



# BIG BAG POOLING IN THE NETHERLANDS

A collaborative opportunity for Plastic Pact members  
to reduce plastic waste and save costs



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### ABSTRACT

This report provides concrete recommendations about Big Bag pooling for Plastic Pact members in the Netherlands, with a pilot plan for demonstrating the financial and environmental benefits of Big Bag pooling, to inspire scale-up within and outside the Pact community.

**Searious Business**

Plastic Pact NL

## Executive Summary

This report has been produced to support Plastic Pact Netherlands (PP NL) signatories with their ambition to reduce Single-Use Plastics (SUPs) and their impact on the environment while unlocking business opportunities in their B2B value chains.

Plastic Pact NL's '*Reduce and Reuse working group*' is aiming for a target of 20% reduction by 2025. Projects that have been identified to help meet this targeted on reusable/refillable B2C Packaging, i.e. in supermarkets, restaurants, and B2B transport packaging used by Pact members and its supply chain partners. Based on a pitch from Pact member LC Packaging about how to help meet this target by reusing Big Bags in a pooling system, Searious Business (SB) was tasked by the Steering Committee of Plastic Pact NL to assess members' interest in Big Bag pooling. Then, to develop a pilot plan for demonstrating a scalable Big Bag pooling system in a pilot setting, showing environmental and financial benefits and recommending critical success factors for scale-up within and ultimately between sectors using Big Bags with shared product specifications.

A flexible intermediate bulk container (FIBC) or Big Bag is an industrial container made of flexible fabric designed to store and transport dry, flowable products, such as sand, fertiliser, and plastics. Big Bags are most often made of thick woven oriented Polypropylene (PP).

In the Netherlands, 9.5 million (9.5 million kt) of Big Bags are put on the market annually, representing an 8% market share of the European FIBC market. With the rising demand for superior and contamination-free solutions for food and agricultural products, as well as shipping of chemicals and mining products, the estimated growth rate for Europe is 3.5% over the next decade.

Most Big Bags end up in landfill or are incinerated as the predominant use case is single use. However, the newly proposed Packaging and Packaging Waste Directive might change the game, as it prescribes mandatory reuse targets for Big Bags – for inter-company transport movements and transport movements between companies within Member States. Furthermore, the recently released FIBC Design For Recycling Guidelines developed by the European Flexible Intermediate Bulk Containers Association and Eurojute will also facilitate the use of recycled PP in new Big Bag designs.

Moreover, data shows that changing from single-use to reusable Big Bags can have many benefits: it allows for significant savings in terms of CO<sub>2</sub>, raw material, water and energy consumption, and it provides cost-saving opportunities. Actual savings and the optimal design of a Big Bag pooling scheme depend on key input variables such as harmonised specifications, the number of Big Bags in rotation, and transport distances. Big Bag pooling also requires behavioural change, standardisation, and operational adjustments to overcome critical concerns related to, i.e. quality, safety and handling.

Based on survey results, focus-group discussions, and follow-up calls with members, the recycling sector has been selected to demonstrate Reusable Big Bags' financial viability. In addition, it can determine how it can offer CO<sub>2</sub>, water, energy, and plastic reduction opportunities for the packaging and recycling sector, with scale-up potential to other industries. Therefore, a project group was formed to develop a pilot plan and run a pilot project in 2023 to demonstrate the following objectives:

- Enhanced in-company or inter-company reuse of Big Bags
- Agreement about requirements for potential pooling system, including
  - Shared (harmonised) safety and performance specifications
  - Quality control meeting standards and expectations
  - Cost-neutral/or net positive business case
  - Environmental benefits
- Increase insight into enabling factors in terms of, i.e. finance & procurement, logistics and operations, behavioural change, legislative, (external) resources, time, etc.

The project will focus on closed-loop solutions within the sector. For now, exchanging Big Bags between sectors is too complex due to product specifications being too different/not harmonised.

The purpose of this report is to provide recommendations about Big Bag pooling for Pact members. It gives insights into the current use of Big Bags and the interest of Pact members to explore a Big Bag pooling system together. It offers concrete recommendations about the potential benefits and enabling factors for Big Bag pooling, and provides a pilot plan for demonstrating the financial and environmental benefits of Big Bag pooling in the recycling sector, to inspire scale-up within and outside the Pact community.

# 1. State of Play - Reusable packaging

## Trends and developments in reusable packaging

Reusable packaging is probably the oldest concept in product delivery and has been used successfully for centuries. The preference for single-use plastic packaging only surged in the last few decades. Businesses are increasingly keen to **capitalise on the \$10 billion opportunity presented by replacing 20% of single-use plastic packaging with reusable alternatives**, highlighted in 2017 by the World Economic Forum and the Ellen MacArthur Foundation (EMF)<sup>i</sup>. The combination of mandatory legislative reuse pressures, the public's increased appetite for sustainability, innovations from technology and service providers, and bold brand commitments all point to **significant growth in this area** over the next 5 years. For transport packaging, Brambles, for example, reported a revenue increase of 9% in Q1 2022, leading to a shortage of their reusable CHEP pallets in the USA<sup>ii</sup>.

In conjunction with rising consumer demand for reuse, a new **regulatory landscape** promoting reusable packaging solutions and systems is emerging. EMF reports that 47% of governments indicate ambitions to put systems in place, and 23% indicate they have been actively working on this. In Europe, regulatory impacts will have a positive impact on the drive for reusables from both producers and consumers. The EU Plastic Tax on non-recyclable plastic packaging came into force in January 2021. Member States are opting for different solutions to meet the need to decrease unrecyclable plastic packaging in their market. For example, France will impose a 5% reuse rate by 2023 and 10% by 2027. Two other major regulatory drivers for reusable packaging -including transport packaging- are the EU's Single Use Plastic Directive which began to take effect in July 2021, and the upcoming European Packaging and Packaging Waste Regulation.

