

Reusable transport packaging for LHA

PHASE 1A

Searious
BUSINESS

Large Household Appliances for
Reusable Packaging Association

May 2024

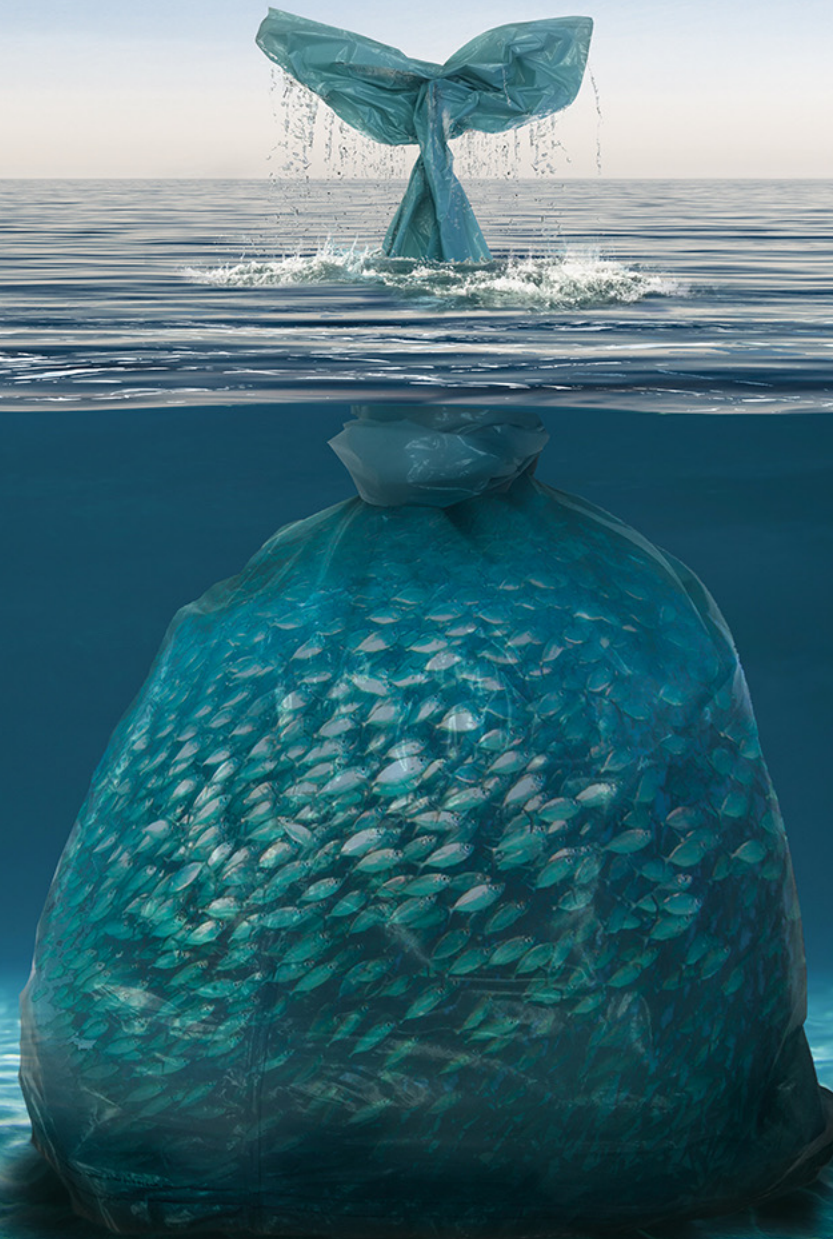


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In brief

WHY REUSABLE TRANSPORT PACKAGING FOR LHA

- Legislative pressure: PPWR sets reuse targets for transport packaging by 2026 & 2030
 - Manufacturers and retailers seek affordable solutions and shared systems to minimise costs and organisational efforts when switching to reuse
- Single-use packaging creates significant waste including problematic materials (EPS)
 - Sustainability demands from consumers continues to rise
- Damage & loss rates total up to 5% and represent significant value
 - Single-use is not equipped to stand major shocks; reusable packaging provides high functionality



