

Measuring recycling: increasing the quality of packaging waste and certification are keys to success

As the culmination of a lengthy process, the European published in June 2018 the Waste Framework Directive (WFD, 2018/851/EC)¹ and related directives, Packaging and Packaging Waste Directives included (PPWD, 2018/852/EC)². For the measurement of recycling of packaging waste, article 6a applies:

- The weight of packaging waste recycled shall be calculated as the weight of **packaging that has become waste** which, having undergone all necessary checking, sorting and other preliminary operations to remove waste materials that are not **targeted by the subsequent reprocessing** and to ensure high-quality recycling, enters the recycling operation whereby waste materials are actually reprocessed into products, materials or substances. For that purposes, **the weight of packaging waste recycled shall be measured when the waste enters the recycling operation.**
- By way of derogation (...), **the weight of the packaging waste recycled may be measured at the output of any sorting operation provided that:**
 - (a) such output waste is subsequently recycled;
 - (b) the weight of materials or substances that are removed by further operations preceding the recycling operation and are not subsequently recycled is not included in the weight of waste reported as recycled.

In order to ensure uniform conditions for the application of this Article, the Commission shall adopt by 31 March 2019 implementing acts establishing rules for the calculation, verification and reporting of data, in accordance with the examination procedure (Article 5 of Regulation (EU) No 182/2011 shall apply). Where the committee delivers no opinion, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply).

Member States shall establish an effective system of quality control and traceability of the packaging waste to ensure that the conditions laid down in point above are met. To ensure the reliability and accuracy of the data gathered on recycled packaging waste, the system may consist of electronic registries set up pursuant to Article 35(4) of Directive 2008/98/EC, **technical specifications for the quality requirements of sorted waste**, or average loss rates for sorted waste for various waste types and waste management practices respectively. Average loss rates shall only be used in cases where reliable data cannot be otherwise obtained and shall be calculated on the basis of the calculation rules established in the delegated act adopted pursuant to Article 11a(10) of Directive 2008/98/EC.

Our views are substantiated below.

Guiding principles for legislative actions

The Extended Producer Responsibility Alliance (EXPRA) welcomes a uniform definition for the measurement of recycling. However, we would like to share some concerns towards the day-to-day implementation of this definition and the ability to show compliance with transparent and reliable results.

The definition of “recycling operation” is crucial in this respect. We therefore believe that the three relevant factors spelt out below should inform the drafting of the delegated and implementing acts by the European Commission:

1. The provisions in the implementing and delegated acts should be long-lasting and therefore in line with other directives and strategies of the European Commission. This includes recognising the EU-wide, harmonised quality standards for sorted plastic waste which were promoted by the European strategy for plastics in the circular economy.

¹ <https://eur-lex.europa.eu/eli/dir/2018/851/oj>

² <https://eur-lex.europa.eu/eli/dir/2018/852/oj>

2. The measurement required to comply with national and EU legislation should be possible for each single responsible entity that has a compliance obligation in this respect³.
3. Daily technical operations within recycling operation should not be affected if these would lead to a change of the process of recycling and to increased cost for the value chain. This excludes changes that may occur due to the increase of the quality of packaging material waste.

Recycling in practice

According to Article 3 paragraph 17 of the Waste Framework Directive, ‘**recycling**’ means 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.

According to Article 6a paragraph 2 of the Packaging Waste Directive, **the weight of packaging waste recycled shall be measured when the waste enters the recycling operation.**

By combining these definitions, EXPRA believes that the measurement for packaging waste should take place when the waste is ready to enter an authorized facility where waste materials are reprocessed into products, materials or substances, whether for the original or other purposes. This is in line with Annex II to the Waste Framework Directive, which governs the recovery operations. This equates to the measurement taking place after selective collection of packaging waste reaching the recycler (e.g. for glass), or at the output of the last sorting operation, as far as said packaging waste complies with standard specifications.