Since 2017, progress in reusable systems has been slow, but market information suggests it is about to change. In the 2020 update on The New Plastics Economy, it is reported that out of the 500+ organisations who signed this global commitment, the change from single-use to reusable packaging is a mere 0.1% increase compared to 2018. However, the **number of businesses piloting or planning to pilot reusable packaging has increased** by 43%. Now standing at 56% of all the signatories to the New Plastics Economy Global Commitment<sup>iii</sup>.

Plastic Pacts around the world are gearing up to make their reuse-targets SMART. See, for example, in Figure 1 how the Plastic Pact UK specifies that each member retailer or brand owner needs to: 1) have completed at least one trial on innovative reusable packaging, including secondary packaging by 2022, and 2) commercialised at least two innovative reusable packaging systems by 2025.

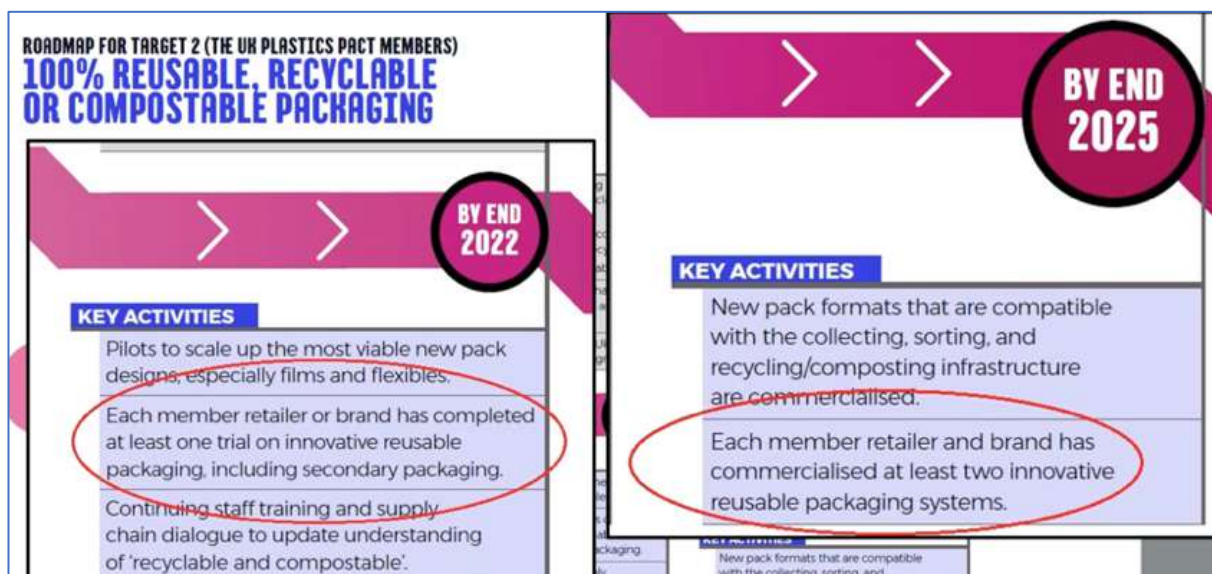


Figure 1 Reuse targets Plastic Pact UK

## Key developments B2B reuse systems

Reusable packaging systems are traditionally more common and better established in the B2B markets than B2C; therefore, valuable lessons can be learned from the former.

**Losing brand identity** in reusable packaging is considered one of the biggest hurdles in moving to reuse systems. Here B2B packaging holds an advantage over B2C packaging as less branding and information is needed. Another convenience B2B has over B2C is that the sender often knows the end-user (receiver) of the product (and packaging), and there are already logistics procedures and infrastructure in place.

However, the need to **reorganise supply chains to enable reverse logistics** is frequently cited as the main barrier for producers to shift towards reusable packaging systems. Industry experts repeatedly comment that changing from a linear to a circular system is challenging for every part of the supply chain infrastructure. The market needs bold front-runners and **industry collaboration** to make reuse work. For example, cleaning and collection hubs will be needed across the market to manage a greatly expanded reuse model for Big Bags. Longer-term, **shared, and centralised facilities** will ensure efficiencies and cost savings.

For B2B reuse models to work, cross-industry **standardisation** is required for the best chance of success. One of the most successful examples is the pallet pooling system, EuroPallets (standardised pallet sizes to fit train cargos, including several quality requirements). Based on the dimensions of an ISO pallet (80x120) and a Euro pallet (80x120), the collo-modular sizing for packaging was developed. Other examples where standardisation across the industry has been realised are EuroPool (reusable crates used by, e.g. wholesalers and restaurants) and the Swedish return system Svenska Retursystem (pooling reusable, standardised crates to move FMCGs). Another interesting example is the Broban crates in the Netherlands for bread and bakery. These products are also standardised in size and are nestable, stackable, and can be exchanged with other bakeries. <sup>iv</sup>

Other factors enabling reverse logistics systems' success include **large enough volumes** for pooling and a high turnaround. A **shared design** with other brands/companies allows for the exchange of the bags. A **broad and diverse network** to cover distances, including import and export routes. **Traceability** of the bags allows deposit charges between stakeholders and gives insight into the current and previous contents of a specific Big Bag and the number of use cycles it has endured.

**SMART packaging and Internet-of-Things** is a growing market that will positively impact reusable packaging models in several ways. First, SMART packaging is tagged, applying a unique digital ID to every reusable packaging item. This facilitates tracking and tracing of reusables and enables impact metrics, return rates, length of service, etc., to be measured. Secondly, the technology can also engage consumers via smartphone apps, generating valuable data and market intelligence for the brand owner around the consumer experience.

