

**Impact Assessment:**  
**The European Commission's Proposed Changes to the Calculation  
Method for National Packaging Recycling Rates**  
**- Executive Summary -**

Commissioned by:

**The European Organization for Packaging and the Environment (EUROPEN)**

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*Disclaimer:*

*This study was commissioned by and completed exclusively for EUROPEN by cyclos/HTP. The opinions expressed in this study are those of the authors and do not necessarily represent the opinions or positions of EUROPEN. For further inquiries, please contact EUROPEN directly.*



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## ABOUT

### EUROOPEN – THE EUROPEAN ORGANIZATION FOR PACKAGING AND THE ENVIRONMENT

EUROOPEN (The European Organization for Packaging and the Environment) is the only pan-European cross-sectoral industry body dedicated exclusively to resolving the environmental challenges facing the packaging supply chain in an active and cooperative manner, while favouring harmonised European and national packaging regulations in an EU Single Market for packaging and packaged goods. As an industry organisation, EUROOPEN presents the opinion of the packaging value chain in Europe on topics related to packaging and the environment without favouring any specific packaging material or system and is therefore open to any company with an economic and sustainability interest in packaging and packaged products.

### CYCLOS GMBH – EXPERTS IN PACKAGING AND PACKAGING WASTE MANAGEMENT

cyclos is one of the leading waste management and material flow consultancies in Germany. Cyclos provides expert and consulting services on packaging, packaging waste and waste management topics – one of the leading waste expert companies in Germany and in business for over 20 years.

The privately held company employs a team of about 30 people, including 12 publicly sworn experts on packaging (incl. batteries) disposal, two of which are also certified experts for electronic and electrical waste recycling in its Berlin and Osnabrück offices. The company provides a broad range of services including audits of plastic recycling plants (both according to the German Packaging Ordinance and EuCertPlast), mass flow verifications for EPR schemes and expert reports and studies on packaging waste and electronic and electrical waste topics and other consulting services related to recycling and waste management.

### HTP GMBH & Co. KG – EXPERTS IN PLANNING AND TECHNICAL CONSULTING IN THE RECYCLING SECTOR

HTP is an independent planning and consulting company for the recycling and renewable energy sectors. Since the early 1990s HTP's engineers from different disciplines have been finding solutions for their customers' challenges. With offices in Aachen and the Ruhr metropolis, HTP maintains close links with research centres in West Germany and the Euregio. This enables the company to keep abreast of the latest technological developments, while at the same time giving them access to a pool of highly-qualified engineers.

Using these two locations as base, HTP provides consulting and engineering services to investors throughout Germany and in selected European and Asian countries. Teams are put together in line with customers' project requirements, using experts from all required disciplines. Using its knowledge of waste treatment and recycling processes, HTP also provides assessor and authorised expert services for companies, courts and government authorities.

cyclos GmbH and the HTP GmbH & Co. KG engineering company have cooperated in a working partnership (ARGE cyclos/HTP) for over 20 years.

## EXECUTIVE SUMMARY

On July 2<sup>nd</sup>, 2014 the European Commission published the “Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directives 2008/98/EC on waste, 94/62/EC on packaging and packaging waste, 1999/31/EC on the landfill of waste, 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment” (proposal). cyclos/HTP was commissioned by EUROOPEN to assess the proposed changes to the Directive 94/62/EC on packaging and packaging waste.

### Objectives

The study focused on three simultaneously proposed changes to the methodology and targets for Directive 94/62/EC on packaging and packaging waste:

- The term “preparing for re-use” is now included in the newly defined “preparing for re-use and recycling” targets while “recovery” has been dropped from the wording.
- The definition of input waste into a recycling process is amended to mean “the weight of waste put into a final preparing for re-use or recycling process less the weight of any materials which were discarded in the course of that process due to presence of impurities<sup>1</sup> which need to be disposed of or undergo other recovery operations”.
- When calculating whether the recycling targets have been achieved for packaging composed of different materials, each material shall now be accounted for separately.