Focusing on the “targeted packaging that has become waste”, EXPRA notes that, in real life, products (including packaging) may be made of multiple materials or even multiple material types (e.g. multiple plastic types). The reason for this is often functional. Without doing so, specific parts of these products could not be used in their intended way. For example: the screw cap of a plastic beverage bottle needs to be made from another plastic type than the bottle itself due to physical aspects of removing plastic parts from each other comfortably. If not, the screw cap would be fixed to the bottle and could not act as an opening or closing device of the bottle.

To select the targeted packaging, collected plastic waste may be sorted at a sorting plant according to the recycling streams - not always per plastic type – and sent to the recycling facility “as bulk or baled materials that have normally received no other processing than sorting”.

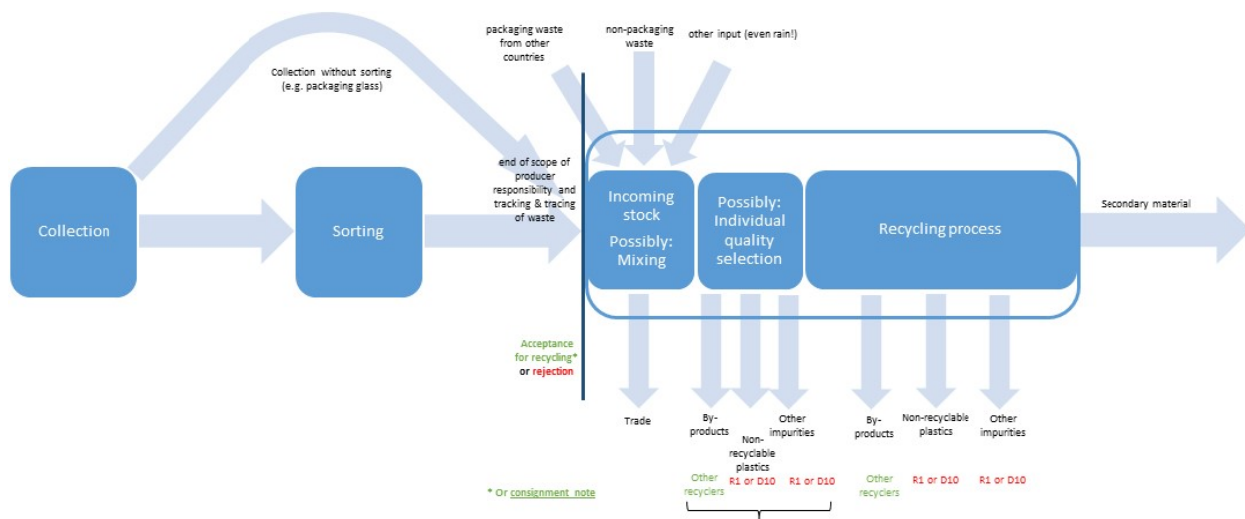
In this light, some EXPRA members have already implemented national standards of (sorted, selected) packaging waste materials⁴, in agreement with recyclers, as a first step of evidence and traceability of the measurement point according to [Decision 2005/270/EC](#). This intends to define:

1. Primary targeted material: a material (e.g. plastic type) for which the recycling operation was designed
2. Non-targeted material: different materials enclosed to the targeted material (ex. plastic) type which are not intended to be recycled by the specific recycling operation (waste, moisture, and other materials), the presence of which is detrimental to the quality of the recycled output.
3. Secondary targeted material: recyclable or reusable materials from another material (ex. plastic) type, but included in the targeted material either by design or by usage. Secondary targeted material are a sub type of non-targeted material, as they will often be recycled, but in the same or in another recycling operation or process.

³ These are mostly PROs, but given that the EU Directives have been implemented in a different way, Member States could either be responsible themselves or make municipalities responsible.

⁴ See EXPRA’s book on “technical specifications”.

In light of the challenge of new law, EXPRA call for a EU-wide standards for packaging waste (sorted, selectively collected) because often result in different levels of specifications that enter the recyclers’ premises.



Possible mismatch with responsibilities and involvement of compliance schemes

Currently, EU targets for the recycling of packaging waste have to be implemented nationally and are directly (through the EU Directive itself) or indirectly (through national legislation) mostly imposed on Extended Producer Responsibility (EPR) systems. As of 2024, these will become mandatory for packaging, meaning that they (or other compliance bodies in exchange) will need to have sound evidence of the attainment of the imposed targets.