Reusable transport packaging creates:

- New business opportunities along the supply chain
- Long-term cost-effectiveness
- Optimized product delivery in a sustainable manner
- Distinct competitive advantage

Regulatory landscape

PACKAGING AND PACKAGING WASTE REGULATION (PPWR)

The PPWR is the driving force for accelerated implementation of reusable packaging in Europe. It will come into force in 2026 and will be mandatory in all 27 EU member states. In the PPWR transport packaging is defined as:

‘transport packaging’ means packaging conceived so as to facilitate handling and transport of one or more sales units or a grouping of sales units, in order to prevent damage to the product from physical handling and transport, but excluding road, rail, ship and air containers.

Reuse targets linked to transport packaging (article 26)

2026: **100%** between different sites of the same operator or any other linked/partner enterprise

2026: **100%** used within the same Member State

2030: **40%** must be available in reusable packaging within a system for reuse

Exemptions from targets

- Excluded from the targets are cardboard boxes. The exemption does not apply to protective cardboard packaging in general (e.g. corner, or top protection)
- If economic operator puts < 1000kg on the market / year
- A member state reaches **5%** above the targets for recycling of packaging waste per material to be achieved by **2025** and is expected to reach **5%** above the **2030** target
- The country is on track to fulfil the respective waste prevention targets (article 38) and can demonstrate to have reached at least **3%** waste prevention by **2028** (vs 2018)
- Economic operators have adopted a corporate waste prevention and recycling plan to achieve waste prevention and recycling targets.

Opportunities in reusable transport packaging

WHY REUSABLE TRANSPORT PACKAGING FOR LHA

Reusable transport packaging enables to save costs from improper resource management and creates new business opportunities

1) Regulatory pressure

2) Business case

- Viable business models offer cost-effective packaging solutions
- Avoided EPR fees
- Reduce damage rates to **<1%** in comparison to current 5% surface protection possible, eliminating protective packaging

3) Warehouse efficiency

- Reduced warehouse storage & optimized logistics through better design and tracking
- Adjustable inner size to fit different products
- Theft reduction through tracking
- Integrated protective packaging
- Interlocking for easy stacking and no sliding

3) Environmental responsibility

- Waste prevention strategy
- Recyclability + closed loop recycling



Appliance scope

IDENTIFYING BEST LAUNCHING APPLIANCES

Starting with a pilot that focusses on one kind of appliance is advised. In a later stage it can easily be expanded towards other appliances.

Washing machines have the biggest market share in LHA so starting here will have the biggest sustainable impact. Their very standardized dimensions, similar to dryers and dishwashers make them the most suitable test object.

Damage rates are similar between the different LHAs, but assumed to be higher as the weight of the appliances increases. As there is an opportunity for better protection and more stability, this adds to the choice to start with washing machines.

DECISION MATRIX

Application	Units sold per year	Market volumes	Standardized dimensions	Damage rate in single-use	Total score
Washing machines	25.2M	10	10	9	9,67
Refrigerators	20.9M	9	6	8	7,67
Dishwashers	13.3M	7	10	4	7,00
Dryers	6.3M	5	10	9	8,00
Water heaters	4M	4	2	4	3,33
Freezers, Dryers, Air conditioners, Kitchen stoves	smaller volumes	2	5	4	3,67

Stakeholder overview

WASHING MACHINES IN EUROPE

- Europe is the 2nd biggest market for household appliances world-wide after China
- 87% of the washing machine exports remain in the European Union
- Most manufacturing sites are located in Germany, Italy, France, Poland (and Turkey)



Trade Association

- APPLiA
- EHPA

PRO

- Per country
- Eco modulation in Belgium, Estonia, Czech
- 5% reuse targets in EPR in France

Manufacturers

- BSH Group (Bosch, Siemens, Gaggenau, Neff),
- Whirlpool (Bauknecht, Privileg, Ignis, Indesit, Hotpoint),
- Miele
- Electrolux (AEG, Zanussi),
- LG

