

Fact sheet: Reusable Take-away Packaging

7 reasons why reusable take-away packaging is a sustainable alternative for climate protection and resource conservation

1

Reusable take-away packaging is more climate-friendly than single-use packaging.



2

The cleaning of reusable take-away packaging uses less water than the production of single-use packaging.



3

Reusable take-away packaging gets recycled whereas the most common disposal scenario of single-use take-away packaging is incineration.



4

Support of bring-your-own packaging will not be sufficient to create a transition towards a circular packaging sector.



5

Safe refilling of reusable packaging is possible in compliance with hygiene standards.



6

Paper packaging exerts pressure on forests and is not always recyclable.



7

Best Practices for the entire EU:
Existing legislation and well-established reuse systems already in place in progressive Member States



Why we need effective EU policies for the reuse of packaging

7 facts why reusable take-away packaging is a sustainable alternative for climate protection and resource conservation

The waste hierarchy is the cornerstone of EU waste policy and legislation and is set out in the EU Waste Framework Directive (Directive 2008/98/EC). However, in the past decades the waste hierarchy has not been taken into account sufficiently, in both legislation and the public debate. Firstly, policies concerning the sustainability of packaging have mostly been centred around recycling – only ranked as the third most preferable option in the waste hierarchy – while continuously growing amounts of waste have simply been taken for granted. Packaging volumes are at an all-time high. The last decade alone, packaging waste has grown by 20% and even outpaced economic growth. Recycling does not reduce waste at source nor does it prevent the production of increasing quantities of unnecessary, and oftentimes downright absurd packaging. Although recycling undoubtedly offers great potentials for the circular economy, the resource and emission saving potentials of waste prevention and reuse are considerably greater, which makes them the preferable options wherever possible. It is therefore high time that the reuse transition is backed by strong, ambitious, enforceable European legislation.

Secondly, the discussion has unfortunately been increasingly concentrated on one material (i.e. plastic) and the possible single-use alternatives, lacking the necessary focus on sustainable packaging systems rather than materials. The associated narrative has created room for consumer mislead and false solutions. Additionally, there has been a trend towards disposable packaging made from composite materials, bioplastics, coated paper, aluminium, and glass, with little to no benefit for the environment.

Furthermore, the continuing increase of on-the-go consumption, as well as the growth of the e-commerce sector, has contributed significantly to an increase in packaging waste volumes. The consumption of paper for packaging in Europe, for instance, reached 32.7 million tonnes in 2020¹.

Specifically on takeaway food and drinks service, [Statista \(2021b\)](#) shows that for many European countries considerably more consumers started to use food delivery services over the whole of 2020, and many consumers intend to continue to make use of these services (see figure 1 below). Takeaway services also increased notably since the start of the Covid-19 pandemic, and it is believed that the market for delivery and takeaway food will not return to the situation before the Covid-19 pandemic ([ABN-AMRO, 2021](#); [Deloitte, 2020](#); [McKinsey, 2020](#)).

1. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Generation_and_recycling_per_inhabitant

