



Executive Summary

FORMULATION OF METHODOLOGY, CRITERIA, AND REFERENCES FOR RECYCLING RATE MEASUREMENT; MINIMUM CONTENT OF RECYCLED MATERIALS IN PRODUCT AND/OR PACKAGING; AND CRITERIA FOR PACKAGING PRODUCT MARKERS

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EXECUTIVE SUMMARY

The need for technical guidelines as a derivative policy of PermenLHK 75/2019

Minister of Environment and Forestry Regulation Number 75 Year 2019 (PermenLHK 75/2019) on the Roadmap for Waste Reduction by Producers is an instrument that broadens stakeholders involvement in waste management. Producers as key actors in the upstream segment of the value chain of a product/packaging are encouraged to expand their responsibilities for their products, from the design stage down to the waste management of post-consumer products/packaging. Producers are also required to formulate a waste reduction plan, as well as to implement and report it to the Ministry of Environment and Forestry (KLHK). However, an effective implementation can only be achieved if all parties involved have the same understanding on aspects related to the waste reduction concept, which include: recycling rate and its measurement, minimum content of recycled materials in product packaging, and product packaging markers.

Article 18 section (b), (c) and (d) of PermenLHK 75/2019 mandates the Minister of Environment and Forestry to: i) formulate criteria and methods to determine and measure recycling rates, ii) formulate criteria for minimum content of recycled materials in packaging products, and iii) compile criteria for product packaging markers. This document seeks to provide input that can be used in formulating the above three criteria, and subsequently mainstreamed into the derived guidelines of PermenLHK 75/2019, in which such guidelines will be used as a reference for stakeholders.

Recommendations on criteria and methods to measure recycling rates

The recycling rate of a plastic-based material/product is determined by the following seven aspects:

- i. Resin type: Currently, HDPE and PET are the two most feasible resin types to be recycled due to technical reasons (availability of material supply and technology, and can be implemented in a large scale) and economic value (cost-effective);
- ii. Size, shape and color: a typical recycling facility requires a specific size, shape and color for their feedstock. Problems arise when sorting is done manually since human error could occur. Poor sorting will decrease the feedstock's quality, which in turn will reduce the quality of the produced recycled products.
- iii. Liner, label and component: the majority of products are formed by several elements with different materials, for example plastic bottles use labels and adhesives to attach the labels. The easeness to separate different materials (in terms of types of materials and size) will affect the recycling rate.
- iv. Contamination: can be caused by the existence of wrong types of plastics or material in a certain stream. Contamination will decrease the effectiveness and quality of the recycling process, aside from damaging the recycling machine.
- v. Additives: additives in plastic products could negatively affect human health and the environment, so that these potential impacts should be considered in the entire lifecycle of the products.
- vi. Availability of processing facility: a packaging can only be called recyclable if collecting and recycling facilities are available in the area where the packaging waste is located.

vii. Economy and market: a material will be seen as attractive to be recycled if it is considered to have a high economic value or if the demand is sufficient.

Considering the above seven aspects as well as the current waste management system and data availability, the measurement of recycling rates is recommended to be assessed by taking into account three aspects, which are: i) material proportion; ii) collection rate; iii) spatial consideration. The proposed measurement system is presented in Table 1.

Table 1: Measurement system for recycling rate

NO.	CRITERIA	DESCRIPTION	SCORE			DATA SOURCE
			1	2	3	
SC1 ¹	Material proportion	Number of elements/plastic types or plastic layers that compose a packaging and the easeness to separate between elements/types	Product/packaging composed of >1 types of plastic that can only be separated by chemical process	Product/packaging composed of >1 types of plastic, which separation requires mechanical processing	Product/packaging composed by only 1 type of plastic or >1 types of plastic that are easily separated	Recyclable waste data gathered by waste banks, waste pickers and aggregators
SC2	Collection rate	Quantity of packaging collected by waste collectors to ensure the continuity of feedstock supply	Product/packaging rarely collected by recyclable waste collectors, only accepted by a specific collector	Product/packaging moderately collected (quantity-wise) by recyclable waste collectors	Very high demand for the product/packaging, so that the collection rate by recyclable waste collector is relatively high	
SC3	Spatial consideration	Spatial distribution of the packaging waste collection; evenly distributed or concentrated in a certain area	Packaging waste collection is concentrated in Java Island	Packaging waste collection is concentrated in western part of Indonesia	Waste collection is evenly distributed from western to eastern part of Indonesia, including small islands	

Source: Analysis, 2021

This method in determining the recycling rate has been tested on 45 post-consumer products/packagings produced by producers regulated in the PermenLHK 75/2019², including packagings that are made from material that will be phased-out gradually based on PermenLHK 75/2019 to see the potential loss of economic value from the phase-out action. Analysis shows that eleven out of the assessed 45 products/packagings have a high recycling rate, in which this high rate is generally owned by PET, HDPE and LDPE plastics; and one type of PP packaging (beverage cup). Considering the future implementation of EPR, those packagings and materials with a high rate can be used as subject for EPR piloting since their value chains are already mature.