Accurate data is essential to optimise any business model, and many trials take place use some kind of data collection system. However, to expand the trials and enable reusable packaging to operate at scale, it is critical that a **standard approach to data systems** is developed. This need can be compared to standardising shipping containers and the infrastructure at ports, loading docks, and freight transporters to enable global trade in the 1970s. Likewise, the reuse industry needs similar standards for reuse systems to become a viable replacement for single-use.

Currently, data management programs for reusable packaging have primarily been operating in isolation. This was recognised by Resolve, a US-based sustainable solutions platform, which created the PR3 project (Partnership to reuse, refill, replace, single-use plastic) to create standards for reusable packaging models. The PR3 project is a collaboration between Seattle municipality, corporate brands (including Nestlé), and NGO champions<sup>v</sup>. This is yet another example of where collaboration is essential to achieve successful progress for reusable packaging models.

In short, **factors that enable the success of reverse logistics and B2B reuse** systems include:

- Large volumes
- Shared design
- Standard and modular packaging
- A broad and diverse network to enable optimum distances
- High turnaround
- Durable and sustainable packaging
- Traceability
- Standardised data management systems
- A shift in user preferences and user behaviour
- Industry collaboration

Some **examples of successful reusable B2B (pooling) providers** include:

CHEP	Pallet pooling	<a href="https://www.chep.com/us/en/services-solutions">https://www.chep.com/us/en/services-solutions</a>
Europallets	Standardised pallets	<a href="https://www.epal-pallets.org/eu-en/">https://www.epal-pallets.org/eu-en/</a>
Euro Pool Group	Logistic service provider pallets and trays	<a href="https://www.europoolgroup.com/">https://www.europoolgroup.com/</a>
Kegstar	Beer keg pooling	<a href="https://nl.kegstar.com/">https://nl.kegstar.com/</a>
Svenska return system	Reusable crates	<a href="https://www.retursystem.se/sv">https://www.retursystem.se/sv</a>
Europool	Reusable crates	<a href="https://www.europoolsystem.com/">https://www.europoolsystem.com/</a>
Container Centralen	Pool for horticulture in the EU	<a href="https://www.container-centralen.com/pool-management-services2/">https://www.container-centralen.com/pool-management-services2/</a>
Tosca	Plastic pallets, bulk containers, crates pooling	<a href="https://www.toscaltd.com/pooling/">https://www.toscaltd.com/pooling/</a>
Orbis	Container, crate pooling	<a href="https://www.orbiscorporation.com/en-us/">https://www.orbiscorporation.com/en-us/</a>
RPP containers	Bulk containers	<a href="http://www.rppcontainers.com">www.rppcontainers.com</a>
ContainerPAL	Bulk containers, harvest bins	<a href="https://reusabletranspack.com/rentals/">https://reusabletranspack.com/rentals/</a>

Table 1 Examples of B2B pooling systems

As PP NL has prioritised analysing the reuse potential for Big Bags in the Netherlands, the report will be zooming in on this B2B packaging format, to which all the above-mentioned enabling factors are applicable.

## Trends and developments B2B packaging - Big Bags

### Market analysis Big Bags in Europe and the Netherlands

Most Big Bags are containers made of sturdy woven PP strips used to transport large quantities of loose materials of various types (flakes, granules, powders). Some industries Big Bags are used in include; Food, Agriculture, Chemicals, Pharmaceuticals, Mining & Minerals, Construction, Disposal & Recycling, Animal nutrition, Fruit cultivation, Horticulture, Forestry, Fishing, Post & Parcel.

Every year, 120 million Big Bags are used in Europe for transporting, i.e. food products, agricultural products, chemicals, and fertilisers, with an estimated growth rate in Europe of 3.5% in the next decade. In the Netherlands, 9.5 million pieces of Big Bags are put on the market annually, representing a market share of 8%. This equals 9.5 million kt of PP-material ending up as general waste in landfills or incinerators after being used only once. At small scale, Big Bags are being downcycled.

As Big Bags are considered a *logistical support item* (in Dutch: '*logistiek hulpmiddel*'), no waste management costs are charged to the Bag producers. There is, however, a registration obligation for Big Bags with a loading capacity of more than 250L. In addition, economic operators putting Big Bags on the market for the first time are required to report their volumes put on the market to the Producer Responsibility Organisation 'Afvfonds Verpakkingen'<sup>vi</sup>.

To enable the recyclability of the Bags and to contribute to the supply chain resilience of rPP for manufacturing Big Bags, the European Flexible Intermediate Bulk Container Association (EFIBCA), in collaboration with the Textile Packaging Materials Association Eurojute, has developed



Design4Recycling guidelines for Big Bags<sup>vii</sup>. In addition, Big Bag producers such as LC packaging are creating Design for Washing guidelines and planning to establish Design for Reuse guidelines, including procedures for washing, storing, handling, labelling, tracking, and transport.

Complementary to the market initiatives that improve the recyclability of Big Bags and the use of recycled content, regulatory requirements are considered among the key market drivers for moving from single-use to reusing Big Bags. The final European Packaging and Packaging Waste Directive (PPWD) proposal sets reuse targets for transport packaging, such as pallets and intermediate bulk containers of all sizes and materials, including flexible containers. See p.72 of the final PPWD draft sent by the Commission to the Parliament on the 30th of November 2022.<sup>viii</sup>

*"Transport packaging used by an economic operator shall be reusable where it is used for transporting products:*

- (a) between different sites on which the operator performs its activity; or*
- (b) between any of the sites on which the operator performs its activity and the sites of any other linked enterprise or partner enterprise, as defined in Article 3 of the Annex to Commission Recommendation 2003/361, as applicable on [OP: Please insert the date = the date of entry into force of this Regulation]. This obligation applies to pallets, boxes, excluding cardboard, trays, plastic crates, intermediate bulk containers, drums and canisters, of all sizes and materials, including flexible formats.*

