

Steps towards standardization of plastic reusable packaging

A preliminary study into standardization in the reuse sector

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1. Introduction – risks of reuse systems

Reuse systems are of all times. Many Dutch people remember the milkman who gave his glass milk bottles in exchange for a deposit. Throughout the 20th century, however, these systems have increasingly fallen out of fashion. Apart from a few examples, such as the *Bruine Nederlandse Retourfles* (BNR, see page 6), reusable packaging has been abandoned in favor of mostly plastic alternatives that are intended for single use.

However, a reverse transition towards more reuse has started. Due to insights into littering and opportunities regarding the sustainability of reuse systems, more reuse is increasingly seen as a positive development. This trend is further driven by legislation such as the Single Use Plastics Directive (SUP), which, as of January 1st, 2024, makes it mandatory for restaurants to offer reusable products such as drinking cups and meal containers for on-site consumption¹. In addition, the European Commission's proposal for the Package and Package Waste Regulation (PPWR) can provide an even stronger push with a series of quantitative reuse targets for specific product groups². The transition from single-use to reuse requires more than adjusting the product. The process of using and handling reusable products must also be adjusted. For example, many systems require choices regarding logistics and cleaning. In addition, it requires a different way of consumption and use. Consumers in open environments must be encouraged to hand in used products.

Risks of proliferation of reuse systems

Time is short until the introduction of obligations for reuse solutions as part of SUP legislation. Under pressure from legislation, entire sectors (e.g., hospitality and catering) will therefore switch to reuse systems on short notice, which entails risks:

1. Because they cannot link up with existing initiatives, many parties might (try to) reinvent the wheel separately from each other. This time and effort could be spent better.
2. Single-use is a convenience product to which consumers and producers are accustomed. Reuse requires more actions and is therefore less convenient by definition. Reduced convenience curtails the success rate of reuse systems.
3. Efficient reuse systems often require a joint approach, but joint action requires time that is often not available due to the rapid introduction of the SUP legislation. Therefore, the risk of inefficient reuse systems is high.
4. Products intended for reuse only offer environmental benefits compared to their single-use counterparts when they are indeed collected and reused several times. Whether this happens mainly depends on the efficiency of the system in which they are used. Therefore, there is a chance that a proliferation of reuse solutions can lead to systems with a higher environmental impact than single-use solutions.

Standardization could prevent proliferation

In sessions that took place in the context of the Reduce & Reuse Working Group of Plastic Pact NL, standardization was often put forward as a requirement in the transition to large-scale use of reuse systems. At the same time, formal standardization of reusable packaging or reuse systems is not (yet) taking place. After all, standardization can also lead to restrictions such as lock-ins and/or inhibition of innovation.

In response to the above, the steering committee of the Plastic Pact NL (with the Ministry of Infrastructure and Water Management as formal client) has asked Rebel to investigate which steps can and should be taken towards standardization of reusable packaging.

1. See the [Single-Use Plastics Directive](#) and the [Ministeriële regeling kunststofproducten voor eenmalig gebruik](#).
2. The proposal for the PPWR can be found via [the site of the European Union](#).

1. Introduction – this study

The steering committee of the Plastic Pact NL has asked Rebel to explore what steps can be taken towards standardization of reusable packaging. The research question is therefore:

"What steps can the Ministry of Infrastructure and Water Management or other parties take to activate or stimulate standardization of reusable packaging?"

The research focuses specifically on the standardization of reusable plastic (drinking) cups and meal packaging, as these products will have a reuse obligation in the Netherlands from July 2023 onwards. The study distinguishes between application in an open environment and a (semi-)closed environment.

To answer the main question, the following sub-questions were posed:

- 1) Why is standardization seen as a solution?
- 2) Which aspects can be standardized in reuse systems?
- 3) What opportunities and barriers exist for standardization of reusable packaging?
- 4) Which paths can be followed towards standardization?

As indicated by the research questions, this research serves as an initial exploration into standardization and is not focused on the technical

content of standards. In other words, this study aims to identify specific actions that stakeholders can take to establish a standard.

Method

To answer the questions, Rebel carried out a desk study into existing standards and studies, an (extensive) survey among Plastic Pact NL members of which 11 participants responded, nine interviews with various parties and additional correspondence with several parties. Annex 1 contains a list of interviewees and Annex 2 contains the questions asked in the survey.

Reading Guide

Sub-question 1 is answered in Chapter 2, starting on page 5. The second sub-question is answered in Chapter 3. Chapter 4 answers the third sub-question and the fourth and final sub-question is answered in Chapter 5. Chapter 6 describes conclusions and recommendations for the government and other parties.