Retailer

- MediaMarkt
- Coolblue
- Euronics
- IKEA
- Expert Technomarkt
- AO.com

Pooling company

- Tosca
- CHEP
- Interzero
- IFCO
- Euro Pool Systems
- IPL
- LPR
- IPP
- Norsk Lasbærer Pool
- Svenska retursystem

Supply chain characteristics

HOW WASHING MACHINE APPLIANCES MOVE IN EUROPE

Value Chain	 Production →  Packing →  Logistics centre →  Transport →  Retail →  Delivery					
Stakeholder	Manufacturer			- Manufacturer owned - Logistics company	- Brick and mortar stores - Multi-branded stores - Brand exclusive stores - Supermarkets, Hypermarkets, Online stores	- Part of retail service - Third-party delivery
Activity	- Production - Assembly	Packing of LHA - EPS protection blocks - PE shrink-wrap - Cardboard box/ top	- Storage - Clamp forklift - Shipping prep - Label / tagging	- Truck - Railway - Sea container	- Purchase from Manufacturer - Sell to consumer	Delivery and installation at client
Major Players	- BSH - Electrolux - Miele - Whirlpool	- Manufacturer owned - Smurfit Kappa - Knauf industries - Constantia flexibles	Manufacturer owned	- Dachser - DB Schenker - DSV	- MediaMarkt - Euronice - IKEA - AO.com	- Retail owned delivery - DHL Group - UPS
Location	Most are in: Germany, France, Italy, Poland, Turkey, Slovakia	At production site	Close to production site	All over Europe	- All over Europe - Storage in own warehouse (or store)	All over Europe
Key Data	25.2 million units sold/ year ± 30% imported 87% of European of WM production stays in Europe 13% are exported	Tax rates (e.g. NL): - Paper €0.017/kg - Other (EPS) €1.32/kg	Stacking up to 8 layers high	Stacking up to 2 layers high	61% via online sales 39% brick and mortar store sales 11% of online purchases picked up at store by consumer	- Largest risk for damages in last miles of delivery (2-5% damage rate) 72% of consumers prefer sustainable packaging

Current packaging

SINGLE-USE

Most common protection

- EPS: Edges and corners for impact and surface contact
- Cardboard: Top for stacking
- Shrink wrap: Around for scratching and moisture

Alternative packaging

- Fully boxed (in carton)
- EPS corner protection inside
- Strapped



Stackability

- Up to 8 layers
- Forces held by appliances

Translated to Reuse

- Reuse target only excludes cardboard boxes
 - Transition to reuse account for most current packaging
- Stackability can be improved with nesting mechanisms



Current Transport

SINGLE-USE

- Exact fit:
outer dimensions packaging
- Clamp forklift
- Most damage risk in last miles
delivery
- Hand truck at delivery



Translated to reuse

- Standard outer dimensions
 - Preferably similar to current single use
- Clampable
 - Compatibility with single-use operations
- Protected sides for handling at delivery
 - Surface protection still needed
 - Extensive testing for reusable cushioning options