*Economic operators delivering products to another economic operator within the same Member State shall use only reusable transport packaging for the purpose of the transportation of such products. This obligation applies to pallets, boxes, excluding cardboard, plastic crates intermediate bulk containers, and drums, of all sizes and materials, including flexible formats.*



## Reuse models – an overview of Big Bag reuse models

For the reuse of Big Bags, three reuse models can be distinguished:



1) Internal/in-company transport movements	User (re)fills the reusable Big Bag and ships it back to the reconditioning partner Filler= end user
2) Inter-company transport movements	User (re)fills the reusable Big Bag and ships it to the end user, who returns the Bag to the reconditioning partner. Pooling system – closed loop; for products with similar product specifications Filler ≠ end user. Bag can be reused for the same application
3) Transport movements between sectors	User (re)fills the reusable Big Bag and ships it to the end user, who returns the Bag to the reconditioning partner. Pooling system – open loop; for different applications with similar product specifications Filler ≠ end user. The Bag can be reused for different applications (food to non-food)

Table 2 Big Bag pooling reuse models

Reusing Big Bags can have many benefits compared to single-use Big Bags. Reconditioning partners such as Worldbag collect, clean, inspect, and redistribute the Bags to pooling customers. To meet increasingly demanding (food) safety specifications, they have been developing innovative dry and wet-cleaning technologies, now also allowing reuse for food applications. For over a decade, they have successfully implemented Big Bag pooling services, generating valuable data about benefits and enabling factors. Based on Cost-Benefit Analysis (CBA), including all reconditioning steps listed above, and Life Cycle Analysis (LCA)<sup>ix</sup>, the following benefits and critical success factors have been identified.

### Potential benefits

- **Cost savings**
  - Reduced cost for the initial purchase of single-use Big Bags
  - Reduced cost in waste management for the single-use Big Bags
  - Average costs savings of 15-25% vs new bags
- **Meeting sustainability targets:** at the company level and Plastic Pact
- **Environmental savings** – based on 5 reuse cycles<sup>x</sup>:
  - Energy: 64% | CO<sub>2</sub>: 66% | Water: 73% | Raw materials: 83%



Figure 2 Potential savings when switching from single-use to reuse

### Critical Success Factors Big Bag pooling

For a Big Bag pooling system to be successful – whether it is internal or inter-company pooling, several product and system factors need to be considered, including:

#### Big Bags

- Standardized design (D4Recycling and use of recycled content, D4reuse, D4washing)
  - Shared design, shared specifications (mono-material and reduce the # of Stock Keeping Units (SKUs)
  - Guidelines about use, transport, and storage for reuse
- Virgin-like performance standards with certified quality control
  - Minimal Safety Factor Ration (SFR) 6:1
- Compliant with health & safety regulations: food contact and working conditions

#### System

- Durable and sustainable packaging
- For the pooling model: a viable business case from more than 150 bags
  - For in-company reuse, no minimum amount is required
- High turnaround time
- Dense logistical network
  - Relevant partners include distribution, tracking & washing/reconditioning
  - Efficient and decentralised logistics
  - Efficient and decentralised storage and handling facilities
  - Efficient and decentralised washing facility at large scale to lower footprint
- A shift in user preferences and behaviour (to boost volumes and sales)
- Suitable software to enable tracking and tracing of Big Bags, their contents and their quality.

### Big Bag pooling: Potential challenges and opportunities

For a Big Bag pooling system to succeed, potential (perceived) challenges must be overcome first. The list below is generated based on desktop research and inventory findings.

Potential Challenge	Potential Solution
No support/low interest from the organisation	Internal pilot case / low-hanging fruit
Company limitations and priorities related to space	Design for Storage guideline
Possible contamination - residues in packaging	- Re-develop bag design - Start with the same products (or non-food) - Explore other cleaning methods
Small quantities at end user	Minimum volume 150 pcs (for pooling)
Commercial doubts - too expensive - investments needed	i.e. WorldBag business case calculation
Perceived environmental benefits versus actual environmental benefits	Perform LCA based on results of pilot considering, i.e. transport, washing, reuse cycles
Lower quality with used bags versus new bags - risk of damaged bags - who will be responsible for safety?	- Design for Reuse guidelines (including washing, transport and storage guidelines) - Quality control/certification
Staffing for sorting	Business case calculation includes sorting costs
Data capturing -Coding on big bags	Bags used in reuse concept keep track of reuse cycles
Logistically not possible	- Internal pilot case / low-hanging fruit
Different types of bags, materials, handling processes, filling stations between all stakeholders	Harmonisation (Design 4 Reuse)

Table 3 potential challenges and solutions



## 2. Market Inventory: opportunities for collaboration

Searious Business was tasked by the Steering Committee of Plastic Pact NL to assess members' interest in Big Bag pooling. Then to demonstrate a scalable Big Bag pooling system in a pilot setting, showing environmental and financial benefits. Finally, make recommendations about critical success factors for scale-up within and ultimately between sectors using Big Bags with shared product specifications.

Based on survey results, focus-group discussions, and follow-up calls with members, the recycling sector has been selected to demonstrate Reusable Big Bags' financial viability. In addition, it can determine how it can offer CO<sub>2</sub>, water, energy, and plastic reduction opportunities for the packaging and recycling sector, with scale-up potential to other industries. Therefore, a project group was formed to develop a pilot plan, to be implemented in 2023.

The following section describes the methodology used for conducting the inventory and its results. Next, chapter 3 describes the pilot plan, followed by a number of recommendations for other B2B reuse opportunities in Chapter 4.