Another critical finding is that 6 of 11 packaging have a higher rate for waste generation, and yet only 3 have a higher recycling rate, namely: bottles (PET), cups (PP) and plastic bags (HDPE-film). This finding shows that there is a gap in the management of packaging with high potential (from supply and continuity perspective) to be recycled. This gap is stemmed from the unavailability of leverage that could increase the economic value of recycling the products and catalyze the recycling process. Both the recyclers and off-takers for such products are

¹ SC = Selection Criteria

² Referring to Technical Paper – Recommendation on Methodology to Measure Recycling Rate of PET and PE Packaging/Products

still limited. Thus their economic value is considerably low and those types of waste are not a priority for collection by the waste pickers or waste banks.

A balance in supply and demand, complemented by an enabling environment, is the key to increase a product's recycling rate. Availability of policies that could drive the collection of waste with low economic value could certainly catalyze the process. Further, the development of recycling technology for the low value waste, as well as the supporting facilities should be fostered to further increase the collection rate.

The recycling rate of a product can also be enhanced by improving the packaging design. At the moment, a guideline on recyclable packaging is not yet available in Indonesia. Hence the formulation of this particular guideline should be a priority for the implementation of PermenLHK 75/2019.

Recommendations on the criteria of minimum recycled content in product packaging

ISO 14021-Environmental Label and Declaration, and ISO 18604-Packaging and Environment are two primary international standards that contain concepts of minimum recycled content and recycled material. [The gap here is the absence of a method to calculate the recycled content that is mutually agreed both at global and national level.](#) The label of some products have indeed provide information on their recycled content, but there is inconsistency in the calculation method to determine the recycled content. The most feasible way to measure the recycled content and determine the minimum content is by conducting mass balance analysis of a product (along its production process) based on its polymer. But in practice, such method will still not be able to give the exact value of this content, particularly when dealing with large scale products. Therefore, what can be done is [formulating the criteria for minimum recycled content.](#)

Such formulation requires an analysis to be done on minimum recycled content and also prioritization of materials that need to be regulated for this content. Analysis was done on the same product/packaging sample that was used to analyse the recycling rate. [Factors that were considered in the analysis are aspects that influence the recycling rate \(Table 1\), recycling urgency and circularity.](#) The latter aspect is focused on the closed-loop recycling rate of a plastic/packaging. The proposed measurement system is outlined in Table 2.

Table 2: Measurement system for circularity

NO.	CRITERIA	DESCRIPTION	SCORE			DATA SOURCE
			1	2	3	
SC4	Closed-loop recycling rate	Is there any recycling value chain for the plastic/packaging (into plastic or the same packaging) in place?	Product/packaging typically recycled into other products (not the same products)	Product/packaging typically recycled into the same product, but the loss of material is significantly high throughout the process, OR product/packaging is recycled into the same product but such practice is not widely available due to weak market support for the product (low market acceptance)	Product/packaging typically recycled into the same product and complemented by higher market demand	Interview with recycling actors

Source: Analysis, 2021

The circularity aspect of the product sample was then compared with their recycling rate to assess the closed-loop recycling potential of the product. Analysis shows that out of eleven packagings with high recycling rate, only one has a high circularity potential: the PET bottle. This indicates that PET bottles have a high potential to be recycled into the same product.

Another notable finding is that there are three packagings with high recycling rate albeit low and medium circularity rate, that are targeted to be phased-out in 2030 based on PermenLHK 75/2019, which are plastic bags (HDPE film), beverage cups (PP) and boxes/trays (PP). The regulation further mentions that before 2030, the minimum recycled content for the three packagings should be at 50%. Owing to this matter, there is a need for a standardization/guidelines on minimum recycled content that can be referred to by the relevant industry actors.

Reflecting upon the analysis results, the proposed recommendations related to minimum recycled content criteria are as follow:

a. Prioritization of material

Considering the recycling rate, level of urgency and recycled content, during the transition period to the phased-out point in 2030 (referring to PermenLHK 75/2019), there are six types of packaging that are recommended to be prioritized for regulation by a standard on minimum recycled content of materials produced by producers³. The six types of packaging made of three types of plastic polymers are: PET bottles, PET cups, HDPE packaging caps/lids, HDPE bottles, HDPE plastic bags and LDPE packaging caps/lids.