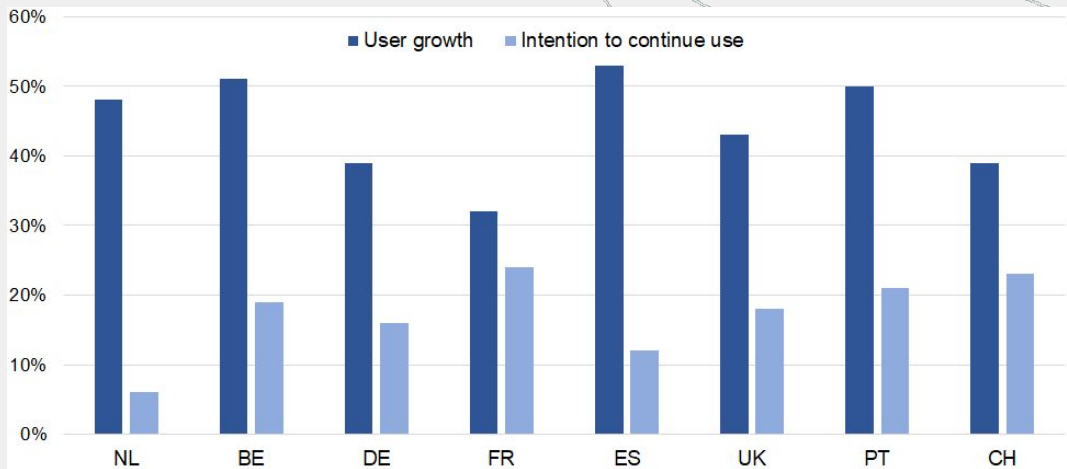


Figure 1: Percentage growth in delivery services and consumers who intend to continue using food delivery services in the Netherlands (NL), Belgium (BE), Germany (DE), France (FR), Spain (SP), United Kingdom (UK), Portugal (PT) and Switzerland (CH) in 2020 (Statista, 2021b)

In addition, according to a recent study, in 2019 in the EU28, more than 17 billion units of single-use packaging for takeaway warm drinks were used and over 16 billion units of single-use packaging were used in 2019 for takeaway food, including pizza. Conservatively assuming disposable consumption remains constant through 2040, this results in 560 billion discarded single-use cups and boxes, accounting for a waste stream estimated at nearly 12,200 kilo tons. This is equivalent to the tremendous weight of more than 170 cruise ships, each accommodating 2,200 passengers.

Take-away food and drinks

More than **17 billion** units of take-away packaging for warm drinks consumed and disposed in the EU28 in one year.

Over **16 billion** units of packaging for take-away meals consumed in one year.

To stop this trend and address the related impacts on people and the environment, we need a shift from a linear to a truly circular economy. The focus should not only be on closing the loop, but also on slowing and narrowing the loop. The proposal of the new Packaging and Packaging Waste Regulation offers the potential to initiate such a transition. Introducing mandatory reuse targets within the regulation is not only innovative, but represents a strong and much-needed signal to many industries and stakeholders.

As proven by extensive scientific literature presented below, well-managed reuse systems reduce waste at source, cut energy and resource use, strengthen SMEs and create jobs as well as scalable business opportunities. Most importantly, reusable packaging plays a key role in the reduction of greenhouse gas emissions. We acknowledge that reuse systems have to be well-managed, need to meet a minimum number of rotations and should be distributed as local as possible to maximise their environmental protection potential.

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https://zerowasteurope.eu/wp-content/uploads/2022/05/ZWE_Executive-Summary-Making-Europe-transition-to-reusable-packaging.pdf

³ Own calculation based on the ZWE study linked under footnote 2

1. Reusable take-away packaging is more climate-friendly than single-use packaging.

Reusable beverage cups and meal boxes can be reused multiple times - up to more than 100 rotations - thereby saving resources and protecting the climate, as several Life Cycle Assessments have shown ^{4 5 6 7}. The emissions associated with reusable packaging are deeply influenced by the number of rotations it undergoes, but only to a certain break-even point ⁸. This plateau can be explained by the fact that there are emissions that occur in every regular cycle of the reusable packaging, such as cleaning and transportation. Therefore, the impacts that are only present in the production and disposal cycle are less significant in the overall impact rather than the cleaning and transport distances of reusable packaging.

Note that these emissions are of course smaller when a reusable packaging is refilled, either at home or on the go.