### Methodology for assessing interest in Big Bag pooling

To evaluate interest among Pact members to explore the benefits of Big Bag pooling, the following methodology was used:

- Briefing from Working Group-meeting
- Survey asking about key markets and applications, volumes, and interest in joining a reuse programme
- Focus-Group discussion during the Plastic Pact General Assembly
- Semi-structured interviews

NB: At the time of the inventory, the proposed Packaging and Packaging Waste Directive, including the mandatory reuse targets for Big Bags, wasn't finalised yet.

### Results

#### Working group meeting and introduction call LC packaging

During a working group meeting of the Plastic Pact NL (in which SB was not present), LC packaging gave a pitch about the potential of reusing Big Bags in the supply chains of the Plastic Pact NL signatories. LC Packaging is a Big Bag manufacturer and parent company to Worldbag, offering Big Bag reconditioning services since 2009. The pitch was received with enthusiasm, based on which the inventory was commissioned, and the Big Bag project began.

To kick off the project, SB had an introduction call with LC packaging, in which the following was discussed: Big bags are used widely in the signatories' supply chains, often used only once (single-use/SU). LC Packaging identified several (perceived) challenges in the reuse of Big Bags:

- Contamination risk
- There is no harmonisation in, e.g. design and size at the moment, and therefore the Big Bags are difficult to be exchanged between several parties
- High costs for reversed logistics and cleaning
- Big Bags are not part of the packaging EPR system, except for the reporting obligation
- Collection might be difficult in case of low volumes

LC packaging sees opportunities if the right stakeholders can be brought together. There might be pooling opportunities for some brands with similar product specifications to work together and pursue standardisation in the design of Big Bags. Interesting products/sectors could be:

- Sugar: i.e. Coca-Cola, PepsiCo: low-grade food product, which might work for wet washing
- Coffee: i.e. Unilever, Nestle, who is working on a reusable Big Bag project at EU level
- Milk powder: i.e. Friesland Campina
- Recycling: PET bottle recycling: i.e. Aldi, Lidl; and/or Flakes, regrinds: i.e. Morssinkhof, 4PET recycling

Based on the Plastic Pact NL Working group meeting and the first calls with LC packaging, the following sectors seemed most promising for the pooling of Big Bags.

- Non-food: Recycling sector
- Food: Sugar sector

The advantages of focusing on these 2 product groups are; availability in the Pact network, potential volume, and lower risk of contamination.

### Survey results

The survey was sent out to the members of the Plastic Pact NL via email for the first time on the 16th of September 2022, a reminder was sent out on the 28<sup>th</sup> of September, and members were reminded to complete the survey during a face-to-face Plastic Pact meeting that took place on 29<sup>th</sup> of September.

Individual members involved in the sugar and recycling value chain were additionally approached via email. This resulted in a total of twelve responses to the survey.

Four out of the twelve respondents indicated that they use Big Bags in their supply chain. For the results of this survey, the input of these four respondents was used.

All four respondents are active in the chemicals/recycling/packaging industry. The products transported in these Big Bags are: Plastic granulates, plastic flakes, regrinds, and additives.

The four respondents all give different answers to the question of how many Big Bags are imported or exported. On the question of how many of the Big Bags they **receive** are sourced in the Netherlands, the answers are 25%, 0%, 0%, and 25%. One of the respondents indicated that 75% of their Big Bags are sourced from EU countries, and another one that 100% is sourced from outside EU countries.

On how many of the Big Bags they **send** stay in the Netherlands, the answers are 0%, 20%, 20%, and 60%. One of the respondents indicated that 79% of the Big Bags are exported to EU countries, and another one that 40% gets exported to EU countries.

**As a significant volume of Big Bags does not stay in the Netherlands, we would recommend that a pooling system should also cover other EU countries.**

Three out of four respondents indicated they are already part of a reuse program for Big Bags, of which all three specify that this is practised in their operations. In most cases, these Reuse programs are actually repurposing programs, as the Bags are used, for example, as washing Big Bags or storage for other products. The challenges that they are facing are:

- No clarity on origin of products
- Remaining materials/contamination
- Damages to the packaging
- Breakage after multiple uses (dangerous)
- Sometimes it takes a long time before the critical volume for collection at their customers has been reached

One out of the four respondents indicated that they do not reuse Big Bags yet.

The reasons the respondents gave for not reusing Big Bags yet are:

- Financially not attractive
- Safety issues / can only be used once
- No reversed transport is possible
- Not clean or mixed with other products

On the question 'What (other) kind of reuse solutions would you be open to for Big Bags used in your operations?'<sup>1</sup> the answers in figure 4 were given by the three respondents that indicated that they already reuse Big Bags in their operations. One would consider joining an existing pooling system, and three are willing to reuse packaging within their operations.

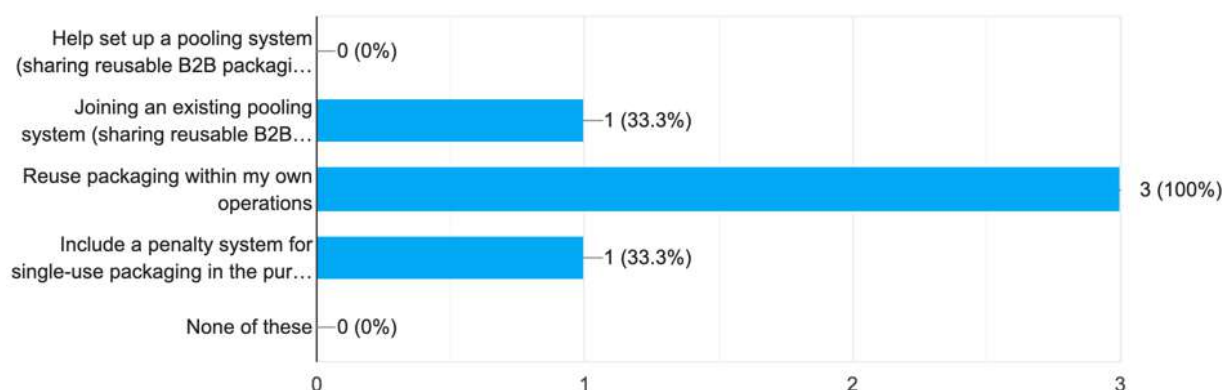


Figure 3 Survey response by companies reusing Big Bags

### Focus-Group discussion

During the Plastic Pact's bi-annual meeting on the 29th of September, the project was presented, and members were asked to reflect on the following question:

"At the moment, Big Bags are often used once, and they are regarded as a logistics tool within the packaging waste fund. So, no waste management fee is charged for this, while in many cases, it is a single-use 'packaging'.