Of these six priorities, plastic bags are the only packaging that is targeted to be phased-out in 2030 (in the retail sector). Meanwhile analysis shows that plastic bags have a relatively high generation rate, which then place them as highly urgent for recycling. Therefore, after the transition period, a strategy is needed to properly manage the lifecycle of plastic bags that are produced by non-producers⁴, for example by formulating standards for the content of recycled materials for packaging used or produced by non-producers.

b. Minimum recycled content in packaging value chain

There are three stages within the packaging value chain where the minimum recycled content plays a role, namely:

- Post-consumer plastic waste generation: the quantity of each polymer will affect the potential of a packaging to meet the minimum requirements of recycled content.
- Feedstock for recycling process: type, quality and quantity of a feedstock are not only influenced by the demand for recycled material, but also the expected quality of the particular material.
- Manufacturing: the existence of a policy on minimum recycled content will provide a standardized output from the recycling process. Additionally, the effectiveness of manufacturing process in supporting the circular economy can also be boosted by the availability of a design guideline for packaging.

c. Policy enrichment

³ Producers referred to here are producers working in three (3) business sectors that are subject to responsibility under PermenLHK 75/2019

⁴ Non-producers referred to here are business sectors that are not subject to responsibility under PermenLHK 75/2019

Indonesia already has a policy regarding the minimum target for minimum recycled content as well as the use of recycled materials in food-related products/packaging and material criteria for food packaging. To enrich and strengthen the existing policies, it is recommended to formulate the following guidelines/standards:

- **Standards on minimum recycled content**
Taking into account the transition and phase-out period, the following two standards for minimum recycled content are recommended to be developed:
 - Minimum recycled content standard for objects regulated in the Roadmap of Waste Reduction by Producers as a reference for obliged producers under the PermenLHK 75/2019 (three business sectors); and
 - Minimum recycled content standard for objects NOT regulated in the Roadmap of Waste Reduction by Producers as a reference for products/packagings used by non-producers (business sectors not regulated by the PermenLHK 75/2019), including plastic bags during post-transition period.
- **Design guideline for recyclable packaging**
This guideline is not yet developed in Indonesia and should be a priority to support the move towards circular economy. The guideline development process can include aspects related to minimum recycled content and the recycling rate.

Recommendations on criteria for product packaging markers

Labels and claims are the two primary markers for a product or packaging. Assessment was done to different available labels and claims at global and national level. Findings generated were used to formulate recommendations for the development of a labelling and claim system.

a. The concept of labels and claims

Labels have the function to make it easier for consumers to identify an item as well as being a medium for producers to provide key information related to their products (including their content). In relation to waste management, good packaging labelling will facilitate the process of identifying types of waste and sorting packaging waste, so that in the end it can increase the level of collection and recycling of materials. ISO 11469:2000 on General Identification and Marking for Plastic Products is a widely used international standard for the codification of plastics and has become a reference for labeling plastic materials.

A claim is a self-declaration of the attributes of a certain product, including the content, manufacturing process, and positive impact of the product/its manufacturing process. Due to its self-declared nature, the credibility of a claim tends to be lower than a label, since the use of the latter often requires certification or standardization processes.

b. Assessment of labelling systems

United Nations Environment Programme (UNEP) divides labels into five categories, namely: i) minimum recycled content, ii) bio-based plastic, iii) recycling guideline, iv) recycling financing, and v) compostability and biodegradability. Assessment was done to labels that represent each of the UNEP categories by considering the fulfillment of the label's content against the criteria of a number of aspects, namely: i) reliability, ii) relevance, iii) clarity, iv) transparency, and v) accessibility. The assessment was carried out using net assessment methods based on expert judgement, where a number of experts became panelists to assess

the conformity of each label to the identified criteria. The individual scores were then aggregated. The key findings of the assessment are as follows:

Table 3: Findings of assessment of labelling systems

MINIMUM RECYCLED CONTENT	BIO-BASED PLASTIC	RECYCLING GUIDELINE	RECYCLING FINANCING	COMPOSTABILITY AND BIODEGRADABILITY
<ul style="list-style-type: none"> • Methods to calculate the percentage of recycled content are inconsistent, and pre-consumer* content can still be found in several types of labels, which then weaken the product's claim on minimum recycled content. • Some logos resemble ecolabels, so there is potential for misinformation. 	<ul style="list-style-type: none"> • Lack of clarity on the differences to biodegradability labels. • No clear information on the utilized biomass (such as: from biomass or made from sustainably sourced biomass). 	<ul style="list-style-type: none"> • Guideline that focuses on local context, which might pose a challenge when the product is distributed in global market. • A well-regarded guideline provides more detailed and specific information. 	<ul style="list-style-type: none"> • The use of illustrations that suggest a universal recycling symbol can create confusion for consumers when being applied in packaging that is clearly unrecyclable. • Transparency in financing mechanisms is a positive point. 	<ul style="list-style-type: none"> • Clear differentiation between the labelling context and availability of a composting facility. • Label for marine, soil, or water biodegradability potentially raises false impression that it is permissible or acceptable to dispose plastic packaging in those areas.

*Pre-consumer content in this case refers to recycled content that gets lost/turns into waste during the production of goods/packaging, so that the material flow does not reach the consumers.

Source: Analysis, 2021

Environmentally friendly label (Ecolabel) from Indonesia is one of the assessed labels. This particular label is assessed to have a weakness in terms of unclear communication towards the consumers (both the image and the text used in the label), suggesting that the product is compostable. On a positive note, the labelling mechanism for this particular ecolabel has been standardized at national level with credible standards. Other labels that will be developed in Indonesia should ensure that they clearly communicate materials that were used in the production, their recyclability and the proper disposal procedure.



Ramah Lingkungan

Figure 1: Ekolabel Indonesia

c. Assessment of claim system

An assessment was done for twelve products that included claims in their packaging/product. These products were then grouped into five categories to be assessed. Findings in each category are presented in Table 4.

Table 4: Findings of assessment of claim systems

MADE FROM RECYCLED PLASTIC	MADE FROM OCEAN PLASTIC	BIOBASED	COMPOSTABLE AND BIODEGRADABLE	RECYCLABLE
<ul style="list-style-type: none"> • Varied calculation methods make comparability between claims difficult. • Can be mistaken for being recyclable (potentially creates confusion). 	<ul style="list-style-type: none"> • Inconsistent use of the relevant terminology and definition. • Raise consumers' awareness on issues that are in line with their concerns. 	<ul style="list-style-type: none"> • Possibility of misinterpreting the biobased claim as biodegradable. • Not all biobased sources are sustainable and responsible. 	<ul style="list-style-type: none"> • Claims are irrelevant or meaningless to those with no access to the appropriate infrastructure, and the group of people with access is very small. 	<ul style="list-style-type: none"> • The use of universal recycling symbol is not regulated. • The recyclability of a product depends on availability and accessibility to recycling facilities, which is not universal. Thus inconsistent with use of universal recycling symbol.

Source: Analysis, 2021

d. Recommendations on the development of systems for labelling and claims

Reflecting upon the above assessment on labels and claims, the following recommendations are proposed:

- Enriching the function of labels and claims

To support the creation of a circular economy, the function of labels and claims should be expanded. Not merely as communication and branding media of the producers, but also as an education vehicle to improve consumers knowledge and guide them towards more sustainable and responsible consumption patterns and waste management options.

Related to this matter, standards and policies that regulate packaging design in line with circular economy goals are clearly needed. Labels should clearly communicate the design context and sustainability element within by also using language that is easily understood by the consumers. While for claims, the needed improvement is a list of descriptions and terminologies for each category of claims, or at the very least a standardized terminology. This will help to avoid misinformation or misperception or confusion for consumers or waste management actors.

- Label certification



Label certification aims to standardize information or indications of a label on a product. FUREC or “Fully Recyclable” managed by PT Standarisasi Sertifikasi Indonesia is an example of a label that indicates (or acts as a marker for) a plastic packaging that can be mechanically recycled and can provide economic benefits at the end of its lifetime.

Figure 2: FUREC Logo

The FUREC label intends to help the waste management actors to identify waste that is categorized as recyclable (Layak Daur Ulang/LDU), such as multilayer packaging. So that in the end, an increase in the plastic collection rate (particularly of those materials considered to have low economic value) and the associated economic value is expected. Further, economic value given by the FUREC logo is also expected to shift producers' perspective and practice towards using packaging that is categorized as LDU.

- The role of the government in supporting a labelling system

The government needs to create an enabling environment to support the current labelling system and drive the producers to certify their products. Measures that can be taken to support this enabling environment creation are:

- Formulate criteria for the labelling of products/packaging made of recyclable material by referring to the previously discussed recycling rate and recycled content (and the relevant recommendations).
- Develop a certification system for the current labelling system (especially for recyclable packaging). The primary target group for the certification are organizations that develop labelling systems or issue eco-labels.

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Imprint

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