2. Standardization as a solution – an agreement to avoid inefficiency

Standardization is often seen as a solution to potential inefficiency of reuse systems. It prevents products and processes from being designed in a way that hinders their large-scale use. For the definition of a standard and an explanation of standardization bodies, see the box at the bottom right.

In 2020, PackBack carried out a study on behalf of Kennisinstituut Duurzaam Verpakken (KIDV) into the potential for standardization of reusable food packaging¹. This research shows that a lot of standardization is already being applied to systems for reusable secondary and tertiary packaging² in the B2B context, because it can lead to a reduction of operational costs (and a lower environmental impact as a bonus). Reuse systems also occur in primary packaging (which goes B2C) (e.g. the BNR, see next page), but few products or systems have yet been formally standardized. Reasons for this are large variations in packaging and a lack of shared infrastructure.

In both the PackBack report and during interviews, two particular standards were widely recognized as relevant and useful across various industries and thus evident to connect to or use:

- **Europallet** (officially: EUR-pallet) is the well-known wooden pallet with dimensions and specifications laid down by the European Pallet Association (EPAL)³. Because this standard is widely used, it is important for logistics of reuse systems to link up with this standard.
- **Gastronorm** (abbreviated to GN) is a commonly used size classification of baking and roasting systems and storage in restaurants and catering,

1. The report can be found on the [KIDV website](#).
2. Primary packaging is placed directly around the product. A secondary packaging is placed around this, e.g. foil or boxes. Tertiary packaging is the level above, for example pallets with shrink wrap.
3. See the [EPAL website](#).
4. This norm can be found on the [NEN website](#).
5. PR3 stands for Partnership to Reuse, Refill, Replace Single-Use Packaging. The standards can be found on the [Resolve website](#).

laid down in the European standard EN 631⁴. Gastronorm often refers to the well-known stainless-steel containers, but because many sizes have been derived within the sector of the GN, plastic applications also often connect to these dimensions.

In addition to these two standards, a standard already exists for reusable packaging: PR3⁵, an initiative of Resolve, an American NGO. These standards have been developed with the aim of integrating and supporting various reuse initiatives. PR3's standard sets core requirements for reuse systems, making it easy for companies to connect to shared infrastructure. PR3 is seeking the designation of the American National Standardization Institute (ANSI) for its standard. Even though the PR3 standard provides a good overview of important parts of a reuse system, it only sets general requirements and does not prescribe definitive product standards.

Standardization can have positive effects on efficiency, interchangeability or interoperability, among other things. However, there are also disadvantages. Standardization may create unwanted lock-ins and reduced flexibility and may limit innovation.

What is a standard?

A standard or norm is a recognized agreement, often in the form of a document, about specifications or criteria of a product or process. Standards can be established within an organization, between organizations, or by recognized standardization bodies. Some standards are laid down formally, but often a standard also exists as an informal, organically formed agreement.

The Netherlands Standardization Institute, better known as NEN, is the national standardization body of the Netherlands and produces NEN standards. The European organization is called CEN and the international organization for standards is ISO, which develops the well-known ISO standards.

2. Standardization as a solution – examples

The textboxes below describe examples of standardized products or reuse systems.

The Brown Dutch Return Bottle (in Dutch: de Bruine Nederlandse Retourfles or BNR)

What? Nederlandse Brouwers (before 2010 known as Het Centraal Brouwerij Kantoor) developed the BNR and has used it since 1986. Since then, most beers from major Dutch beer producers are filled in this type of bottle. The uniform bottle pool with an extensive deposit, collection and sorting system was set up voluntarily in the 1980s as an "answer to the high cost item for breweries for the purchase of new bottles as well as for the use and, above all, ease of return for the consumer"¹

Why is it a good example? The scale is unprecedented for a Dutch reuse system, which is partly due to the many collection points. In 2016, approximately 2.2 billion beer bottles fell within the current deposit system, and in practice the BNR bottles were reused 20-30 times. A lesson from this system: pocketing of product (beer bottle) in secondary packaging (crate) is leading.

Zero Waste Cup

What? Zero Waste Cup² is an initiative of Paardekooper b.v. and PackBack to set a standard for reusable coffee cups; not only in design but also in terms of the reuse system. Entrepreneurs can join Zero Waste Cup, after which consumers pay or receive a deposit for the cups via an app.

Why is it a good example? Zero Waste Cup shows how a digital platform interacts with standardization. Cups can be scanned via QR codes, so that it is clear to entrepreneurs where their cups are and whether their stock needs to be restored.

Similar initiatives: BillieCup and WeCup.

German unmanaged pools

What? In Germany, there are several local unmanaged pools for glass jars and bottles.³ Any party can join by purchasing a load of jars and cooperating (physically or financially) in washing facilities. Incidentally, some suppliers of Ekoplaza have been supplying glass juice and dairy bottles for years according to roughly the same principle, but these systems are very small-scale and not open like the German counterparts.

