

What does it mean to move to a circular economy in 2021?

by Lucia Buffoni, Marketing Manager at Repl

2020 is over, 2021 has been invoked so much and by so many countries around the world - and now? Unfortunately, it seems that the pandemic has made it through the year without too many problems and continues to bother us and affect our lives. But the resources called in, at all levels, by the struggle against Covid will be lethal, this time for the virus itself. This is what we hope the most, and according to The Economist, we have chance that "the decade could yet roar."



If we talk of safety, plastics and packaging pop up. In such an emergency contingency, plastics have proved once more to be the most reliable and affordable solution for personal protection. The pandemic has challenged everyone's lifestyle, habits, and daily life, even of those who are fighting for a reduction when not a ban of plastics. Many sustainability-conscious people found themselves choosing single-use plastic items, such as disposable wipes and sanitary protective devices, but also plastic bottles containing hand sanitizers up to takeaway food containers and single serve drinks packaging.

If we look at the world consumption rates of 2020, single use packaging is at a record high from north to south and this will last for a while, together with the demand of plastic disposable wipes, gloves, masks, etc. This increase is challenging a lot the collection and recycling systems, which however are demonstrating to be resilient, keeping up. In such a context the best thing we can hope for, is to take the opportunity to keep pushing the development of a circular economy of which of course plastics recycling is the best example. Now more than ever the solution seems

not to be the elimination of plastics, but a systems-level approach on a global scale to improve collection and recycling.

Let us remain on the concept of circular economy. Reaching a circular economy means structuring economies on the virtuous closed loop of make - use - recycle in which every product is designed to be used and then disposed leaving no traces, it means being re-used to generate other products and so on. All good so far - but is this really the full picture? I mean if we recall the primary goal of a circular economy, that is to cut CO₂ emissions as main cause of global warming, then the carbon footprint contribution of our activities should be the main driver. Instead, some solutions emerging and defined as 100% recyclable produce actually higher CO₂ emissions than what they are replacing and can't therefore be sustainable for the future.

Looking at the single use packaging sector, plastic packaging is the most attacked material and, as a consequence, we see a shift to other materials that are not automatically more carbon footprint friendly than plastics. This is often an emotional answer to social media attacks that

could be even more harmful from a system point of view. As an example, replacing a PET bottle with a glass one is not the solution. What if we try to let consumers learn what's behind a packaging and why plastics in packaging have become so successful worldwide! The current health emergency is showing one of their unparalleled advantages offered to consumers: safety. But plastic packaging does offer much more: light weight, a PET bottle is lighter than any other packaging and therefore consumers can practically carry their on-the-go snacks and drinks while commuting to job; moreover it hardly breaks and its logistic is agile and safe all over the world; lastly plastics are highly recyclable (and recycled already) to enter the packaging value chain again or to be used for a number of other applications, not of lower value (textiles as an example). Coming to the carbon footprint contribution, plastic packaging helps reduce CO₂ emissions, especially when it involves recycling.

A PET bottle made of 50% rPET has a lower environmental impact than a tin can or a glass bottle (be it single use and reusable), which is the least environmental unit. Having said that, there are ways to make a plastic packaging even more sustainable.





Reducing, reusing, recycling, and refitting

One way can be choosing additives and colours that add performance and aesthetics while having negligible impact on its recyclability. This is at the basis of the Refit concept. Repi as a global colour and additive solutions supplier to the packaging industry is strongly promoting its vision on circular economy, by adding a 4th "R" to the three well known: reducing, reusing, recycling and refitting. Refit means having an all-round approach to carbon footprint contribution. Protagonist is the liquid colour and additive technology that can be defined as a low carbon footprint technology. Why? A few main reasons can be found:

- **Process:** The manufacturing process of a liquid colour/additive is energy efficient since no high temperatures are needed to blend carriers (that are already liquid) with pigments or dyes. Regardless from the specific production cycle, all processes happen at room temperature.
- **Logistics:** The high concentration of liquids leads to less space needed for transport and therefore significant CO₂ saving.
- **Stockage of liquids at the customer's site** is highly space efficient, reducing space needed in warehouse.

Refit comprises additives and colours that are dedicated to plastic recycling and offer a broad-spectrum support in the form of aesthetics enhancers and mechanical boosters: Anti Yellow (AY) additives and IV enhancers. The colour of rPET varies a lot from supplier to supplier (and even from one batch to the other) and depending on the ratio of recycled

PET used, the result can be anything from grey or pale yellow, to blue or greenish. The more recycled content the bottle has, the darker the end colour will appear. The Anti Yellow range comprises different liquid additives able to balance the appearance of variations in material and to regain brightness, correct a greenish or greyish tone.

Mechanical challenges instead include a drop of the Intrinsic Viscosity (IV) when using rPET. This happens because PET, after several production cycles, due to degradation, shows a reduction in the molecular weight: Its chains are shorter, and the final product is mechanically weaker. Repi's IV enhancer combine shorter molecular chain to longer ones, thus increasing the IV of the material. Besides additives, colours can also come to the rescue. When a very dark rPET is used and an

Anti-Yellow additive is not enough, corrections through colour may be crucial. Repi's Fumè colour range is made of shades like ambers, light blues, greens or greys, that are used at very low dosages (as low as 0.05%) so not to impact the recycling stream.

The entire value chain of plastic packaging has been working hard and constantly for many years on making plastic recyclable and recycled. Now more than ever, cooperation and constructive approaches are crucial. Instead of blaming one packaging solution against the other, let us prepare for the "roaring 20s" with renewed energy and focus on what "delivering the circular economy" means, without forgetting the carbon footprint impact of our choices. This is the only way to get to structured solutions that will be effective and positive in the long run.

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