Reverse logistics

CRITICAL SUCCESS FACTOR

Reverse logistics are key

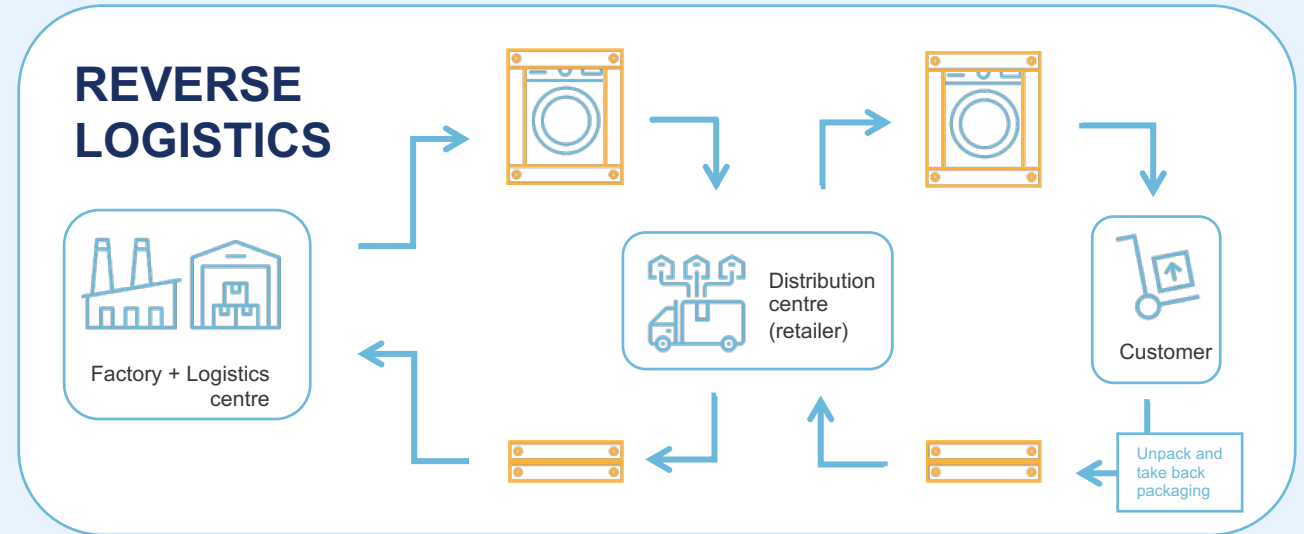
The introduction of reusable packaging means it has to come back from a consumer (or store) to a manufacturing site. This requires extra transport.

The first return step is always the same

- Taken back by delivery guy (truck)
- Ends up in distribution centre of the reseller
- No extra cost if own delivery
- Or little extra cost with 3rd party pick-up & delivery

Efficiency

- Applied to European production with European consumers
- Reverse logistics are performed using existing forward logistics movements



Assets

- Reusables compactable when empty
- Compatible with current single-use system
 - Same dimensions and handling

Potential business models

POOLING VARIATIONS

B2B POOLING

1. Third-Party Pooling Providers:

- Independent companies own and manage the reusables
- Services to businesses on a rental or leasing basis
- Fees based on usage or subscription models

2. Packaging producer - Owned Pooling:

- Manufacturers have own pooling systems
- Retained ownership of the reusables
- Provided to customers as part of product offering
- Costs of pooling service integrated in pricing of the product

SELF-OPERATED

3. LHA Manufacturer - Managed Pooling:

- Manufacturer manages the pooling of reusable packaging for their products
- Either own the reusables themselves
- Or partner with third-party pooling providers for pooling service to customers