Why is it a good example? The unmanaged systems show that standardization can be useful for suppliers from an economic and pragmatic point of view. At the same time, the pools are increasingly being closed for other parties due to the problem of 'freeriders', parties who do use the products, but do not cooperate in washing facilities.

SwapBox

What? Swapbox⁴ is a company that relieves companies, mainly catering packaging and coffee suppliers, of logistics and cleaning of reusable meal packaging. Founded in 2020, now operating in the Netherlands and Belgium, they are working to open a new, large-scale cleaning facility. In addition to SwapBox, several companies offer similar services, see examples below.

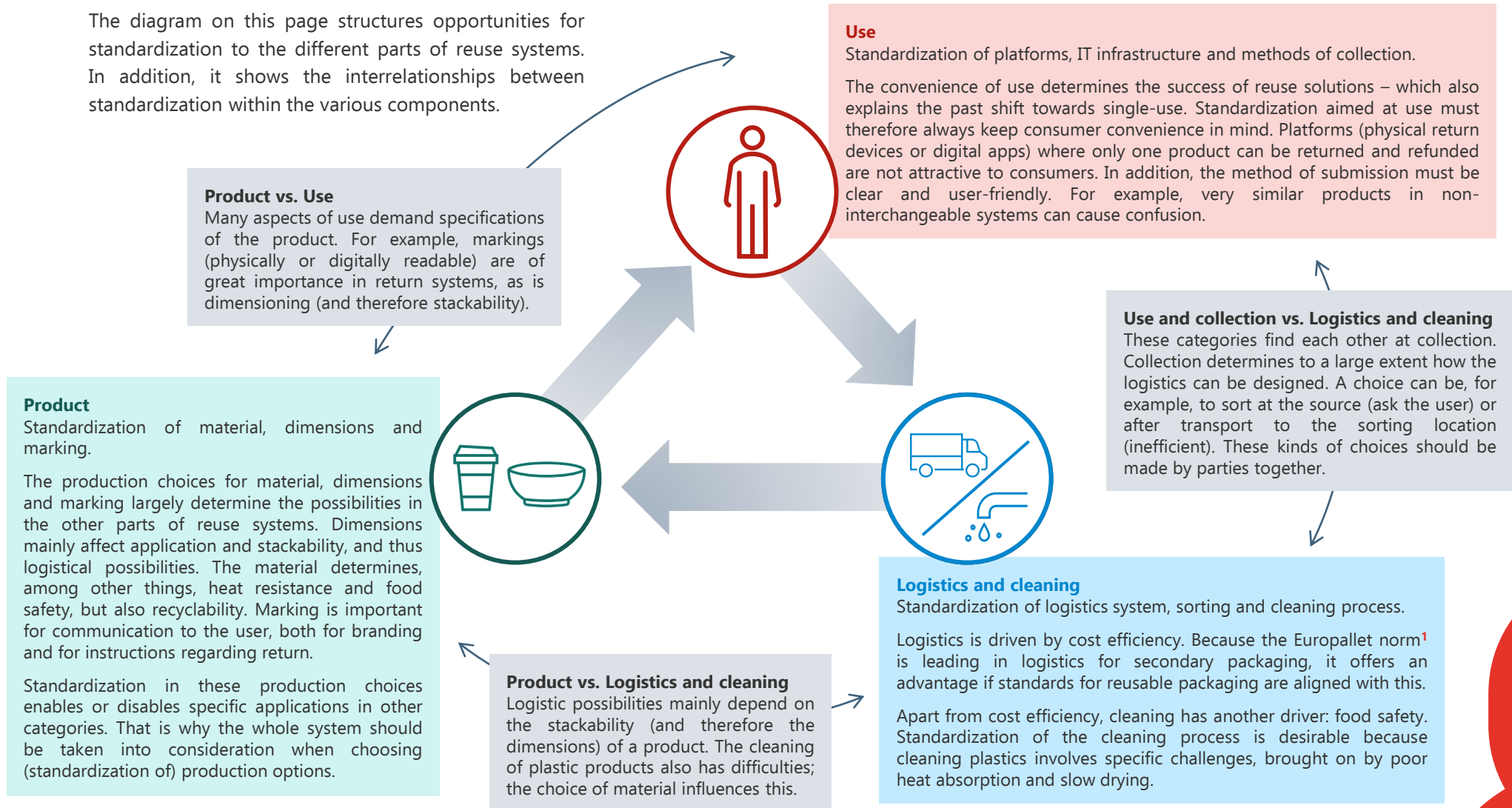
Why is it a good example? Companies such as Swapbox are setting standardization in motion. Because they determine which meal packages they will or will not service, their clientele follow the set 'standard'. When SwapBox (or a competitor) gains a large market share, an informal standard develops organically.