The overall objectives of the study were to understand what the Commission intends and expects to achieve by the proposed changes, to clarify the meaning of certain terms used, to assess potential impacts as well as to evaluate the effectiveness and feasibility of the proposed changes based on a technical analysis, taking into consideration administrative, financial, environmental and other impacts. Finally, the goal was to develop recommendations for improvements as a basis for EUROOPEN to further engage in the political process.

### Summary of recommendations:

1. To keep the term “preparing for re-use” as suggested by the Commission in order to ensure alignment of terminology used across the different waste directives.
2. To remove the term “recovery” from the target definition for packaging recycling targets while encouraging the exploration of options to address the legislation gap regarding other forms of disposal.
3. To define the point of measurement as “input into a final preparing for re-use and recycling process” while providing a clear definition of the term.
4. To eliminate the intended subtraction of impurities at the point of measurement completely.
5. To refrain from using the term “packaging composed of different materials”.
6. To keep the current method of counting components of composite packaging towards their predominant material.

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<sup>1</sup> The original wording of the proposal omitted the words „of impurities“. The Commission referred to this as a material error. The complete sentence is therefore included here.

## Approach

The study included an initial assessment of the proposed changes to identify shortcomings and potential weaknesses from a technical and recycling process point of view. One result of this assessment was a set of three possible interpretations of the proposed method to calculate packaging recycling rates. A questionnaire was shared with over 110 industry stakeholders with the goal of understanding how the proposed changes are perceived by organisations and institutions within the recycling industry and how the wording of the proposed calculation method is interpreted. In addition, clarification was sought from the Commission based on the uncertainties identified in the initial assessment.

For each of the three possible interpretations of the calculation method for packaging recycling rates derived from the Commission's proposal, the impact on national packaging recycling rates of nine selected Member States was evaluated.<sup>2</sup>

The proposed changes were also evaluated with reference to technical feasibility, administrative and financial burden as well as environmental impact, taking into consideration additional comments and clarifications provided to cyclos/HTP by the European Commission. Based on this analysis, recommendations were developed on how the shortcomings and uncertainties of the proposal could be addressed.

## Assessment and evaluation of proposed changes

In the following, a summary is presented of the assessment and evaluation of the three proposed changes subject of this study as well as the recommendations developed by cyclos/HTP. It acknowledges the Commission's intent to more accurately count what is actually recycled, to streamline definitions, and to simplify and harmonise data capture and reporting.

### 1. Preparing for re-use and recovery targets

According to the Commission, the term "preparing for re-use" is included into the wording of the proposal to assure the streamlining of definitions between the Packaging and Packaging Waste Directive (PPWD) and the Waste Framework Directive (WFD). According to Article 3 (16) of Directive 2008/98/EC, "preparing for re-use means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing." Following the proposal, this definition is to be added to the PPWD. Despite this definition, feedback from the stakeholder survey suggests that stakeholders are still confused about the meaning of the term and concerned about the potential impacts on packaging recycling rates. They also worry about a potential separation of recycling targets and "re-use" targets at a later point in time.

Many of these worries stem from the fact that stakeholders frequently use the terms "preparing for re-use" and "re-use" interchangeably, thereby overlooking the different meanings of the two concepts and other necessary considerations.