4. Collaborative Consortium:

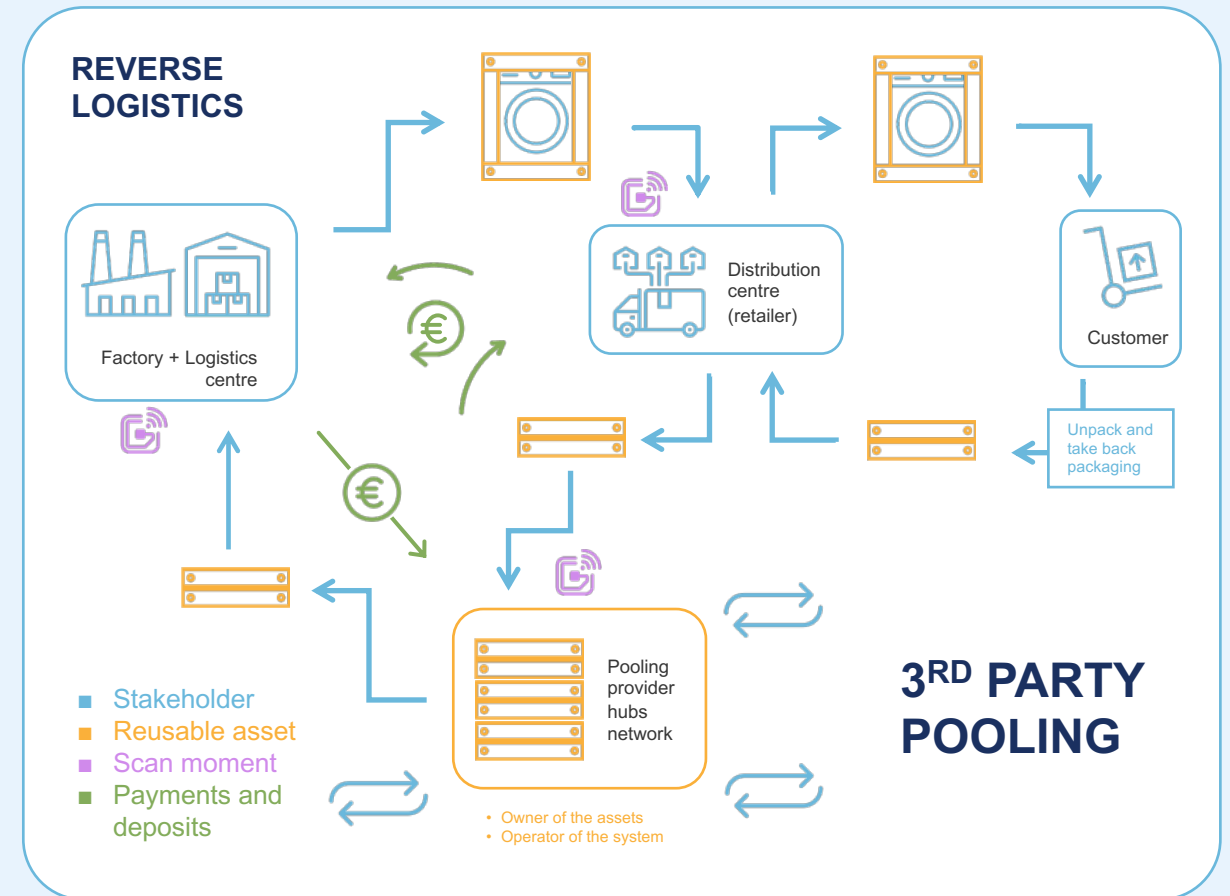
- Businesses jointly own and manage pooling system
- Members share the costs and benefits
- Collaboration to optimize packaging resources and supply chain efficiencies

Zooming into B2B pooling

BUSINESS MODELS WITH POTENTIAL

- Owned by third party packaging and service provider
 - (Industry) Consortium or existing logistics company
- Packaging is returned to hub in pooling network
- Pay-per-use system

1. Producer receives packaging
2. Product in packaging is delivered to retailer
 - Deposit is added to the price for retailer
3. Packaging is taken back upon delivery to consumer
4. Compact packaging returns to retail depot
5. Packaging pick-up by pooling hubs
 - Deposit is returned to reseller, or added to balance
6. Packaging is checked and reconditioned
7. Ready for shipping to producer