Similar parties: Ozarka, Vytal and ReCircle.

1. See the [website of Nederlandse Brouwers](#) for information on the BNR (deposit) system.
2. See [Paardekooper's website](#) for information on the Zero Waste Cup.
3. An example is the [Mach Mehrweg Pool](#) or MMP.
4. See [swap-box.com](#).

3. Options for standardization

The diagram on this page structures opportunities for standardization to the different parts of reuse systems. In addition, it shows the interrelationships between standardization within the various components.



1. See page 5 for information on the Europallet norm.



4. Opportunities and barriers – categories

Opportunities and barriers have been mapped out through a survey and interviews. Specific attention was paid to drinking cups and meal containers, and two categories were distinguished: closed and (semi-) open environments. The next three pages describe the identified opportunities and barriers, divided according to the three parts of reuse systems identified on the previous page. The opportunities and barriers are described for each part based on the categories drinking cups, meal containers, closed environments and (semi-) open environments. In addition, general opportunities and barriers are described for each component.

Drinking cups

The drinking cups category includes both plastic reusable cups for hot drinks (such as coffee/tea) and plastic drinking cups for cold drinks (such as soft drinks/beer). From 2024, single-use drinking cups may no longer be offered for on-site consumption due to SUP legislation¹. For consumption on the go (e.g. coffee to-go), takeaway or delivery, single-use may no longer be provided free of charge and a reusable alternative or 'bring your own' must be offered.

Meal containers

The same rules apply to (partially) plastic meal packaging as to drinking cups. This means that takeaway or delivery restaurants must offer a reusable alternative to disposable meal packaging.

1. The ministerial regulation makes an exception for offering highly recyclable (single-use) alternatives if collection targets are met. See assessment frameworks for different product groups via [this link](#).
2. A distinction can be made between flows that go to an on-site washing facility or an external washing facility. For the relationship between return flows and washing facilities, see the study '[Nederland schoon op schaal](#)' door Mission Reuse.

Closed environments

Both one-off events (such as festivals) and ongoing locations (such as amusement parks and offices) are considered closed environments. Restaurants without take-away or to-go also fall into this category.

(Semi-)open environments

Pick-up and to-go locations are defined as open environment. There are two types of return flows²: 1) packaging that is collected at home or 2) packaging that is returned to a drop-off point, which can be the sales location itself.

A common barrier: branding

Branding is a barrier to standardization across all categories. It is important for companies that their products are recognizable, which encourages 'deviation from the norm'. You can even see this effect within the most successful reuse system in the Netherlands: beer bottles. Various beer brands such as Heineken and Grolsch have deviated from the BNR in order to attain their own look and style with their bottles. Despite their deviation from the standard, their bottles are still part of the BNR system, but this has an impact on the efficiency of the system as a whole.

There are two options to retain branding in standardized reuse systems. The first is **reversible branding**, i.e. branding via a removable sleeve or label, or by using soluble ink. However, these solutions provide an extra production and processing step and possibly an extra waste stream if the sleeve is not reusable. The alternative is **sorting**, where products are sorted according to brand after handing in. The latter happens, for example, within the BNR system.

4. Opportunities and barriers – product

General

Many barriers in use, logistics and cleaning can (partly) be addressed by applying standards to the product.

In interviews it came up that standardization of products happens more or less organically. When choosing which products to offer, producers base themselves on the (same) consumer demands in the market. However, it is uncertain what the outcome of such an organic process is, and how desirable it is. In addition, determining 'the right time to standardize' is difficult.

Meal containers

- A barrier in meal packaging is the number of applications/dishes. The development of a standard for each type of dish seems inefficient. On the other hand, in cafeterias for example, different sizes (from A2 to A51) are already the standard for chips and snack trays.
- For large (takeaway) restaurants, branding will be a reason not to focus on standardized meal packaging.
- For smaller locations (mainly takeaway and delivery) that attach less importance to branding, standardized reusable meal packaging offers interchangeability options.

Drinking cups

- Standardization of cups for hot drinks is referred to as low-hanging fruit. A choice for one standard set of dimensions and choices regarding material offers all

coffee suppliers interchangeable models, which can also be supplied by all producers. This makes deposit systems easier to implement. Various initiatives such as Billie Cup¹ and Zero Waste Cup² show that local pools can be set up with a standardized coffee cup. One standard enables a system with a nationwide coverage.

- Drinking cups for cold drinks are more often used in closed environments than their counterparts for hot drinks. However, standardization could offer logistic advantages for many purposes. At this moment, many festivals still seem to opt for a disposable cup combined with high collection and recycling rates.
- Conversations have started about developing a standard for drinking cups at the NEN.