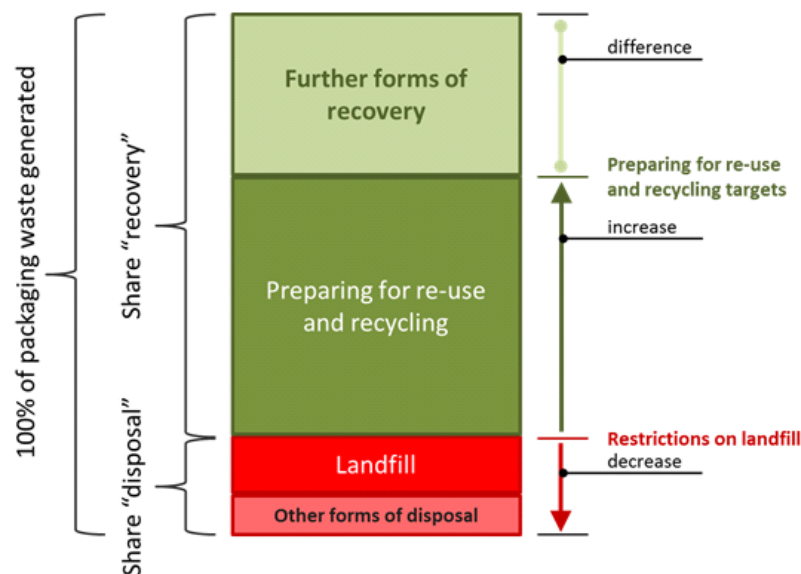
- The definition of "re-use" in both existing and proposed legislation only applies to non-waste (i.e. multiple use packaging that is still in use) and concerns packaging in multiple-use systems. Only when such in-use packaging is discharged from the multiple-use system due to damage and/or reaching the maximum trips of rotation, does it become waste. Therefore, quantities that refer to "re-use" packaging do not count towards the calculation of preparing for re-use and recycling targets.

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<sup>2</sup> Belgium, Czech Republic, France, Germany, Italy, Poland, Spain, Sweden, United Kingdom. The countries were selected based on geographical diversity, types of waste management systems, current recycling performance and representativeness in terms of economic and population indicators. The selection was agreed upon with EUROOPEN.

- The packaging recycling targets proposed by the Commission apply to packaging waste quantities only and therefore specifically excludes any packaging that is qualified as “re-use”. For packaging specifically, the proportion of waste subject to “preparing for re-use” is trivial compared to packaging waste subject to recycling. The inclusion of “preparing for re-use” quantities will therefore not significantly impact packaging recycling rates.
  - So far, data related to preparing for re-use has not been systematically captured. However, it is expected that the additional administrative burden associated with such reporting obligations would be insignificant.
- ➔ **cyclos/HTP recommends to keep the term “preparing for re-use” as suggested by the Commission in order to ensure alignment of terminology used across the different waste directives.<sup>3</sup>**

The term “recovery” has been omitted from the newly proposed recycling targets because the concept of recovery is not in line with implementing the waste hierarchy, which calls on Member States to promote waste prevention, re-use and recycling over other forms of recovery and especially landfilling. The proposal replaces the previous recovery targets with a combined recycling target for preparing for re-use and recycling, thereby eliminating the distinction between recovery and recycling targets.



**Figure 1: Recovery in context of preparing for re-use and recycling**

The key findings can be summarised as such:

- With the discontinuation of statutory recovery targets, the Commission removes an incentive to use recovery as an alternative to recycling. This encourages Member States to move towards forms of waste treatment higher up in the waste hierarchy.<sup>4</sup>

<sup>3</sup> This recommendation assumes that “preparing for re-use” as per the official EU definition is applied in the proposed change. The introduction of separate targets for “re-use” is not considered in this study. As mentioned above “re-use” does not equal “preparing for re-use” and therefore constitutes a whole new field of inquiry.

- There appears to be a gap in the proposed legislation whereby landfill will be restricted by the Commission, but other forms of disposal are not (other forms of disposal include for example incineration without energy recovery or release into the sea). As a result, Member States may encourage such forms of disposal and with that neglect the Commission's intention to implement the waste hierarchy. This conflict may be dissolved either through additional EU legislation regarding disposal or the implementation of restrictions on a national level.
  - The combination of restrictions on the bottom of the waste hierarchy (disposal) while simultaneously setting targets for preparing for re-use and recycling at a higher level of the hierarchy make additional recovery targets redundant and unnecessary.
- **cyclos/HTP supports the removal of the term “recovery” from the target definition for packaging recycling targets but also encourages the exploration of options to address the legislation gap regarding other forms of disposal (e.g. incineration without energy recovery).**

## 2. Calculation of packaging recycling rates

The proposed change to the calculation method for packaging recycling rates was divided into three separate aspects to be evaluated – the point of measurement, the definition of the term “impurities” and the setting of a 2% threshold for impurities.