Q1) What does your company need to switch to reusable Big Bags in a pooling system?

Q2) What do you think is needed to reduce the use of single-use Big Bags and stimulate reuse?

Participants that joined the session were a recycler, a former recycler, a Big Bag producer, and a Big Bag distributor. Participants indicated that for a reuse program to be successful, it needs to compete with the current business model in terms of price, ease of use, convenience, and efficient handling. In addition, it was highlighted that it would be important to standardise the design of the bags. This could disincentivise the sales of closed Big Bags (as opposed to those with a discharge spout), as closed Big Bags are cut open to unload them, which means they have reached their end of life and cannot be part of a reuse program.

One of the recyclers mentioned that they get all their Big Bags back from their customers through a deposit-based collection system which includes both the pallets and Big Bags. This is an interesting model to explore further in the pilot phase. Another member of the Pact's bigger collection and recycling members confirmed they would be interested in joining the project regarding recycling bags End of Life (EoL) and defining D4Recycling guidelines.

### Follow-up calls

The survey was completed by twelve respondents. As mentioned earlier, the four respondents that indicated that they use Big Bags are all active in the recycling/chemical/packaging sectors. One of the four respondents stated they were not interested in reusing their Big Bags. SB has followed up with this respondent to clarify this. Quote: 'We sell our products in Bag Bags to several EU countries. The buyers use the Big Bags as a means of storage and subsequently as a "container" in their production process. The transports are not regular. Customers abroad also do not want to "store" the Big Bags after use. They have different suppliers from several countries.'

<sup>1</sup> Possible answers: Help set up a pooling system (sharing reusable B2B packaging with other companies); Joining an existing pooling system (sharing reusable B2B packaging with other companies); Reuse packaging within my own operations; Include a penalty system for single-use packaging in the purchasing policy/supplier policy, making reusable B2B packaging more attractive; None of these; Other



Although no respondents from other sectors responded to the survey, SB still reached out to Pact members involved in the sugar value chain to understand their interest in participating in a pilot project. Several food and beverage producers and retailers were approached to gauge their interest. Whereas all respondents showed an interest in the future pilot results, some confirmed that not many Big Bags are used in their supply chain. Others mentioned that the reuse of Big Bags is not yet a priority. One of the members indicated that they have done internal research about the same and concluded contamination issues could not be overcome using existing cleaning methodologies. Therefore, they will focus on recycling the Big Bags first. They might, however, not be aware of the cleaning technologies that are being developed, i.e. LC Packaging (wet and dry cleaning), so it would be interesting to contact this member, as part of the scale-up plan, after the demonstration project.

### Recommendations for Big Bag pooling for Pact members and their supply chain partners

Based on the survey results, focus-group discussion, and follow-up calls with members, the **recycling sector** has been selected for demonstrating the potential of Big Bag pooling in a pilot setting. Sector representatives were interested in exploring Big Bag pooling in a pre-competitive Pact setting. A sufficient number of Bags are being used with more or less similar product specifications, and transport distances seem to be favourable for a positive business case with environmental gains.

A project brief was then developed and sent to Pact members from this sector that showed an interest in teaming up to jointly develop the following project plan for a demonstration pilot.

## 3. Pilot plan: Big Bag pooling - Recycling sector

### Reuse models to be piloted

The project team will be piloting 2 Big Bag Pooling systems in parallel to test viability in 2 scenarios (see figures 4 and 5):

- 1) **Reuse model 1- In-company:** for transport movements between regrind supplier SenS Interclean/AST and converter Euromoulding, who are part of the same parent company AST Group, manufacturer of plastic containers.
- 2) **Reuse model 2 – Inter-company:** for transport movements of regrinds between recycler De Paauw Sustainable Resources (DPSR) and one of their end-users, Van Tuijl/Vatuplast, manufacturer of plant pots.

For both pooling systems, Big Bag producer and reconditioning service partner Worldbag supplies 6:1 Big Bags (ISO 21898) to the regrind suppliers/recycler DPSR and AST respectively, to collect them for reconditioning from the packaging manufacturers Vatuplast and Euromouldings. After reconditioning, Worldbag will redistribute them again to the regrind suppliers/recyclers. Reconditioning includes cleaning, inspection, and quality control. Figures 6 and 7 show the current value chain of De Paauw Sustainable Resources (Figure 6), and Euromouldings (Figure 7).