The responsibility of EPR systems or other compliance bodies ends at the moment the recycler accepts the packaging (sorted) waste. If the recycler trades the waste, or mixes the waste with other incoming stock, the traceability to an individual compliance body is lost. In that case, only the weighted average result of preliminary operations, prior to entering the recycling operation, would be available. The more the quality of the various sources of input differs, the larger the distortion a weighted average calculation of losses will be. This distortion is by definition at the expense of the compliance body that delivers input with quality above the average, and it rewards the compliance body that delivers the lower quality.

CONCLUSION 1: The measurement of recycling should take place at the at the output of the last sorting facility or the selective collection entering in a recycler facility. This is of the essence as long as, inside the recycler’s premises, waste from various sources are mixed before the recycling operation starts, and are consecutively treated with additional losses in turn. This would lead to a situation where compliance organisations’ results would be unfairly curtailed.

CONCLUSION 2: As more or less a standard procedure, the derogation to the proposed measurement point should apply. This comes with the challenge to effectively prove that all waste that is accounted for as recycled, is in fact recycled. EXPRA has a method for this: within the official derogation, it should be ensured that all packaging waste (both sorted waste and “pure” unsorted waste) can be counted as recycled at the entrance of the recycler. This concept is explained below.

Measurement of recycling at the output of last sorting facility or selective collection that reaches the recycler

Whereas the official derogation mentions that measurement can take place at the output of any sorting facility or directly at the entrance of recycling operations, it is our proposal that, for packaging waste, this occurs at the output of the last sorting facility or selective collection reaching the recycler. The reason for this is twofold:

- Some packaging material waste does not need preliminary sorting and can be sent to a recycler directly (e.g. glass).
- Sorted packaging waste cannot be always proven to be recycled, but it is feasible for sorted packaging waste to be ready to enter a certified or verified recycler if it complies with accepted standards specifications.

This proposal leans on three pillars: enhancement of quality description, formal waste acceptance after quality control, and inclusion of the former two pillars into the certification or verification of recyclers. These are explained below.

1. Enhancement of quality description

EXPRA takes the opportunity to introduce the quality specifications for packaging material waste as pointed out also in the European strategy for plastics in the circular economy, and combine this with a well-documented and standardised transaction/acceptance regime.

The quality of material packaging waste coming from different jurisdictions (or compliance organisations) should be harmonised. A definition and a basis for measurement is already provided for in European standard EN 15437 (especially table 1). By using this standard, a user (whether it is the seller or buyer in a transaction) of packaging material waste can describe the various properties that are present, or the properties that are acceptable or not acceptable.

As an alternative, the approach of the EN 643 for packaging paper waste can be reapplied for the other packaging waste material.

Inseparable from the physical properties of waste, the present or future waste holder (which in practice will be the recycler in most cases) should be able to specify what operation the various types of waste, that are present in a delivery, will undergo. This can vary from recycling in his own plant (for primary targeted materials), sale to other recyclers (for secondary targeted materials), sale to waste-to-energy plants (in case of combustible non-targeted materials) or disposal (in terms of moisture).

2. Formal waste acceptance after quality control

Packaging material waste is not always sold by the compliance organisation, but sometimes by other bodies with the responsibility to *collect* waste in their territories and who receive a remuneration for collecting and selling the aforementioned waste. In practice, it has happened that these other bodies (maybe in order to maximise income) deliver a quality that is below the official specification level. If a recycler has no official, restrictive acceptance policy, this waste could be accepted with a slightly lower transaction price. What happens is that compliance organisations have to correct much for impurities but yet still pay the full amount for the entire batch of waste. To combat this adverse effect on the circular economy (both in terms of performance as in terms of costs within the value chain) a formal waste acceptance policy by recyclers would help and should be the basis for the contracts with suppliers of packaging material waste.

