

EuRIC Position on the Assessment of the definition of “Recycling”

13 September 2021

The European Recycling Industries’ Confederation (EuRIC), thanks the Joint Research Centre (JRC) and European Commission (DG ENV) for the opportunity to provide input into the Assessment of the definition of recycling. EuRIC supports keeping a consistent recycling definition which our industry has invested heavily into to fulfil this role. Furthermore, while chemical recycling is already (and should be) considered as a recycling process, it should be mainly considered as a supplemental role to mechanical recycling. Finally, EuRIC strongly supports the focus on defining high-quality recycling, which are often fulfilled by End-of-Waste criteria for a variety of waste streams.



EuRIC represents the recycling industry at a European level. Gathering the vast majority of national recycling federations from EU/EEA Member States, the Confederation represents about 5.500+ recycling companies – from market leaders to SMEs – generating an aggregated annual turnover of about 95 billion € by treating various waste streams such as household or industrial & commercial waste including ferrous and non-ferrous metals, end-of-life vehicles (ELVs), electronic waste (WEEE), packaging (paper and plastics), end-of-life tyres or textiles.

This paper outlines the key cross-cutting positions of the European Recycling Industry, on the basis of the 3 objectives of the project:

1. To identify any **relevant recycling process** on which **further** guidance is **necessary** to define appropriate calculation rules,
2. To propose **appropriate calculation rules** for the estimation of the recycling rate for such processes with (*special attention to chemical recycling*), and
3. To discuss and suggest **potentially** relevant **approaches** for defining **quality of recycling**.

We look forward to working closely with the JRC, DG ENV and other industries to ensure a progressive push in possible future revisions of the recycling definition or calculation rules.

1. Identification of relevant recycling processes

EuRIC advocates to keep the recycling definition consistent, as the recycling industry has invested heavily to meet the expectations of this definition. The Waste Framework Directive’s¹ (WFD) definition of recycling is as follows: *“any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations”*. This definition is technology-neutral and target-oriented. It is thus regarded as the necessary definition for our industry. This evidently includes chemical recycling within its definition, whilst excluding substances used in energy recovery or as fuels.

This definition could be made more robust by explicating the substitution element of recycling, since recycled materials substitute primary raw materials or substances:

¹ Directive 2008/98/EC [...] on waste. Link [here](#).

“Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes **which substitute primary raw materials in a production process**. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations”.

EuRIC advocates for chemical recycling to be included as a recycling method, which we perceive already is the case. However, the inclusion and calculation should be strictly set on chemical recycling to obtain polymers (i.e., not including the transformation of waste into syngas/oils to be used as fuels) **where the waste cannot be otherwise mechanically recycled**. Currently it is still unclear where chemical recycling stands in the waste hierarchy. While there is no need to change the definition of recycling, except to strengthen the substitution element of material recovery, **EuRIC firmly supports a more granular definition of the waste hierarchy** where chemical recycling will have an intermediary position between mechanical recycling (above) and (energy) recovery (below) to better highlight the complementary nature of chemical recycling (see Figures 1 & 2) as well as its larger environmental footprint.

As noted in EuRIC’s position paper on Chemical Recycling,² chemical recycling should be utilised as a complementary recycling method in achieving the circular economy where plastic streams cannot be currently recycled. This is largely based on the following facts: there is still no large-scale industrial chemical recycling plants, chemical recycling is energy intensive, it leads to significant material losses, and many pyrolysis outputs are not directly recycled usable plastics (as relatively clean homogenous plastics are required for high-yield/quality recycled plastics).³ Though Life Cycle Assessments (LCAs) often do not take this into account, they still often show the more energy intensive and GHG emitting processes required for chemical recycling compared to mechanical recycling counterparts.⁴

A specific definition should further be considered for chemical recycling, to clearly position it as the supplemental activity in achieving true circularity. A possible definition for chemical recycling could be as defined by the European Coalition for Chemical Recycling: “*Chemical Recycling converts polymeric waste such as post-consumer plastic waste, industrial and shredder waste and others, **which could not otherwise be recycled**, by changing its chemical structure to produce substances that are used as products or as raw materials for the manufacturing of products. Products exclude those used as fuels or means to generate energy*”.⁵

² EuRIC (2019) [Position on chemical recycling](#).

³ Hazardous Waste Europe (2020) Understanding the Environmental Impacts of Chemical Recycling: Ten concerns with existing life cycle assessments. Link [here](#).

⁴ Jeswani, H. *et al.* (2021) “Life cycle environmental impacts of chemical recycling via pyrolysis of mixed plastic waste in comparison with mechanical recycling and energy recovery”, *Science of the Total Environment*, Vol. 769. Link [here](#).

⁵ See European Coalition for Chemical Recycling’s main [webpage](#) under “Definition of chemical recycling applied by the coalition”.