### ***Point of measurement***

The wording of the proposal regarding the calculation of the amount of waste put into a final recycling process (“less the weight of any materials which were discarded in the course of that process”) leads many stakeholders to believe that the Commission is aiming to change the point of measurement at which the input waste is being captured. The wording of the proposal can be understood in different ways, although the Commission stated in its clarification statement to cyclos/HTP that the total quantity recycled is supposed to mean the “input into a final recycling process after all sorting operations are completed”.

From a technical and recycling process-based point of view, cyclos/HTP can remark the following:

- In existing legislation, the point of measurement is not clearly defined, as can be seen in Figure 2. This means that currently Member States can choose the point at which they capture recycled quantities. This ambiguity leads to the reporting of inaccurate data because Member States may capture data at multiple or wrong points of measurement. A harmonisation of data capture and a simplification of auditing and reporting are necessary.
- The fixation of the point of measurement (bright green arrow in Figure 2) is to be seen as a positive move. It contributes to the harmonisation of calculating and reporting recycling data and eliminates potential errors in data capture such as double counting or counting amounts that do not reach a final recycling process.
- Based on technical and administrative feasibility, an input-based calculation is the only sensible possibility. Any other point of measurement introduces significant uncertainties regarding data capture, auditing and reporting. Especially with respect to an output-based calculation, the following significant problems would arise:

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<sup>4</sup> Regardless of the removal of recovery targets, recovery (especially energetic recovery) will still remain indispensable to fulfilling landfill restrictions.

1. Performance indicators would have to be obtained at all final preparing for re-use or recycling facilities.
  2. These speculative indicators would only partly reflect the actual processes because complete capture is unrealistic.
  3. The traceability of material flows is not warranted, meaning that it cannot be guaranteed that recycling rates are exclusively based on packaging waste because materials from other streams may enter the processes. Furthermore, there is a danger that waste streams of different origins may be counted towards the recycling rate.
  4. Finally, applying an output-based calculation bears the risk of downcycling, which would negatively impact the environment.
- In practice, some preparing for re-use and recycling plants include sorting steps. This may result in the situation that the input into these plants may not be equal to the input into a final preparing for re-use and recycling process. The Commission's proposal does not define clearly enough at what point the actual final preparing for re-use and recycling process commences.