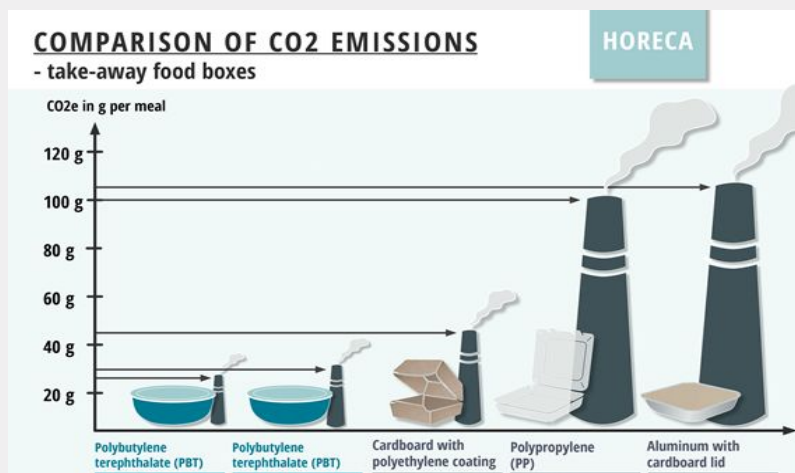


Figure 2: Comparison of CO2 emissions of take-away food boxes

A study commissioned by the German Federal Environment Agency demonstrates that after about 10 rotations, reusable plastic cups are more advantageous than all common single-use alternatives. The break-even point for reusable meal boxes is reached after 13-15 rotations, depending if the packaging is cleaned inhouse or in a centralised rinsing facility (see figure 2). Broken down by material types, the CO2 emissions of cardboard boxes are almost twice as high as for reusable alternatives. The difference is even greater with single-use applications made of plastic or aluminium. A polypropylene disposable box or an aluminium tray pollutes the climate with 3.5 times the CO2 emissions of reusable alternatives. Takeaway single-use packaging is almost exclusively produced with virgin material, while recycled material is rarely used. Even if the single-use packaging is recyclable (which often is not the case due to a plastic coating and contamination with food and grease), it is usually disposed of via public waste bins and incinerated with the residual waste. This negatively affects the carbon footprint of single-use packaging.

⁴ Carbotech AG, Österreichisches Ökologie-Institut, Öko-Institut e.V. Deutschland (2008): [Vergleichende Ökobilanz verschiedener Bechersysteme beim Getränkeauschank an Veranstaltungen](#)

⁵ ifeu (2019): [Untersuchung der ökologischen Bedeutung von Einweggetränkbechern im Außer-Haus-Verzehr und mögliche Maßnahmen zur Verringerung des Verbrauchs](#)

⁶ Gallego-Schmid et. al (2018): [Environmental impacts of takeaway food containers](#)

⁷ Bouchet Boucher (2021): reCIRCLE. Lebenszyklus und Kreislauf-Analyse

⁸ Zero Waste Europe and ReLoop (2020): Reusable vs. Single-use Packaging. A review of environmental impacts. https://zerowasteurope.eu/wp-content/uploads/2020/12/zwe_reloop_report_reusable-vs-single-use-packaging-a-review-of-environmental-impact_en.pdf.pdf_v2.pdf

2. The cleaning of reusable take-away packaging uses less water than the production of single-use packaging.

According to several LCAs, the water consumption of the production of single-use take-away packaging can be considered to be higher compared to the cleaning efforts for reusable packaging^{9 10 11 12}. In particular, the paper industry requires large quantities of water to produce paper fibres. The production of just one single-use coffee-to-go cup requires 1.3 litres of water⁵, whereas the cleaning process of one reusable cup only needs 100 to 200 millilitres.

When looking at food boxes, studies indicate a water consumption of 1.3 litres for a paper food box and more than 5 litres for a pizza box whereas the cleaning of a reusable box only needs between 0.2 and 0.9 litres of water^{6 7}.

	Carbotech, Austrian Ecology Institute, Eco-Institute germany (2008) [item: drinking cup]	German Environmental Agency (2019) [item: drinking cup]	Gallego-Schmid et al. (2018) [item: PP container]	Ramboll (2020) [14 different multiple-use product items]
Water consumption [l/item]	0.1	0.1	0.2	0.318
Energy demand/item [kWh/item]	0.0014	0.0014	0.0000742	0.027

Table 1: Comparison of water consumption and energy demand in different LCAs on take-away packaging

As one can see in table 1, the assumed consumption for washing one reusable item in the Ramboll study “Comparative Life-Cycle Assessment (LCA) single-use and multiple-use dishes systems for in-store consumption in quick service restaurants” commissioned by the European Paper Packaging Alliance (EPPA), compared to other studies on the subject, is two to three times higher for water, and twenty or more times higher for energy, respectively¹³. Whereas in the Ramboll study, single-use packaging presents ecological advantages over reusable solutions, the opposite is the case for the LCAs cited above.

