

1. Plastic Revaluation in the Circular Economy

2. Introduction

To understand the role of Plastic Revaluation within the Circular Economy, first we need to understand what Circular Economy means.

In our current economy, we take materials from the Earth, make products from them, and eventually throw them away as waste – the process is linear. In a circular economy, by contrast, we stop waste being produced in the first place.

(Ellen MacArthur Foundation)

As a matter of fact, important efforts are being done to depart from the linear model. In the latest years and at European level, some progress has been achieved through different actions.

In March 2020, the European Commission presented the [Circular Economy Action Plan](#), which aims to promote more sustainable product design, reduce waste and empower consumers. Then, in February 2021, the Parliament adopted a resolution to demand additional measures to achieve a carbon-neutral, environmentally sustainable, toxic-free and fully circular economy by 2050. In March 2022, the Commission released the measures to speed up the transition towards a circular economy. In November 2022, the Commission proposed new EU-wide rules on packaging, which aims to reduce packaging waste and improve packaging design [2].

Too often people think that Circular Economy means recycling, but in fact, recycling is just one final tool used in the circularity loop. There are different things that we can do in order to stop generating waste, some of them are: sharing, maintenance, re-use, refurbish/re-manufacture and then eventually, recycling. Plastic Revaluation is another mind-set and tool that finds a home within the circular model, and it offers a way to tackle the plastic waste challenge with lower CO₂ emissions than recycling.

3. Description

Something that is important to understand is the concept of value. Value can have a myriad of definitions depending on the field of society that the word is used, within the economy, value is the monetary, material, or assessed worth of an asset, good, or service [3].

Addressing the Circular Economy model, Ellen MacArthur Foundation identifies 2 different materials streams where value flows around. One is the Biological Materials stream and the other is the Technical Materials stream, in which Plastic Revaluation plays a vital role. The butterfly diagram shown in Figure 1, presents in a graphical way the two streams mentioned before.