Closed environment

In the closed environment, standardization of the product seems less relevant. In a closed environment, the products can be kept on location and no exchange takes place with other locations.

(Semi-)open environment

- There are still few good solutions for reusable packaging in the (semi-)open environment while there is a great opportunity due to the large volume (and the risk of litter).
- Standardized markings on products can help with communication about reuse systems and collection to consumers.

1. See the [Billy Cup's website](#).
2. See the examples on page 6.



4. Opportunities and barriers – use

General

Convenience is an important reason for the earlier trend towards disposable products. That is why, in addition to price, convenience via among others accessibility and availability ultimately determines the chances of the transition to reuse systems¹. Standardized reuse systems are one way to provide broad access.

Moreover, the deposit system is a proven concept for achieving high collection rates. Standardization is a prerequisite for a deposit system.

Meal containers

A risk of reuse systems for meal packaging is that consumers develop a large collection of different meal containers, which can only be returned in a few places. Standardized containers can reduce the variety and increase collection points.

Drinking cups

- Digital platforms or apps that track deposits, such as PackBack's app for the Zero Waste Cup², are financially feasible because of standardization. In addition, they encourage standardization: in order

to join a platform, a location must adopt the standard product. Such digital platforms can therefore be a driver for standardization.

- Machine return systems naturally require a standard that products must meet. The machine must be able to handle the dimensions and often requires a marking, code or NFC chip.

Closed environment

- A controlled closed environment makes experimenting with reuse systems with the goal of standardization easier.
- Within closed systems, branding is less important, which removes a barrier to standardization.

(Semi-)open environment

Litter is mainly created in the use phase. Standardization of markings about, for example, deposits or return options can improve clear communication to consumers and thus reduce litter.

1. For more information on a fair transition to reusable packaging, see [this report](#) by Unpacked and RREUSE, commissioned by the Rethink Plastic Alliance.

2. See the examples on page 6.

4. Opportunities and barriers – logistics and cleaning

General

(Return) logistics and cleaning are aspects that make reusable packaging systems more complex for service providers and users than single-use, especially in the (semi-)open environment. Locations that do not yet have washing facilities must invest in this transition (in the form of money, space and labour) or outsource it to parties such as Swapbox¹. These types of parties, just like digital platforms, can be a driver for standardization, because reusable packaging must match their facilities.

The possibility of several central washing facilities organized or subsidized by the government has been mentioned by various parties. These could provide efficiencies by pooling resources. Such facilities offer opportunities for standardization.

In addition, it was indicated that, because on-site cleaning or cleaning of plastics is new to many organizations, food safety may be at stake. There are already standards regarding hygiene and food safety, but these are often not focused on reusable plastic packaging. Properties of plastic, such as low heat absorption and difficult drying, pose specific challenges. Attention areas include plastic degradation, microplastics and additives

Meal containers

Meal containers are often relatively large and inconvenient to transport². Efficiency gains can be made there through standardization. Complying with the Europallet and Gastronorm are an advantage.

Drinking cups

Stackability and therefore standardization is of great importance for logistics. However, even with minimal differences in dimensions (which cannot be accommodated by standards), stackability can still be a problem.

Closed environment

- Even in the closed environment, not all suppliers of reusable packaging have access to washing facilities, which offers additional possibilities for external parties.
- Guidelines have already been developed for hygiene of reusable products at events³.

(Semi-)open environment

Return logistics provides extra complexity for the delivery of mainly meal packaging. Standard products can reduce complexity, for example because it makes exchanges between different market parties easier.

1. See the examples on page 6.

2. [This report by McKinsey](#) describes, in addition to this and other barriers, incentives for the use of reusable packaging.

3. See the ['Reusables' hygiene at events-guidelines](#) by the Sustainable Event Alliance.



5. Different paths lead to standardization

Since a standard is no more than an agreement, standardization comes in many different forms. This chapter describes different paths towards standardization. On the one hand the path to a formal standard via the NEN and informal standardization on the other. Coalition building is in the middle.

The formal way: NEN

The Dutch Standardization Institute NEN guides and monitors the standardization process. For example, they ensure representation of the entire sector and openness to all stakeholders. Without these conditions, a developed standard will not acquire the status of a NEN standard. In principle, parties other than NEN can also develop a recognized standard, but only through NEN can a standard be given the status of NEN (or CEN/ISO) standard. The connection to Europe via the CEN and international standards via ISO is one of the great advantages of the formal way of standardization.

At NEN, standards are developed in technical committees. NEN also has a national standard committee for packaging¹. To date, this committee has not developed and is not developing any standards related specifically to reusable packaging. This is partly because processes for reusable packaging take place at European level in line with European directives.