Reuse model 1:  
In-company pooling of Big Bags



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Figure 4 Reuse model 1 – in-company pooling system to be piloted

Reuse model 2:  
Inter-company pooling of Big Bags



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Figure 5 Reuse model 2 – inter-company pooling system to be piloted

Current value chain

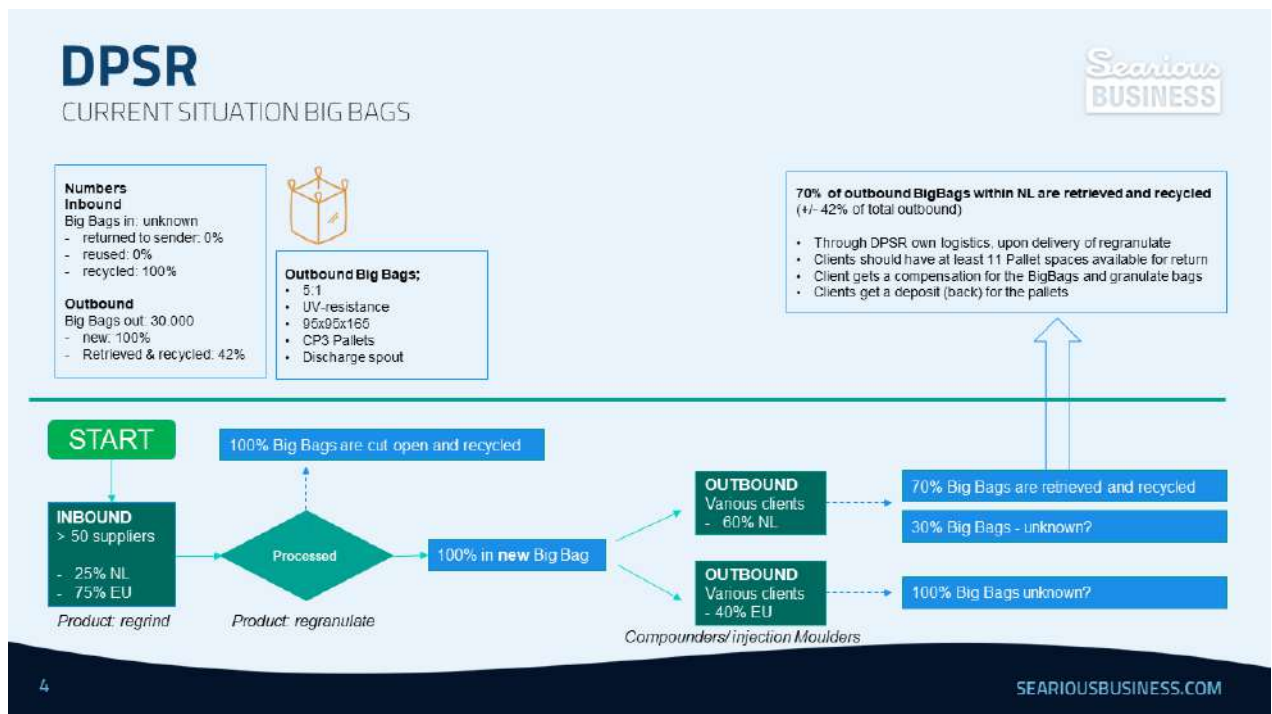


Figure 6 Current Value chain De Paauw Sustainable Resources

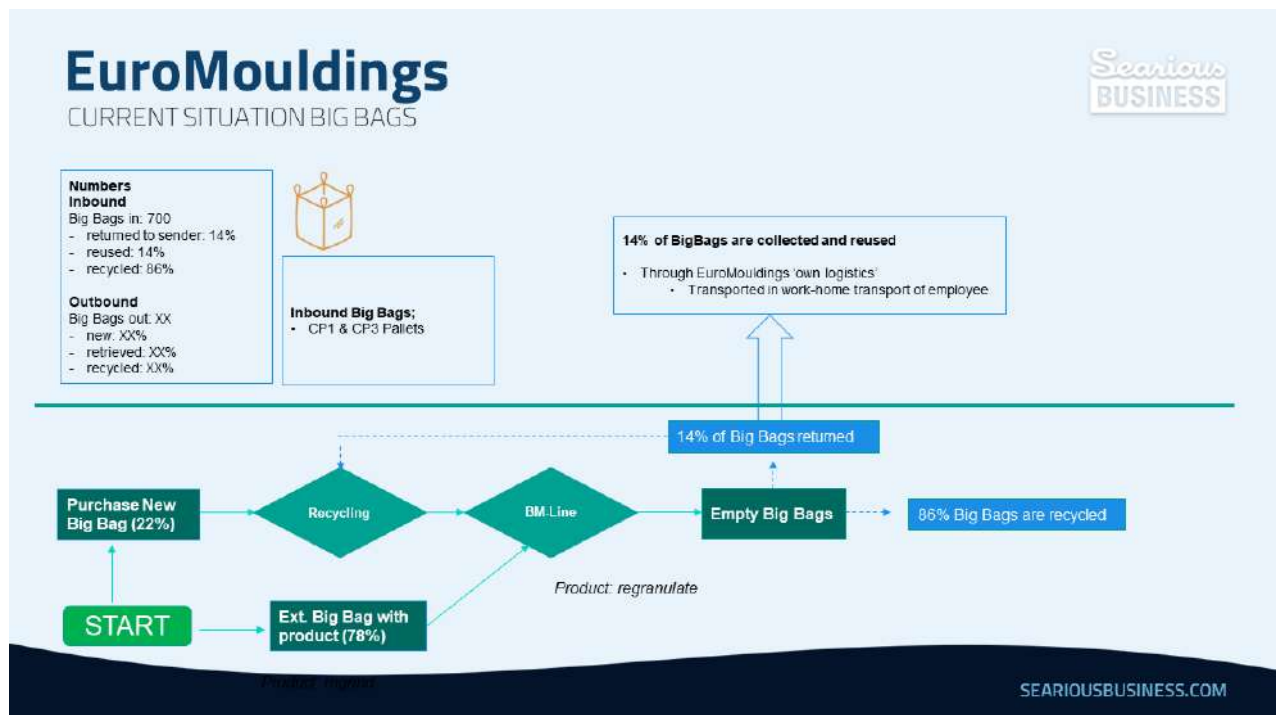


Figure 7 Current Value chain Euromouldings



## Key challenges to address in the demonstration pilot

- Shared specifications
- Contamination: which cleaning technology will ensure the 100% contamination-free requirement?
- Volumes and reuse frequency needed for a positive business case and significant environmental benefits.

