

SUSTAINABLE TIMES



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DEC 2021 | ISSUE 12



ADVANCEMENTS IN RECYCLING TECHNOLOGY

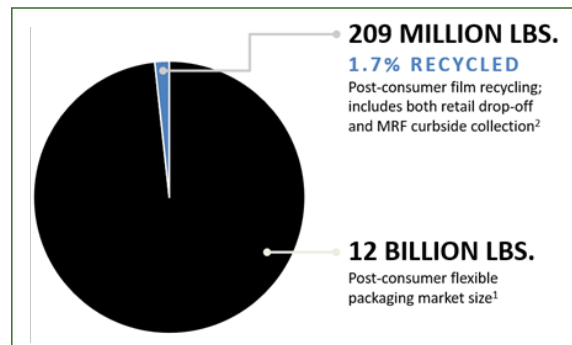
According to a Flexible Packaging Association study from 2013, the post-consumer flexible packaging market is equal to 12 billion pounds. However, only 209 million pounds or 1.7% is recycled through retail drop-off and MRF collection. The lack of recycling is a result of a lagging infrastructure that is not sufficiently developed for dealing with the newer, more prominent material streams like flexible packaging. Unfortunately, flexible packaging is considered a contaminant to the existing streams of glass, rigid plastic, paper, and cardboard. It is very

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challenging for existing facilities to consider investment to capture this flexible packaging stream as the new equipment and reconfiguring of existing operations can be expensive.

However, industry initiatives like the Materials Recovery for the Future project have successfully demonstrated that a MRF (Material Recovery Facility) can be upgraded with the latest

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¹ Flexible Packaging Association.(2013). Flexible Packaging Industry Segment Profile Analysis (Commercial material removed and projected to 2015)

² American Chemistry Council .(2017). 2015 National Post-consumer Plastic Bag & Film Recycling Report. In . (Ed.). N.p.: Moore Recycling. Retrieved from plastics.americanchemistry.com/2015-National-Post-Consumer-Plastic-Bag-and-Film-Recycling-Report.pdf

ADVANCEMENTS IN RECYCLING TECHNOLOGY

equipment offering the potential to separate flexibles from the existing streams of recyclables. In this case, mixed plastic bails were generated, and end markets were discovered for this mix including roof board, asphalt, concrete, pavers, and a variety of other products. The point is that there is the potential for flexible plastics to be separated from the rest of the recycled product stream and that there is sufficient demand to warrant further investments.

Because of this mixed plastic bail, traditional mechanical recycling facilities are not able to use this stream as the process is highly dependent upon a single material type. However, a newer recycling technology termed Advanced (often called Chemical) Recycling is showing promise. Potential for this emerging technology is increasingly being explored using several different methods including the use of solvents, biological agents, and various thermal reactions. These methods can yield petrochemicals, fuels, monomers, and new polymers. There are

over 60 manufacturers currently focusing on advanced recycling technologies.

Benefits of advanced recycling technology include the ability to accommodate mixed materials where separation is not as critical even taking mixes of rigid and flexible plastics; broad applicability for use in food packaging; and enhanced physical properties. This offers great potential for the industry. It should be known that when compared to mechanical recycling, advanced recycling does have an increased carbon footprint. However, the impact is still much lower than the carbon footprint derived from the manufacture of virgin resins. Advanced recycling should be considered complementary to mechanical recycling.

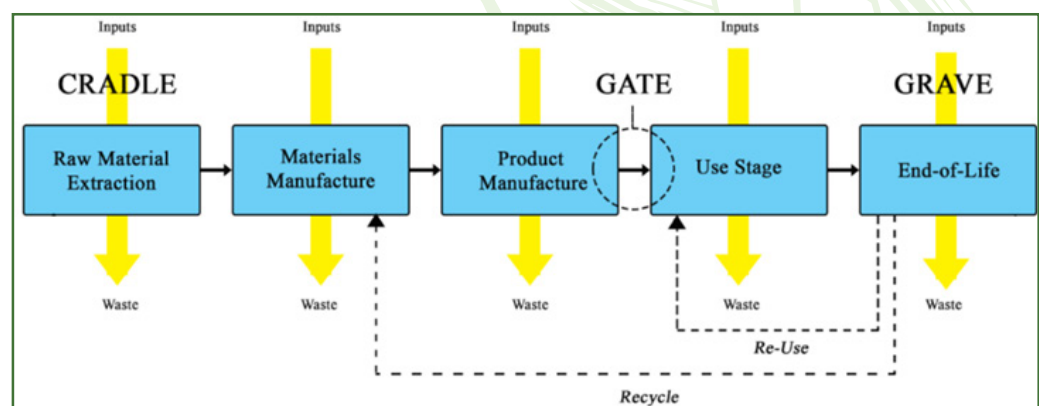
If there is interest in exploring options for chemical recycling, APC has supply of polyester (PET) films that utilize this technology. Polyethylene (PE) options also will be available in 2022.

LIFE CYCLE ANALYSIS (LCA)

Did you ever wonder how to quantify the sustainable benefits from transitioning your existing product to a more sustainable option?