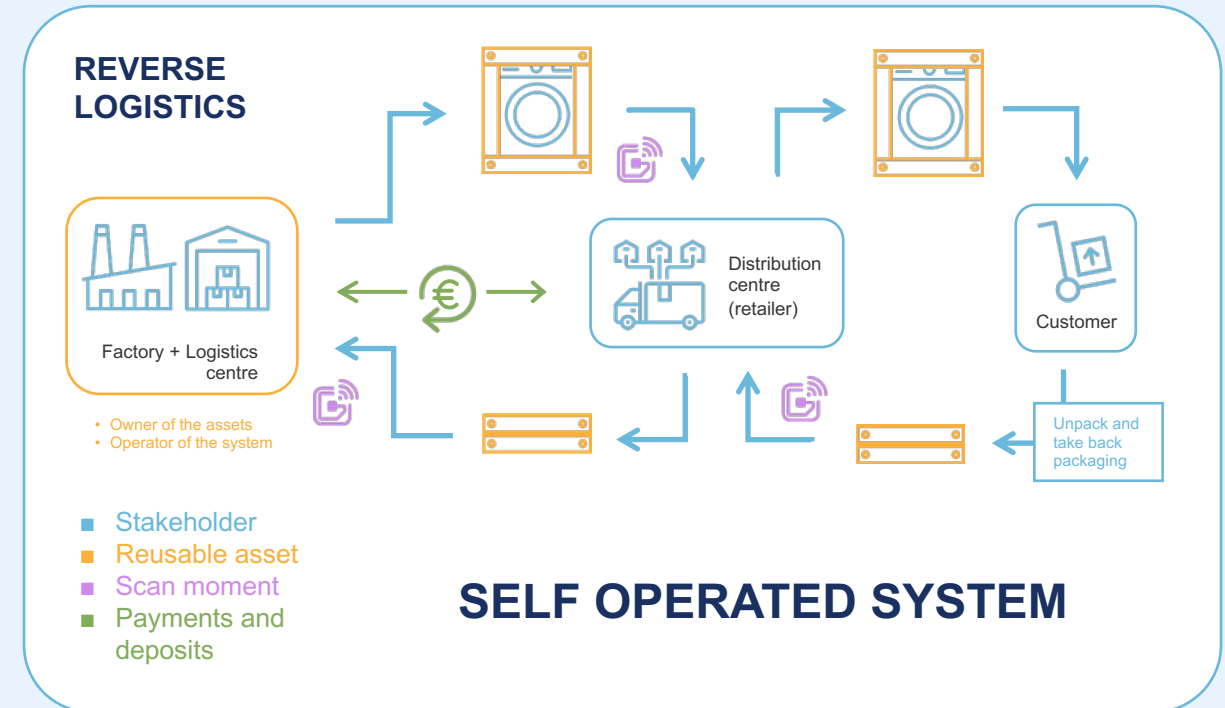


Zooming into self-operated

BUSINESS MODELS WITH POTENTIAL

- One-time purchase or self-produced reusable packaging
- The manufacturer is the owner and the operator of the system
- Packaging returns to manufacturer

1. Product and packaging are delivered to retailer
 - Deposit is added to the price for retailer, or to balance
2. Packaging is taken back upon delivery to consumer
3. Compact packaging returns to retail depot
4. Packaging is returned to manufacturer
 - Deposit is returned to reseller, or added to balance
5. Packaging is checked and reconditioned
6. Ready for reuse



Business models with potential

PROS & CONS

B2B POOLING

Pros

- No investment needed by manufacturer
 - Or lower costs if shared and set up by consortium
- Standardized assets means scalable for industry
- Central hubs network for optimized transport

Cons

- Need for standardised / adjustable models, suitable for different machines
- Dependent on many hub locations
- Viability needs commitment multiple users

SELF-OPERATED

Pros

- Competitive edge
- Adjustable to own product line
- More suitable for small scale start

Cons

- Higher capital expenditure
- Efficient reverse logistics depends on transport existing forward movements
 - Own or dedicated transport preferred
- Costly system to maintain

Compatibility with current supply chain

CONDITIONS FOR A WORKING REUSE SYSTEM

Viability of reuse



- Although production costs of reusable packaging are significantly higher than single-use options, reuse makes a positive return on investment and outperforms single-use. The more reuses, the cheaper and more sustainable
- The costs in each use cycle are mainly in transport, in the tracking system and to a lesser amount in reconditioning

Ease of operational fit



The current supply chain for LHA provides good opportunities to integrate reusable packaging:

- Applying reusable packaging is an opportunity for shorter packing time than single-use packaging, as protective cushioning is integrated in the reusable.
- Standardized packaging allows usage across brands and fits different kinds of LHA (such as washing machines and dishwashers).

Fit for reverse logistics



Efficient reverse logistics is key to create a viable reuse system:

- The shorter the product travels, the better
- LHA are mostly delivered and installed at the consumer. This enables packaging return upon delivery
 - To compete with single-use packaging empty reusable packaging must be taken back by the same vehicle that delivers the product
- Collection hubs for efficient transport
 - Empty reusables can be returned to nearby locations
- Tracking
 - The owner of the packaging needs to know how many of what packaging is located where
- Incentive to return the assets:
 - Deposit or registering numbers and hindsight calculation

Why switch to reusable packaging

BUSSINES OPPORTUNITIES FOR 17,3 M WASHING MACHINES



Environmental burden

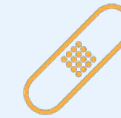
- Washing machines produce an estimate of **63k tonnes** packaging waste per year
- Dishwashers (similar packaging), produce **33,3k tonnes** of packaging waste per year
- Related greenhouse gas emissions, health hazards and environmental impacts all have a cost to society. This will be reflected in **future pricing and litigation costs**.