Figure 1 – Overview of different loops for plastics in a circular economy (Crippa et al. 2019)

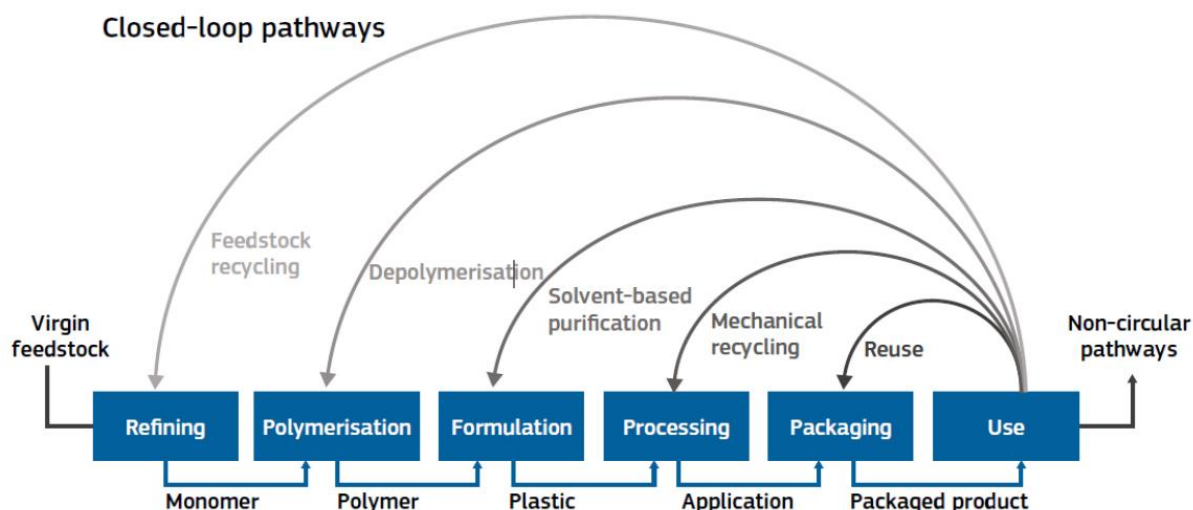
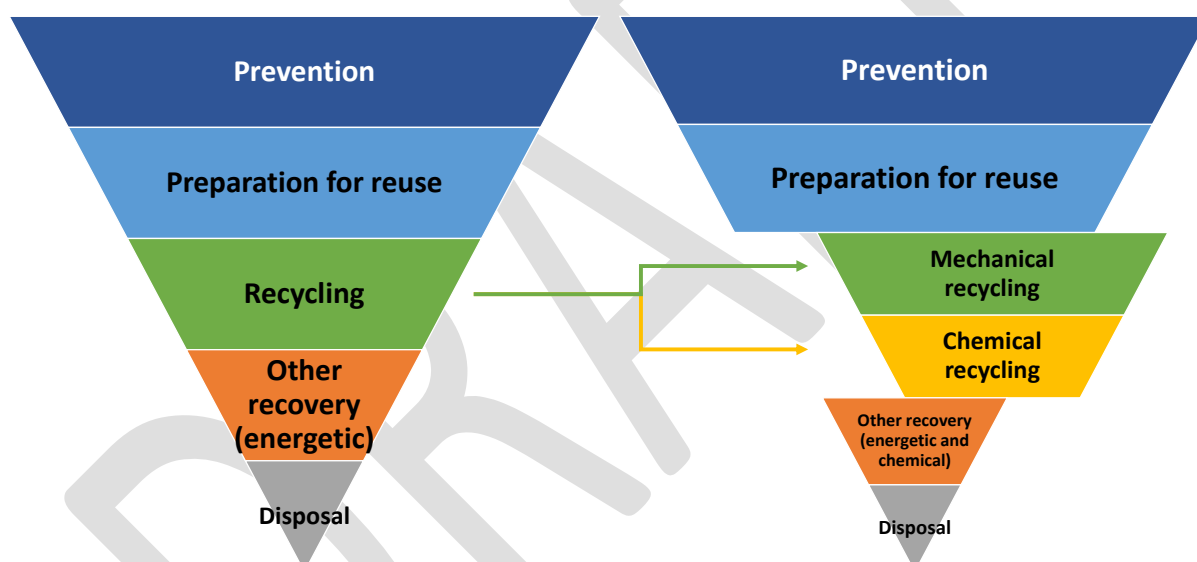


Figure 2 – Where chemical recycling should fit within the Waste Hierarchy



One aspect beyond the recycling definition, which requires attention on better defining recycling activities, is Annex II of the WFD (outlining R-codes). Post-treatment technologies (i.e., post-shredders) and chemical recycling should be factored into the R-codes. Furthermore, for the recycling industry R12 (“exchange of waste”) does not exist in practice. EuRIC calls for both the JRC and DG ENV to consider these factors further in their study.