One disadvantage of formal standardization is the investment: parties contribute a designated sum to participate in standards committees and must invest a certain amount of time. For the former, a tailor-made solution can often be found for smaller parties. The time investment for small parties sometimes forms a barrier, however, which means that in practice often only large parties are involved. In some cases, the government contributes in order to involve small parties. Moreover, stakeholder participation is an important part of the processes of the NEN.

Another disadvantage is the long lead time for formal standards development. The process for a NEN standard takes at least 1.5 years, and in Europe this is often longer. An alternative is an agreement with less status, such as a NEN spec (1.5 week) or technical agreement (NTA, 3 months to 1 year).

1. For the standard commission on packaging see the [NEN's website](#).

2. See the examples on page 6.

A conversation has recently started between the KIDV, Rijkswaterstaat and NEN to investigate the development of an NTA for drinking cups.

The group chooses its own path: coalition formation

A formal standard is not necessary for standardization. A group of parties can form a coalition and choose to use a shared pool of products and/or facilities. Standardization is unavoidable here because the product, the logistics and possibly the cleaning are coordinated between the parties.

Coalitions generally benefit from more affiliated parties, as this increases coverage and cost efficiency. The BNR system² is a good example of how pooling within a coalition leads to standardization. A more recent example is Evernew, a coalition led by Mission Reuse that explores pooling of cleaning facilities.

A supporting party can serve as a catalyst in a coalition. This must either be independent party (such as Mission Reuse in the Evernew coalition) or represent the sector (such as the Dutch brewers with the BNR pool).

Waiting for the paved road: joining an existing initiative

In practice, standards develop automatically in a market. Producers and suppliers closely monitor each other and informal standards are formed in the market. In addition, market leaders eventually emerge who set the tone with their system or product(s). It is also possible that a developed standard becomes commonplace, an example is the Euronorm. Regardless of how an informal standard is formed, it is likely that other parties will follow suit from an efficiency point of view. Conversely, from an efficiency point of view, it is unlikely that a party will now develop reusable packaging that does not comply with the Euronorm or applicable standards for washing facilities.

The biggest disadvantage of this route is that (due to a lack of coordination) it is 1) uncertain when a standard will become commonplace and 2) whether it will result in an efficient system in terms of environmental impact.

6. Conclusions – coordination of standardization

Market approach

The Dutch government leaves standardization of products to market parties since these parties recognize where standards are needed and how they should be designed. Due to the reuse obligations in SUP legislation that will start this year, producers and suppliers of cups and meal containers will implement these in a pragmatic manner to comply with legislation. The time to develop standardized solutions or to align within the industry is very limited. This can create the risk of a wide variety of reuse systems and packaging and increased environmental impact of the plastic packaging system.

Standardization procedures should ideally be coordinated by a clearly identifiable party that represents the companies involved. Unlike many products (e.g. Nederlandse Brouwers for beer bottles), there is no clear industry association (or producer responsibility organization) for the various reusable packaging products. These products are often only partially covered by an industry or by several industries. Drinking cups for hot drinks are a good example, because service providers can fall under several different industry associations and are often small entrepreneurs. The lack of coordination increases the risk of proliferation of products and systems and possible related environmental impact and litter.

Coordinating the transition to reuse

Coordinating the process and the steps towards standardization will decrease the risk that the reusable packaging system will have a higher environmental impact compared to its single use alternative or that the system is less convenient for consumers. It is in the interest of specific sectors to meet the targets of new legislation (e.g. the reuse targets in the SUP directive). However, each party involved can give its own interpretation to this and set up their own reuse system. It is in the interest of the government/enforcement that these goals are met in a uniform and

standardized manner. For the government, the benefits lie in social effects and environmental impact. For enforcement and/or monitoring parties such as PROs, the advantages lie in the feasibility of monitoring and facilitation of systems. These overarching organizations with interest in a uniform (and intersectoral) systems should have a stimulating and facilitating role in the process towards standardization. Different options for facilitating the transition to reuse are described below:

- **Facilitating and/or stimulating organizations that oversee the development of standards.**
 - From their facilitating role, the Dutch government could try to place the coordination on standardization with a broad organization such as the AFV(/KIDV), Plastic Pact NL, the NRK, trade organization or with the NEN itself. If it proves difficult to find a single party, a combination of parties can be grouped into a working group. Such a working group could also take on a monitoring role.
- **Initiate the process of standardization**
 - To kick-off the process of standardization the Dutch government could initiate the first steps of standardization. The current initiative of initiating the process of developing a NTA at NEN by RWS and KIDV is an example of this.
- **Active monitoring of standardization** by the government provides insight into potentially undesirable trends. Based on this insight, it can be determined whether more action is required.
 - More action could, for example, consist of stricter enforcement of process standards.
 - The superlative degree would be to make (product) standards mandatory. However, this can have negative consequences, the most important of which is it disincentivizes innovation.