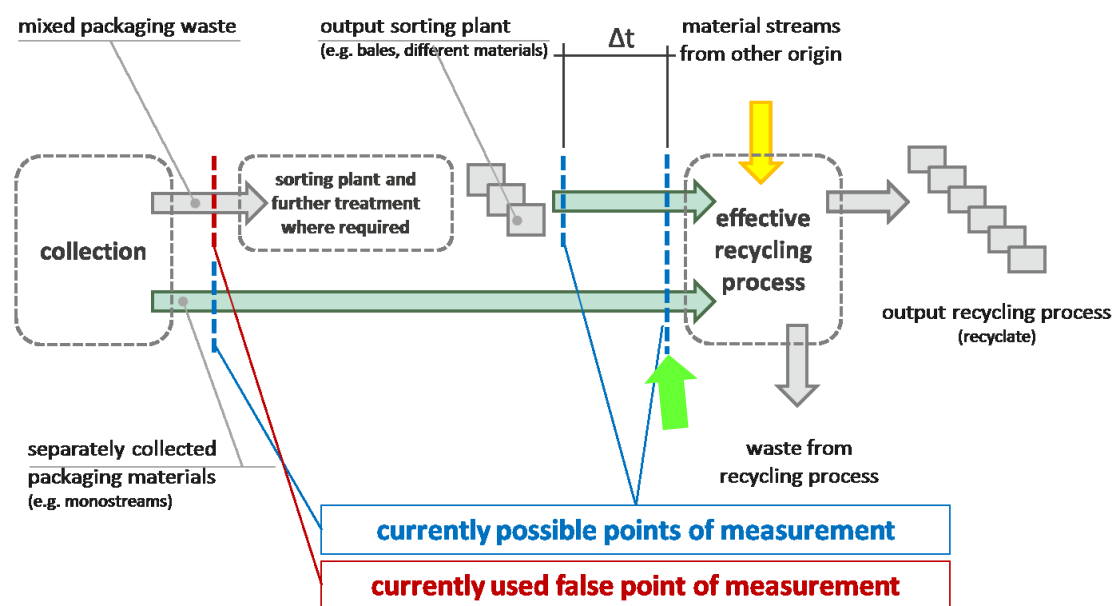


Figure 2: Simplified waste management flow chart illustrating currently possible points of measurement

### Definition of the term “impurities”

The Commission clarified that the term “impurities” in its proposal relates to “not targeted” (meaning materials not targeted in the proceeding recycling process) materials but does not include losses due to physical and/or chemical transformation inherent to the recycling process. The official wording of the proposal, however, remains unclear in this regard and leaves stakeholders uncertain about how to accurately assess and apply the proposed calculation method.

The following issues remain unaddressed:

- The notion of “impurities” as understood by the Commission is closely aligned with the definition of impurities laid out in specifications used in the recycling industry. Such



specifications define acceptable levels of impurities in waste input into a recycling process. Compliance with specifications is audited to ensure that expected levels of impurities are met, but levels defined in specifications can only provide speculative numbers and do not accurately represent realistic levels of impurities in input waste. To base the calculation of the recycling rate on such specified levels of impurities would only marginally contribute to the goal of the Commission to measure what is actually being recycled.

- The amount of impurities contained in the input into a final recycling process cannot be accurately known unless each input batch is analysed separately, meaning every delivery to a recycling plant would have to be separated and analysed to ensure that the level of impurities complies with the respective specification. This would place an unjustifiable burden on affected stakeholders.
- Furthermore, it is not clear from the Commission's proposal as to what exactly is included in the term "impurities". For example, it is unclear whether packaging-affiliated materials (e.g. caps, lids, labels) are considered impurities and how they should be accounted for. Without defining what impurities are, it will be impossible to know how to apply the proposed calculation method.

### ***Definition of a 2% threshold for impurities***

The Commission's proposal introduced a level of tolerance for impurities (2%) below which the discarded materials do not need to be subtracted from the input into a final recycling process. In its clarification statement to cyclos/HTP, the Commission also emphasised that the 2% threshold was deemed acceptable by "industry stakeholders" and that such a level "seems to be reachable by a proper at source separation and/or a proper sorting".

cyclos/HTP, along with the surveyed stakeholders, would like to voice the following concerns about this aspect of the proposal.

- Currently, levels of impurities accepted in the industry are set between 1% and 10% of input into a final recycling process, depending on the material. These numbers are, based on cyclos/HTP's experience, realistic targets where automated sorting mechanisms are used, which is how the majority of packaging waste is processed. Consequently, the Commission's proposed 2% limit of impurities that should be aspired to, does not appear to be in line with current industry practices.
- Reaching the proposed 2% threshold will be impossible for some materials due to process-inherent limitations, or only possible if unacceptable cost or administrative burdens are imposed. cyclos/HTP therefore suggests that one general threshold for all material fractions at such a low level should be rejected.
- In addition, the proposed way of subtracting impurities mathematically disadvantages those materials which do not reach the 2% threshold because purity levels between 98% and 100% are always counted as 100%, while levels of impurities lower than 98% will lead to a deduction of recycled amounts.



