled with a growing amount of contaminated and unusable plastic coming from other countries, China stopped accepting most foreign plastic imports. As plastics pile up in the U.S., Europe and elsewhere, China's decision reveals to what extent this is a global problem, requiring global responsibility and ownership.

STEPPING UP TO THE PLATE

To be able to reuse it, we need plastics made of recyclable materials – which at the same time possess all the characteristics necessary for preserving and safeguarding products. The pressure is now on manufacturers to come up with solutions that will allow plastic to enter a circular economy, rather than being treated more or less as waste. More than ever before, stakeholders along the entire value chain are asking – or demanding – that businesses take more ownership of the end-of-life phase of their plastic products and packaging, including the impact it has on the environment.

And more businesses are stepping up to accept that challenge. At the 2018 World Economic Forum in Davos, for example, 11 leading brands, retailers, and packaging companies committed to working towards using 100 percent reusable, recyclable or compostable packaging by 2025 or earlier, representing more than 6 million tons of plastic packaging per year.

Getting more food to the table

Globally, about 30 percent of food is wasted or lost – roughly 1.3 billion tons per year. Some is lost due to poorly thought out or insufficient packaging. As the world becomes increasingly urban and the need for food grows, packaged food will increase to meet that demand. Getting packaging right has therefore never been more important.

Smart packaging helps to extend food shelf life and ensures food is protected, safe to consume and appetizing. The main enemies of food shelf life are: microorganisms (mold and bacteria); oxygen; moisture and steam as well as light and ethylene (ripening gasses in the case of fruit and vegetables).

	Shelf life unpacked		Shelf life In flexible packaging
Bananas	15 days	x 2.4	36 days perforated PE pouch
Cucumber	3 days	x 6.6	20 days PE-shrink
Meat	4 days	x 7.5	30 days vacuum packaging
Chips	7 days	x 25	175 days barrier pouch

Governments are also passing laws that require businesses to consider the product lifecycle and increase the recyclability of their plastics. For example, starting this year, businesses must register their packaging before they can participate in the German market. To be eligible, the packaging must be made with either recycled raw materials, or renewable materials wherever possible.

The idea behind the law is that if materials, such as plastics, are to be recovered for re-use, then responsibility must be placed on all producers across all industries. Also included in the new rule are increased recycling rates for plastics, which obligates city governments to meet targets by facilitating consumer and industrial recycling.

The European Commission has also passed a Europe-wide strategy to reduce plastic pollution and ensure that all plastic packaging across Europe is recyclable or reusable by 2030. Member states will be obliged to collect 90 percent of single-use plastic drinks bottles by 2025, through deposit refund schemes, for example; 55 percent of all plastic needs to be recycled by 2025.

THE FUTURE OF FOOD PACKAGING

Without a doubt, the food and beverage categories are the most challenging when it comes to developing packaging that meets strict food safety laws and consumer expectations. Whether we get to fully biodegradable or even packaging made solely from renewable resources – and at an industrial scale – is yet to be seen. However, it's already possible to produce single layer plastic packaging from 100 percent recycled material without sacrificing quality. As these technologies improve and are scaled up, more plastic can enter the circular economy.

In our quest to identify new materials, what we must avoid, says Dr. Helén Williams, Senior Lecturer in Environment and Energy systems at Karlstad University in Sweden, is the "environmental sub-optimization of packaging, as this can lead to more food waste." In reality, very often the food represents 90 percent of the climate footprint and the packaging 10 percent – or even less. In the case of meat, the meat may represent 99 percent of the CO_2 produced. "We need to take care of the food we grow – taking into account all the energy, water and feed that went into it," Williams reminds us. An important message as we prepare to feed an estimated 9.8 billion people by 2050.

Supporting the next generation of flexible packaging technology

Over the last couple of years, GEA has teamed up with several leading technology companies to explore packaging alternatives. In 2017, GEA helped co-develop and test a new full polyethylene (PE) laminate with an oxygen barrier. During testing, this recyclable mono material film proved itself in terms of its flexibility, strength and resistance to puncturing.

The recyclate from full PE laminate packs can be used in high quality, non-food packaging film and other products. While the shift to producing at scale with these new materials will take time, adoption should increase as more companies move to recyclable materials. Other GEA collaborations involve testing paper and biodegradable film.

Jacques Timmermans, Applications Specialist Packaging, GEA (left in picture), showing the application of the full PE laminate on a GEA SmartPacker CX400 during a live event in the Netherlands in 2017.