Finally, a large challenge noticed by the European Recycling industry is the lack of harmonised definitions across the EU-27. Examples of this include how feedstock recycling is not considered recycling by some member states, but it is in others. Similar issues are found within the calculation rules.

2. Appropriate calculation rules

EuRIC has consistently supported:

- i) Harmonized rules to measure recycling across the Member States for all stream;

- ii) Consistent enforcement of these rules to ensure that recycling is accounted, in practice, uniformly across Member States to foster a level playing field.

EuRIC has also voiced its concerns regarding the revised rules to measure recycling in the Waste Framework Directive as modified by the Directive 2018/851/EU. This is simply because the calculation point can mix up recycling with production processes whereby, for the latter, it is not possible not to say impossible to measure genuine recycling rates (but rather recycled content).

On the question of chemical recycling calculation rules, a robust mass-balance approach is the preferred option to calculate the share of recycling in chemical recycling, to ensure comparability with other recycling processes. It is imperative to emphasise in any future calculation methodologies that chemical recycling is **complementary to mechanical recycling**. This could be illustrated within the waste hierarchy with chemical recycling as the lesser partner within the recycling part of the hierarchy (Figure 1).

Waste streams that are currently missing harmonised recycling calculation rules include textiles, food waste, Construction and Demolition Waste (CDW), and for recovery Refuse-Derived Fuel (RDF). Furthermore, EuRIC suggests new calculation points⁶ for industrial wastes (specific wastes from different industrial activities – i.e., industrial slags).

It has been noted that corrections are not a good approach in the recycling process and should be avoided. Corrections may widely differ because of different storage management at a recycling facility as well as regarding to the different constitution of a single waste stream (impurities, contamination, rain water, added materials for a specific process needed, e.g., solidification of waste). Furthermore, correction may also very easily lead to an abusive increase in recycling quotas achieved (see box below).

Example of correction leading to abusive increase in recycling quotas achieved

Input material 1 into sorting/separation = non-sorted steel scrap, 10 tons with 20 % (2 tons) impurities (e.g., plastics, other metals, etc); sorting/separating those 20 % impurities results in a recycling quota of 80% achieved.

If somebody adds illegally 2 tons of non-sorted steel scrap containing only 5 % (100 kg) impurities (because it might be too much workload to take out these 5 % impurities from a small-volume waste stream) during sorting/separating of Input stream 1, the resulting output stream is 10 to – 2 to + 2 to = 10 to = 100 % recycling quotas achieved.

In case of additionally sorting/taking out 5 % impurities of Input stream 2, you will achieve a recycling quota of 99,5 %. Mixing/blending of different waste stream consisting of the same base material (= steel scrap) will in this case increase the recycling quota achieved.

3. Defining quality of recycling

Overall, **EuRIC greatly supports the initiative to discuss the quality and functionality of recycling**. Nevertheless, some care is required when developing ideas on possible future definitions of high-quality recycling. As a general note, the quality of recycling depends on a variety of factors (input material quality, end user requirements, standardisation, and market demand and price). When the feedstock to a recycling facility is of a consistently high quality, higher quality is often achievable in

⁶ Commission Implementing Decision (EU) 2019/1004. Link [here](#). ‘Calculation point’ means the point where municipal waste materials enter the recycling operation whereby waste is reprocessed into products, materials or substances that are not waste or the point where waste materials cease to be waste as a result of a preparatory operation before being reprocessed;

recycling processes; however, this can also increase the price which means that often down-stream consumers are not willing to pay for higher grade recycled materials. This is why legislative tools are crucial to drive the demand for high-quality recycled raw materials. Specific tools that should be as a priority implemented are **mandatory recycled content targets**, and **Green Public Procurement (GPP)** criteria.

In any case, the quality of recycling is defined by quality standards (EN 643 for paper), industry specifications and ideally end-of-waste criteria set at EU or national level. It is crucial to link such quality requirements with the end-of-waste status or a proper status for raw materials from recycling (RMR), as legal certainty is a pre-requisite to transitioning towards a more circular economy.

In a generic definition as the recycling definition, factoring in the quality element is not feasible because quality is defined on a stream-by-stream basis. The only way to better reflect it is to strengthen the substitution element, as EuRIC suggests.

EuRIC can provide for a number of waste streams industry specifications, quality standards and end-of-waste criteria used on a daily basis to benchmark the quality of RMR, be it for commercial relations or when interfacing with competent authorities.

A large, light gray watermark of the EuRIC logo is centered on the page, behind the main text. It consists of the word "EuRIC" in blue and a circular dot pattern to its right.

EuRIC