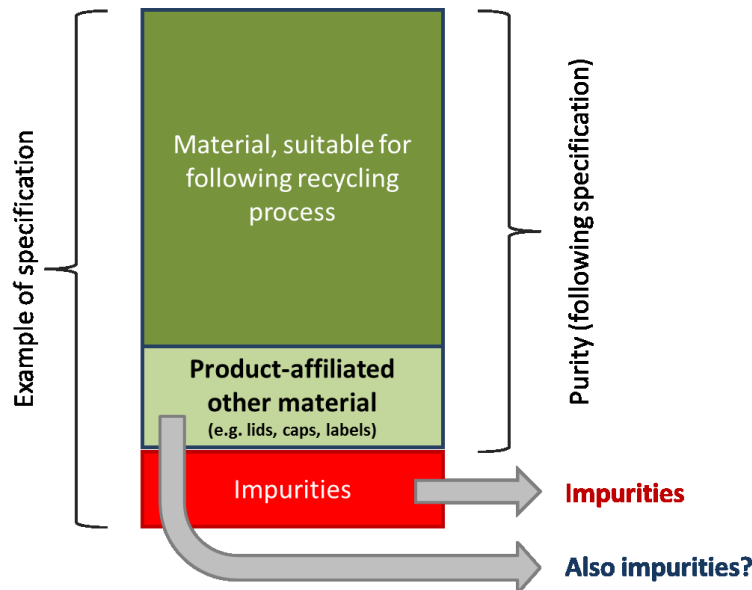


Figure 3: Definition of impurities

Based on the analysis and evaluation of the proposed calculation method:

- ➔ **cyclos/HTP recommends defining the point of measurement as “input into a final preparing for re-use and recycling process” but strongly suggests a clear definition of the term should be added in order to avoid misapplication of the legislation.**

Remark: cyclos/HTP defines a “final preparing for re-use and recycling process” as a process that occurs in a designated facility, the final product of which will not be subject to any further waste-specific treatment (meaning changes in quantity and quality of the material).

- ➔ **cyclos/HTP recommends eliminating the intended subtraction of impurities at the point of measurement completely.**

A potential alternative approach to this might be to add a clear definition of what constitutes “impurities” before changing the 2% threshold for impurities to a more feasible level achievable by all material fractions (in the range of 5% - 10%). Even though defining material-specific levels of impurities would be a more balanced approach, cyclos/HTP foresees significant obstacles in achieving a workable solution.

### 3. Packaging composed of different materials

The Commission's proposal to separately count material components of packaging composed of different materials did raise concerns among a broad range of stakeholders that such a change would not be technically feasible to implement. Furthermore, the Commission's use of the term „packaging composed of different materials“ rather than „composite packaging“ used in current legislation is not in line with the Commission's intent to harmonise terminology and also poses questions pertaining to the definition of this new term.

- Typically, “composite packaging” is characterised by an inability to separate the packaging components by hand. The Commission's clarification that „packaging composed of different materials means packaging where the different materials can be separated by hand or not“

does not clarify whether the Commission is talking about composite packaging. It would therefore suggest that almost all packaging (composite packaging and packaging made of different materials) belongs into the category of „packaging composed of different materials“.

- Regardless of whether “packaging composed of different materials” refers to composite packaging or packaging simply made of several different materials, the proposed separate counting of packaging components to their respective materials is not possible because the accurate share of each packaging material in the input into a final preparing for re-use or recycling process is unknown and can therefore not be accounted for. Obtaining such information requires looking at the actual recycling process, which would in effect lead to an output-based calculation that runs contrary to the Commission’s intent to fix the point of measurement at the input.
- In addition, such an output-based view poses the danger that downcycling will be encouraged because in order to reach the packaging recycling targets, processes that produce a high amount of output (at a lower quality) might be advantaged compared to complex processes that produce a product of a very high-quality (but fewer amounts).
- Generally, a material-specific allocation of the output fractions from a final preparing for re-use and recycling process to the respective input contents is technically not possible due to a number of unknowns regarding the composition of both the input material or the fact that materials from origins other than collected packaging waste might be added during the recycling process.

- ➔ **cyclos/HTP recommends that the Commission refrains from using the term “packaging composed of different materials”.**
- ➔ **cyclos/HTP recommends that the current method of counting components of composite packaging towards their predominant material should not be changed.**