## Pilot goal and objectives

### Demonstration pilot goal

Pact members will demonstrate in a pilot project the financial viability of reusable Big Bags and how it can offer plastic reduction opportunities for the packaging and recycling sector, with scale-up potential to other applications.

### Demonstration pilot objectives

- Enhanced in-company or inter-company reuse of Big Bags
- Agreement about requirements for potential pooling system, including
  - Shared (harmonised) safety and performance specifications
  - Quality control meeting standards and expectations
  - Cost-neutral/or net positive business case
  - Environmental benefits
- Increased insights into enabling factors in terms of, i.e. finance & procurement, logistics and operations, behavioural change, legislative drivers, (external) resources, time, etc.

The project will focus on closed-loop solutions within the sector. For now, exchanging Big Bags between sectors is too complex due to specs being too different/not harmonised.

### Key metrics of success

- **Plastic reduction – mt/yr**
- **Cost saving – €/year**

## Project Approach

### STEP 1: Testing technical and logistical feasibility

- 1) Test what cleaning technique can ensure no residue remains in the bags
  - 2) Test virgin-like performance after 5 reuse cycles
- Project members agree on: shared specifications, performance requirements, and products to include in pilot set-up.
  - Big Bag producer and reconditioning service partner Worldbag supplies clearly identifiable 6:1 Big Bags to De Paauw Sustainable Resources (DPSR) and AST to ensure the traceability of the bags.
  - Recyclers DPSR and AST supply Big Bags with regrinds to packaging producers Euromouldings and Vatuplast.
  - Worldbag collects the Big Bags from Euromouldings and Valuplast, cleans the bags using 2 different cleaning techniques: dry cleaning and wet cleaning, conducts quality control, and returns the reused Big Bags to DPSR and AST,
  - Worldbag monitors and administers the quality performance of the bags.
  - Project team to agree on the timing of iterations to ensure technical viability and confidence in the quality performance of the bags.
  - Project team to evaluate results, discuss enabling factors, and provide recommendations for scale-up.

### **STEP 2: Assess current and alternative business case and environmental benefits**

- All project partners confirmed their willingness to share needed input for an LCA and Cost-Benefit Analysis (CBA) by Worldbag, peer-reviewed by an independent party.
- Independent third party and Worldbag will run an LCA and CBA and analyse results.
- Project team to evaluate results and provide recommendations.

### **STEP 3: Knowledge sharing**

- The team is providing project updates by email & phone.
- Organise 4 project meetings: 2 progress meetings (1 on-site, 1 online), 2 meetings to collect input on the Case study and Design Guidelines (1 on-site, 1 online).
- Develop a case study highlighting critical success factors.
- Develop a scale-up plan, identifying sectors and Pact members to include in a potential scale-up plan.
- Develop Design 4 Reuse guidelines.
- Present findings during 2 Pact meetings – Reuse Working Group meeting and the general bi-annual member meetings.
- Provide policy recommendations supporting the reuse of Big Bags in the Netherlands.

The pilot is expected to generate value data that can be shared in the national Plastic Pact environment and, more broadly, by European industry players.

### **Pilot Partners**

- De Paauw Sustainable Resources – recycler/regrind supplier
- Vatuplast – packaging producer
- SenS Interclean/AST – regrind supplier
- EuroMouldings BV – packaging producer
- LC Packaging – Big Bag supplier
- WorldBag – washing and reconditioning partner
- Searious Business – project coordination, independent LCA and CBA

### **Timeline**

January-December 2023

## 4. Recommendations for other B2B reuse projects

This report has been produced on behalf of the Pact's 'Reduce and Reuse working group' to support its mission to meet the target of 20% reduction of single-use packaging by 2025. It zooms in on reuse opportunities for Big Bags, as the working group prioritised this type of transport packaging. However, several other B2B reuse opportunities have been identified, as part of the inventory process (survey), including:

- Pallet wraps
- Polybags
- Clothing hangers (B2C)
- The Working Group could further unpack needs and volumes used by Pact members, and their interest to develop a collaborative project in line with the Big Bag project design.

## 5. References

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<sup>i</sup> Ellen MacArthur Foundation, *Reuse – Rethinking Packaging*:

<https://ellenmacarthurfoundation.org/reuse-rethinking-packaging>, last visited 24/11/22

<sup>ii</sup> *Brambles facing pallet availability challenges*: <https://packagingrevolution.net/brambles-reports-revenue-increase-of-9-faces-pallet-availability-challenges/>, last visited 24/11/22

<sup>iii</sup> Ellen MacArthur Foundation, *New Plastics Economy progress report*:

<https://ellenmacarthurfoundation.org/global-commitment-2022/overview>, last visited 24/11/22

<sup>iv</sup> See references in Table 1, *Examples of B2B pooling systems*

<sup>v</sup> Resolve/PR3, *Reuse standards*: <https://www.resolve.ngo/site-pr3standards.htm>, last visited 24/11/22

<sup>vi</sup> Afvalfonds Verpakkingen, *Logistieke hulpmiddelen*: <https://www.afvalfondsverpakkingen.nl/nl/uw-verpakkingen>, last visited 24/11/22

<sup>vii</sup> A copy can be requested from Searious Business or LC Packaging/Worldbag

<sup>viii</sup> Packaging and Packaging Waste Directive [https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste_en), last visited 30/11/22

<sup>ix</sup> Worldbag, *Reusing Big Bags: The valuable benefits*:

<https://www.worldbag.com/2022/09/21/reusing-big-bags-the-valuable-benefits/>, last visited 24/11/22

<sup>ix</sup> Worldbag, *Reusing Big Bags webinar*: <https://www.lcpackaging.com/en/2022-sustainable-fibc-virtual-conference-on-demand-en/session-4-the-added-value-of-the-SA8000-certificate/> last visited

24/11/22