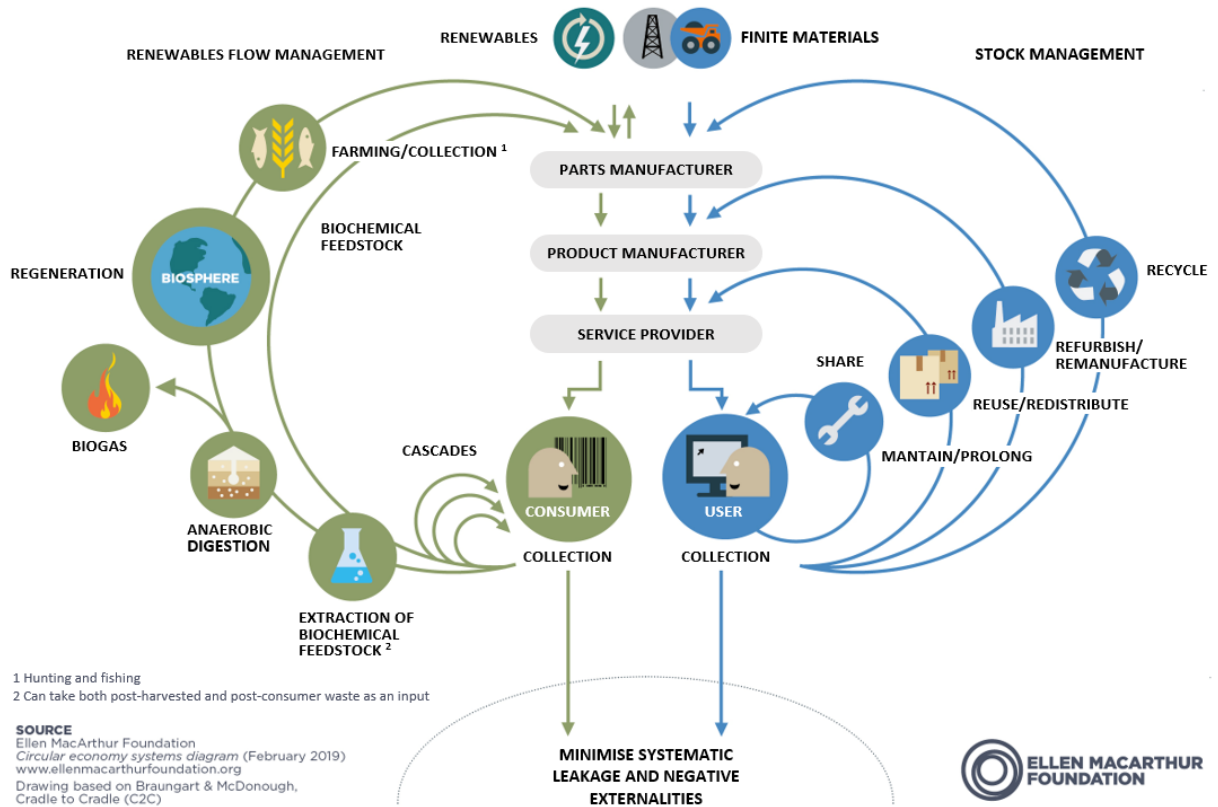


Figure 1. Butterfly diagram for material streams. Adapted from Ellen MacArthur Foundation.

Circular businesses aim to retain the added value of products for as long as possible. In the context of the Value Hill, value is added while the product moves “uphill” and circular strategies keep the product at its highest value (top of the hill) for as long as possible. When a product is ready to start its downhill journey, it is done as slowly as possible so that its useful resources can still be of service as illustrated in the Value Hill in Figure 2 [4].

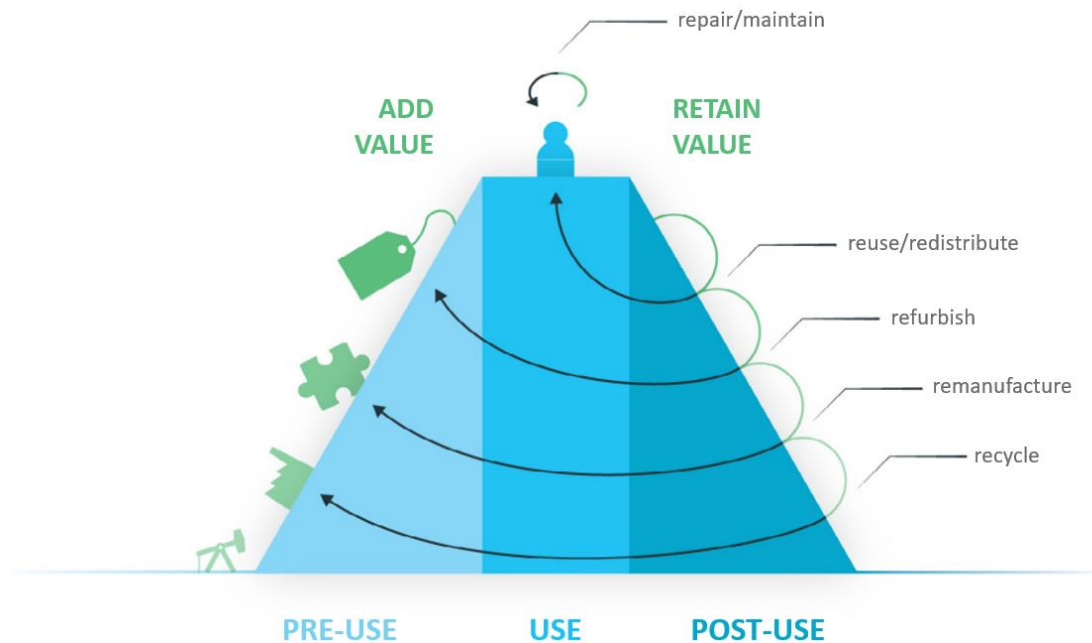


Figure 2. Value hill. Adapted from www.circle-economy.com

There are several actions that can be taken in order to retain the value of a product. J.Kirchherr & D.Reike provided a very concise summary of those actions, which are shown in the figure below. The scheme shows 9R actions that we can implement to keep a product's value, where the highest the R number, the lowest retention of value occurs. It is worth noticing that Recycling is one of the last resources we should aim for in the new Circular Economy.

Circular economy	Strategies	
Smarter product use and manufacture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with radically different product
	R1 Rethink	Make product use more intensive (e.g. by sharing product)
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
	R4 Repair	Repair and maintenance of defective product so it can be with its original function
	R5 Refurbish	Restore an old product and bring it up to date
	R6 Remanufacture	Use parts of discarded product in a new product with the same function
	R7 Repurpose	Use discarded product or its parts in a new product with a different function
Useful application of materials	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of material with energy recovery
Linear economy		

Then, revaluation considers plastic waste as an asset, which can be capitalized through creativity and invention capacity, i.e., not only using plastic waste discarded products (or its parts) in a new product with a different function (called repurpose) but creates added value through a new product or feature that can be monetized.