Where the properties as mentioned above would be one pillar for the transaction between the seller and the recycler, application of European standards for the determination of the actual quality of waste would need to be the other pillar. Standard EN 14899 (*Characterization of waste. Sampling of waste materials. Framework for the preparation and application of a sampling plan*) can be the basis of a quality testing method that is robust

enough. Compliance with the quality, as agreed on before the transaction, would lead to acceptance; non-compliance would lead to refusal and return of the waste.

3. Inclusion of waste quality description and formal waste acceptance after quality control by third parties

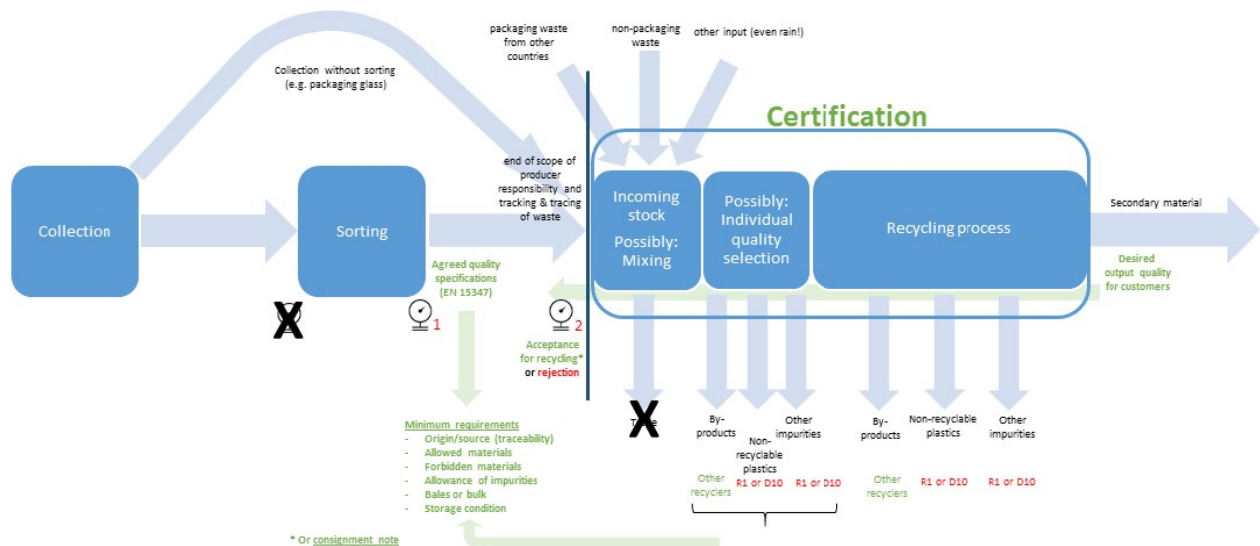
In order to be even more certain that recyclers provide complete, accurate and reliable information to compliance organisations, or traders, the transaction and acceptance method of recyclers could be subject to certification/validation. Third parties could perform initial and yearly administrative checks to see if the right procedure is in place.

One example of certification is EUCertPlast, which certifies the installed recycling technology along with a mass balance and yield. Adding the transaction and acceptance policy to EUCertPlast doesn't need to be a large change and would facilitate the necessary certainty to provide evidence for the attainment of the recycling targets.

The methodology should also be open to innovative recycling techniques, which might not always be suitable for certification. In this case, pre-certification or Member States' delegated powers should (temporarily) be possible.

Conclusion and final result in graphical form

Taking into account the needs of the recyclers, EXPRA proposes to agree upon a minimum quality level of the packaging material waste, as a basis to build European harmonised standards. Quality testing based on samples of packaging waste material (for which also European standards can apply) should determine if the quality is sufficient enough for a waste batch to be recycled. If this is the case, and the recycler has added the transaction and control programme in its certification or validation, there is reliable information for compliance organisations, or traders, to calculate recycling targets (recycling in this case is the sum of the weight of accepted targeted materials).



Within the CEN TC 261 Packaging, EXPRA commits to developing such European standards. This CEN Group is the appropriate venue (and a technical tool for the European Commission) to gather EU-wide expert representatives for this joint work.

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