Single-use packaging & waste management costs

- Packaging costs
- In-optimal warehouse use (stacking)
- EPR fees (collection, sorting, recycling)

Estimated: € 965 million annually for LHA market in Europe



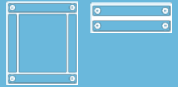
Reduction of damage & loss costs

- Returns (logistic costs)
- Repair work
- Product discounts
- Restocking costs
- Interruption and delays
- Administration
- Drop in customer loyalty

Estimated: € 1.4 billion annually for LHA market in Europe

Profit perspectives

PER STAKEHOLDER



Reusable packaging producer

- Sale of high-quality packaging
- Packaging repair
- Take-back at EoL for recycling



Appliance producer

- Reduced damage & loss rate
- Optimisation for warehouse space & logistics
- Reduced or eliminated EPR fees
- Time-efficient packing
- No purchasing and inventory of packaging needed



Retailer

- Reduced or eliminated EPR fees
- Reduced damage rate
- ESG reporting and CSDDD
- Time-efficient packing and unpacking



Logistics companies

- Streamlining of operations
- Standardization of packaging for improved stacking and transport
- Involvement in reverse logistic of packaging



Pooling companies

- New business segment for LHA packaging
- Revenues from pay-per-use model
- Optimisation for inspection & cleaning



Consumer

- No packaging waste to discard at home
- Sustainable delivery option enabling conscious consumerism
- Time-efficient and convenient unpacking

Next steps



Phase 1B: Scope & Conditions

- 1) Create scope for 2-3 scenarios with a high-over analysis
Goal: Draft different opportunities in order to compare scenarios and identify the most suitable solution for interested stakeholders to move forward
 - Write a feasibility study, incl. insights on needed packaging format, reverse logistics, maintenance, partnerships, digital infrastructure set-up, etc.
 - Select most promising scenario
- 2) Define conditions enabling a positive business case
Goal: Assure successful implementation and workability of the identified scenario
 - Set system requirements including parameters, and Key Performance Indicators (KPIs)



Phase 2: Business model development

- Comprehensive in-depth economic analysis (CBA) and environmental analysis (LCA)
- Definition of optimal business model set-up (ownership, collaboration agreements, financing strategy, reuse scheme, packaging journey, etc.)
- Selection of suitable packaging options (specs of product, system & behavioral change)
- Creation of strategic roadmap for long-term sustained competitive advantage
- Guidelines for stakeholder engagement plan, marketing strategy and communications



Phase 3: Piloting and evaluation

- Execution of a 6-month retail pilot, testing different settings
- Implementation of marketing & communications campaign
- Evaluation of pilot and provision of improvement actions needed for upscaling

Join as project participant

And secure market advantage

Becoming the to-go partners for reusable transport packaging for LHA, ready to serve market needs from 2026 onwards!

- Costs will be divided through organisations joining the project
- Project outcomes will be customized to organisations needs and capabilities
- Insights (such as CBA) will not be publicly shared and are for the use of project participants only

Costs for upcoming phases are:

Phase 1B: 35k€

Phase 2: 100k€

Phase 3: 60k€

Stakeholder involvement

- RPA members: please provide feedback on your interest to join phase 1B&2.
- Share slide deck with your company internally to introduce the project
- See two-pager (send after this meeting via e-mail)
- Starting with focus on Germany due to a) market size b) production sites c) resulting relevancy for PPWR (100% targets for sites withing one member states and between production sites of one company)
 - Manufacturers: BSH group, Whirlpool, Miele, Electrolux
 - Pooling companies: feedback from RPA members!
 - Retailers: MediaMarkt Saturn Group, Ikea, Coolblue
 - Packaging manufacturer: tbd depending on model and needs. There are options (e.g. Corplex, FreePackNet)
 - Trade associations: APPLiA, Reverse Logistics Association
 - PRO: Grüner Punkt

Join the movement now!

www.seariousbusiness.com