Plastic Revaluation is an innovative strategy not currently represented in the table but falls within the Repurpose (R7) action, providing a ground-breaking alternative by which not only products (or its parts) are used in a new product, but also product's complements (such as packaging, moulds, material leftovers, etc.). It can be done from a more expert way to a more beginner one creating added value through a new product or feature that can be monetized.

Plastic Revaluation is a friendlier approach which does not undertake industrial processing as Recycling (R8) does, such as segregation and/or the breakdown of its components. It accomplishes safe waste management for anyone willing to initiate this action where innovative and creative processes are the key for the final product result.

4. Case studies & Examples

Plastic Revaluation and Circularity are models that not only SMEs¹ can implement and be benefited from. Most of the big companies are also jumping on board with their sustainability practices, Adidas is a good example of a big company that incorporates Plastic Revaluation practices in their business model.

[Adidas X Parley](#) is one of their initiatives which taps into the circularity of polyester. Since 2015 the shoemaker has been cooperating with the organisation Parley for the Oceans to recover plastic from beaches and coastal regions. Materials that otherwise would fall out of the value cycle, are now recovered and transform into Parley “Ocean Plastic” premium materials for the sports, fashion and luxury industry. Adidas then uses Parley’s material to manufacture their unique sneakers. The company in 2020 claimed that more than half of the polyester used in their products came from recycled material, and they are working to expand their eco-design practices in which they design with recyclability in mind.



Another big company with Plastic Revaluation practices can be found in the finance industry, CPI Card Group, one of the leaders in the U.S. markets for eco-focused payment cards. The company claims that for every one million [Second Wave](#) cards produced, nearly one ton of plastic is diverted from entering the oceans. Their Earthwise rPET-G card introduced in 2020 is the first card made with up to 98% revalued plastic. The recovered materials are sourced from Hiti and through their partner [First Mile](#), the company gives a fraction of the sales of every ocean-bound card sold to projects that support collectors.



As mentioned before, SMEs also thrive in the new Circular Economy thanks to Plastic Revaluation. This is the case of [REPLAS](#) in Australia, a company that has been turning the problem of plastic

¹ Small & Medium-sized Enterprises

waste into useful products since 1991. The type of materials that they revalue come from post-consumer, post-commercial and post-industrial streams. In the linear economy model those materials would normally end up in landfills, but thanks to ECOPLAST, these valuable plastics find a new life in the products they offer.



Another SME that embeds the principles of Plastic Revaluation and Circular Economy is The Gravity Wave. This Spanish start-up was founded with the mission of freeing the Mediterranean Sea from the harmful plastic waste, specially the fishing activities waste. In association with fishermen from 5 different countries, they collect and process plastic fishing garment from ports (including ghost fishing nets and recovered plastics), and transform these valuable materials into different products. They offer plastic plates in different colours, dimensions and thicknesses that can be turned into tables, home articles, interior design elements, urban furniture and plastic sign letters among others.



5. Resources

Links:

Ellen McArthur Foundation

<https://ellenmacarthurfoundation.org/>

Videos:

The vision for a circular economy for plastic

<https://www.youtube.com/watch?v=xmTQA-RNygQ&t=40s>

Podcasts:

Re-Think Global

<https://www.rethinkglobal.info/circular-economy-podcast/>

The Circular Economy Show

<https://the-circular-economy-podcast.simplecast.com/episodes>

References

- [1] "Circular economy introduction." <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview> (accessed Jan. 17, 2023).
- [2] "Circular economy: definition, importance and benefits | News | European Parliament," Feb. 12, 2015.
<https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits> (accessed Jan. 17, 2023).
- [3] "Value: What It Means in Business and Finance," *Investopedia*.
<https://www.investopedia.com/terms/v/value.asp> (accessed Jan. 17, 2023).
- [4] "Master Circular Business with the Value Hill - Insights - Circle Economy." <https://www.circle-economy.com/resources/master-circular-business-with-the-value-hill> (accessed Jan. 17, 2023).