Life Cycle Analysis is one of the tools that


sustainable professionals are using to quantify the impact of a change from the current packaging to a more sustainable option. There are several types of LCA options as shown in the diagram:



LIFE CYCLE ANALYSIS (LCA)

- A partial product life cycle measures the impact from resource extraction (cradle) to the factory gate (before being transported to the consumer)
- A full or cradle to grave LCA is a method used to evaluate the environmental impact of a product through its life cycle including extraction, the processing of raw materials, manufacturing, distribution, use, recycling, and final disposal

LCAs can include factors such as greenhouse gas emission, energy, and water consumption. To illustrate how an LCA can be used to compare options, I will include a few examples below:




Retail Coffee Bag
Retail coffee packaging can often be comprised of up to 4 different film layers. The benefits include good shelf presence and ultimately a long shelf life. Aluminum foil is often used as the barrier layer but the manufacturing process is energy intensive resulting in poor carbon footprint. In practice, metallized films can often be used to replace foil and offer the same level of barrier protection.

GreenHouse Gas Emissions <i>kg CO2 eq</i>	↓	37%
Energy Consumption <i>MJ</i>	↓	11.60%
Water Use <i>Liters</i>	↓	2.75%

This [Retail Coffee Bag](#) is a good example of a cradle to grave LCA. In this case, the substitution of a metallized film for a foil can offer significant sustainable benefits.

This [Confectionary StandUp Pouch](#) is another good example of a cradle to grave LCA where the potential for recycling is beneficial for the recyclable option resulting in lower greenhouse gas emissions and water use.

LCAs are often helpful and can be one of the tools to consider when making a sustainable packaging change. ***If there is interest in exploring the use of LCA tools, please contact your sales contact.***



Confectionary StandUp Pouch
Confectionary packaging can often be made of 2-ply laminates of polyester (PET) and polyethylene (PE). To enhance the package for recycling, we need to replace the outermost layer of PET with a PE film.

GreenHouse Gas Emissions <i>kg CO2 eq</i>	↓	7%
Energy Consumption <i>MJ</i>	↑	0.90%
Water Use <i>Liters</i>	↓	11.60%



ELLEN MACARTHUR FOUNDATION: THE GLOBAL COMMITMENT PROGRESS UPDATE FOR 2021

Over 500 signatories have signed the voluntary pledge instituted by the Ellen MacArthur Foundation and are actively focused on making progress toward achieving targeted goals. The goals include reducing packaging weight and/or use of virgin plastics, increasing use of recycled content, and designing for reuse, recycle, or compost packaging.

Positive Progress

For the second year in a row, brands and retailers in the commitment have reduced their virgin plastic consumption. This equates to a 0.6% reduction between 2018 and 2019 and a 1.2% between 2019 and 2020. This reduction is anticipated to result in a reduction in virgin plastic of around 19% between 2018 and 2025 which would equate to an estimated 8 million tons of virgin plastics being produced each year.

The progress on virgin plastic reduction is largely attributed to the use of recycled content in packaging, particularly rigid PET packaging. Brands and retailers increased recycled content by 60% from 5.2% to 8.2%.

Progress in other categories such as design for reuse, recycle, or compost increased only marginally. Focus on design for recycle increased by 0.7% where reusable and compostable packaging showed little progress. Sectors with higher portions of flexible and small format packaging tended to have the lower shares of recyclable packaging.

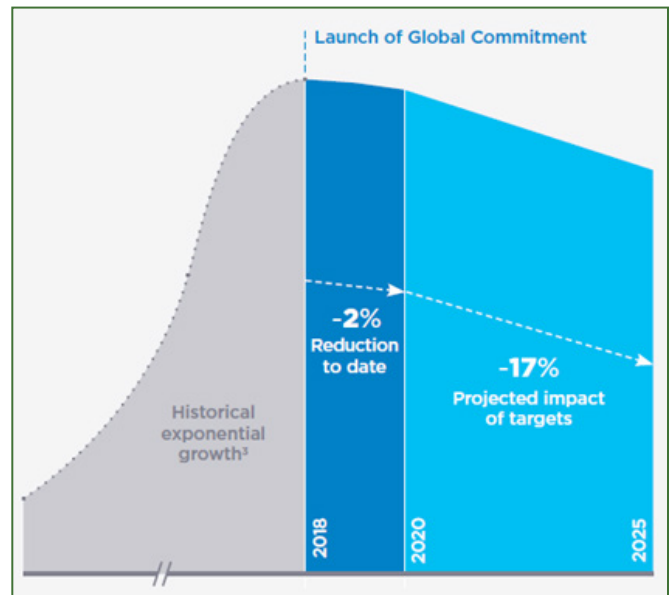


Figure 1: Ellen MacArthur Foundation: The Global Commitment 2021 Progress Report, Figure 1

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Sustainable Times is a quarterly newsletter compiled by American Packaging Corporation that is designed to educate, provide industry highlights and keep you informed of sustainable

solutions being developed by APC. If you have any questions, please feel free to contact your sales representative or Jeff Travis at jtravis@americanpackaging.com.