6. Conclusions – recommendations

On this page, recommendations are formulated that are aimed at a subsequent process regarding standardization. The recommendations are mostly addressed to the Ministry of Infrastructure and Water Management, but also relate to other parties. The recommendations range from general points to product and batch specific points.

General

Legal obligations regarding reusable packaging in the Netherlands are fast approaching. Halfway 2023 the first regulations set in, so there is limited time for setting up systems for reusing meal containers and drinking cups (for hot or cold use). Therefore, there is a high risk of an uncoordinated proliferation of reuse systems with negative (efficiency and environmental) effects as a result. In addition, it is expected that more reuse obligations will be imposed by the EU in the future (in the form of the PPWR).

The central recommendation is therefore to facilitate standardization by designating a coordinating party. This and other more specific recommendations are described below.

Specific recommendations

➤ **A coordinating party.** At this moment there is not a clear overarching party that is or feels responsible for coordinating and monitoring the process of standardization of reusable cups and meal packaging. In six months, the SUP legislation with reuse obligations for these products will come into force. This means there is limited time for setting up a set of standards for these products. Therefore, we recommend the Dutch Ministry to place the

coordination with a broad organization such as the AFV/(KIDV), Plastic Pact NL, the NRK or with the NEN itself. A stakeholder analysis can be utilized to investigate two things: **1)** which parties are willing and/or able to take part in the coordination of standardization, **2)** whether these parties overview different products and **3)** how the sector for reusable packaging can be organized.

- **Working group.** As long as there is no designated coordinating party, and/or if it proves difficult to identify aforementioned party, a working group can be set up that monitors and coordinates standardization of reusable packaging. This group should at least consist of producers, suppliers and users, to be able to identify to which product (groups) or processes standardization can make a positive contribution in the future.
- **Connection to Europe.** Due to the simultaneous introduction of SUP legislation and the PPWR, it is likely that similar challenges regarding reusable packaging and standardization arise in neighboring countries. Because of this fact and the long lead time for the development of (formal) European standards, it seems useful to assess in the short term whether there are similar needs for standardization in other EU countries. The KIDV and the affiliated Planet Reuse have already taken steps in this direction by starting a working group titled 'Standardisation of Reusable Packaging'.

On the next page, product/sector specific recommendations are described.

6. Conclusions – recommendations

Product and sector specific recommendations

➤ **Drinking cups for hot drinks** seem to be low-hanging fruit. In addition to cups for cold drinks, for which there are already talks to develop an NTA, cups for hot drinks could benefit from a formal standard. Standardization is an option for this product because of the advantages for the large number of smaller parties that use it. This standard should be nonobligatory and enables setting up interchangeable reuse systems.

Similar to process for cups for cold drinks, starting a process into the possibilities of a standardized drinking cup for hot drinks (to be used by small and larger parties that join collective reuse systems) seems sensible because of the potential benefits. Producers, users, operators and providers of washing facilities should be involved in the process.

➤ **Meal containers** are, contrary to drinking cups, more diverse and therefore developing product standards is challenging. Moreover, it seems early for standardization as it is unclear on what products the market will settle.

The **delivery market** would seem to be able to benefit from standardization. However, several parties have mentioned that delivery service providers have limited interest in reuse systems.

To be able to determine the moment that standardization is an advantageous option for meal containers, coordination and/or

monitoring is needed. A coordinating party, as recommended on the previous page, could determine when standardization is advantageous.

➤ **Cleaning on location and/or cleaning plastic reusable packaging** will be new for many to-go companies. These products require different cleaning steps than currently known products (such as ceramics). With the perspective on food safety, it seems sensible to aim for the development of a recognized (formal) process standard for the cleaning of reusable plastic packaging and testing its hygiene.

Despite the fact that standardization has its disadvantages, it can partially eliminate the risks of uncoordinated proliferation of reuse systems. Without a coordinating party, chances on swift development of these standards are small, and it will not be long before reuse systems will be the norm.

Annex 1 – List of interviewees

As part of this (preliminary) study, interviews were held with:

- | | |
|----------------------------|--------------------------|
| ➤ Marcel Keuenhof | KIDV |
| ➤ Jeroen von Morgen | NEN |
| ➤ Anne Poggenpohl | Mission Reuse en Evernew |
| ➤ Maurits Last | Swapbox |
| ➤ Erwin van Limpt | Haval en Circulware |
| ➤ Steven IJzerman | UDEA |
| ➤ Gijs Langeveld | Polymer Science Park |
| ➤ Beth Massa | Ozarka |
| ➤ Stijn Bartelink | Paardekooper b.v. |

In addition to the interviews, correspondence and consultation took place with:

- Rijkswaterstaat
- Ministry of Infrastructure and Water Management

Annex 2 – Survey

A survey was conducted among Plastic Pact NL participants, to which 11 respondents responded. The survey consisted of the following parts and questions (in Dutch):

Introductie

- Wat is uw naam?
- Namens welke organisatie vult u deze enquête in?

Algemeen

Hieronder volgen enkele vragen naar voorbeelden. Deze vragen dienen als introductie op de vragenlijst en om een beeld te vormen aan welke gestandaardiseerde herbruikbare verpakkingen of verpakkingssystemen men denkt. Daarnaast brengen we mogelijk voor ons onbekende voorbeelden en/of initiatieven in kaart.

- Aan welke voorbeelden denkt u bij standaardisatie met betrekking tot herbruikbare verpakkingen?
- Over de antwoorden bij bovenstaande vraag: ziet u dit als voorbeelden waar we lessen uit kunnen trekken? Zo ja, welke lessen?
- Kent u lopende initiatieven met standaardisatie van herbruikbare verpakkingen als doel en zo ja, welke?

Kansen en barrières

De noodzaak, kansen en barrières voor standaardisatie van herbruikbare verpakkingen worden onderzocht voor twee productgroepen (drinkbekers en maaltijdverpakkingen) in twee verschillende omgevingen (gesloten vs. (semi-)open). Daarnaast kan onderscheid gemaakt worden tussen standaardisatie van het product en het proces. In het volgende deel van de enquête wordt u bevraagd welke kansen en barrières u ziet in de verschillende categorieën.

- In welke categorie (maaltijd/beker en gesloten/open omgeving) ligt volgens u de grootste noodzaak voor standaardisatie (en waarom)?
- In welke categorie bestaat volgens u de minste noodzaak (en waarom)?
- Welke kansen en/of barrières ziet u voor categorie 1, maaltijdverpakking in een gesloten omgeving?
- Welke kansen en/of barrières ziet u voor categorie 2, bekers in een gesloten omgeving?
- Welke kansen en/of barrières ziet u voor categorie 3, maaltijdverpakkingen in een open omgeving?
- Welke kansen en/of barrières ziet u voor categorie 4, bekers in een open omgeving?

Vervolgstappen

In deze studie zoeken we concrete vervolgstappen richting standaardisatie van herbruikbare verpakkingen. Het volgende (en laatste) deel van de enquête gaat over deze vervolgstappen.

- Welke verschillende manieren/routes ziet u om tot standaardisatie van herbruikbare verpakkingen te komen?
- Welke partij(en) is(/zijn) volgens u aan zet om standaardisatie in gang te zetten?
- Heeft uw eigen organisatie hierbij volgens u een rol te vervullen? Zo ja, welke? Zo niet, waarom niet?
- Welke concrete rol is er bij standaardisatie van herbruikbare verpakkingen volgens u weggelegd voor de overheid?
- Overige opmerkingen/aanbevelingen:
- Mogen wij u contacteren om nadere vragen te stellen in het vervolg van onze opdracht?
- Zo ja, wat is uw e-mailadres?

Annex 3 – References

In this report, several reports, documents, legislations and websites are referenced. These are listed below.

Legislation

- Assessment frameworks for different product groups in the ministeriële regeling (December 2022) - [link](#).
- Ministeriële regeling kunststofproducten voor eenmalig gebruik (March 2022) - [link](#).
- Packaging and Packaging Waste Regulation (PPWR) proposal (November 2022) - [link](#).
- Single-Use Plastics Directive (June 2019) – [link](#).

Referenced reports/documents

- McKinsey (October 2022) – Reusable packaging: Key enablers for scaling ([link](#)).
- Mission Reuse (December 2021) – Nederland schoon op schaal ([link](#)).
- NEN (May 1994) – Gastronorm (NEN-EN 631-1:1994) ([link](#)).
- PackBack (July 2020) – Standardisation in reusable food packaging ([link](#)).
- Resolve – PR3 standards ([link](#)).
- Sustainable Event Alliance (October 2022) – ‘Reusables’ hygiene at events-guideline ([link](#)).
- Unpacked & RREUSE (October 2022) – A Just Transition to Reusable Packaging: necessary conditions, benefits and best practice ([link](#)).

Referenced websites

- [Billy Cup's website](#).
- [EPAL website](#).
- [Mach Mehrweg Pool's website](#).
- [Nederlandse Brouwers website](#).
- [NEN's website](#).
- [Paardekooper's website](#).
- [Swapbox's website](#).



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