⁹ Carbotech AG, Österreichisches Ökologie-Institut, Öko-Institut e.V. Deutschland (2008): [Vergleichende Ökobilanz verschiedener Bechersysteme beim Getränkeauschank an Veranstaltungen](#)

¹⁰ ifeu (2019): [Untersuchung der ökologischen Bedeutung von Einweggetränkebechern im Außer-Haus-Verzehr und mögliche Maßnahmen zur Verringerung des Verbrauchs](#)

¹¹ Gallego-Schmid et. al (2018): [Environmental impacts of takeaway food containers](#)

¹² Bouchet Boucher (2021): reCIRCLE. Lebenszyklus und Kreislauf-Analyse

¹³ See a detailed analysis of the Ramboll study made by Deutsche Umwelthilfe:

https://www.duh.de/fileadmin/user_upload/download/Projektinformation/Kreislaufwirtschaft/Coffee_to_go/220705_EPPA_Ramboll_Study_Review_FINAL.pdf

3. Reusable take-away packaging gets recycled whereas the most common disposal scenario of single-use take-away packaging is incineration.

The production and disposal scenarios of reusable packaging within reuse systems generally happen in a controlled environment. The current system operators on the market cooperate closely with their production facilities, that are located in their distribution country or neighbouring country. For example, the take-away reuse system [Recup](#) produces all of their reusable cups in southern Germany. On the one hand, this leads to shorter distribution distances. On the other hand, high quality recycling processes can be enhanced as reusable cups at their end-of-life are sorted out by the participating partners of the system and are directly sent back to the system operator guaranteeing a safe and clean waste stream. Most of the reuse system operators use mono-material for their products like polypropylene (PP), that can easily be recycled. These recycling materials are suitable for food-contact-material and urgently needed to achieve the proposed recycled content targets of Article 7 in the PPWR, e.g. for materials other than PET. Moreover, reusable packaging systems for takeaway will have to operate with a system of economic incentives to return the item (e.g. deposit or penalty based via an App) which would further reduce the risk of mismanagement and littering of reusable packaging. Digital based reuse systems like Vytal achieve excellent return rates of their packaging of over 99% and an average return time of less than five days.

By contrast, single-use takeaway packaging usually is disposed of in mixed waste bins either on the go or when consumed in-house. In Germany, for example, more than 40 percent of street waste in cities consists of single-use-packaging¹⁴. Consequently, recycling of this packaging is no longer possible. In many European countries, the mixed waste ends up in incineration plants, sometimes it is even landfilled. This corresponds to the second-to-last and last level of the waste hierarchy. If disposable packaging is taken home, recycling cannot be guaranteed there either. If the packaging becomes heavily soiled, e.g. by food residues or grease, pizza boxes, for example, no longer belong in the paper waste but in the residual waste. So even if single-use packaging for take away food and drinks is designed for recycling, it can only be recycled in the rarest of cases. In addition, especially in the case of composite packaging, the plastic coating of paper packaging, for example, makes recycling difficult or impossible. In the worst case, single-use-packaging ends up in the environment, which can lead to microplastic emissions into water and soil. These effects are not even considered in current LCAs.

¹⁴ Verband Kommunalen Unternehmen (2020)

https://www.vku.de/fileadmin/user_upload/Verbandsseite/Presse/Pressemitteilungen/2020/Studie/Daten-VKU-Littering-Studie.pdf

¹⁵ Deutsche Umwelthilfe (2023): Repräsentative Umfrage unter Verbraucher*innen zu ihrer Nutzung von Ein- und Mehrwegverpackungen für Take-away Speisen und Getränke

https://www.duh.de/fileadmin/user_upload/download/Projektinformation/Mehrweg/230329_Mehrweg_Umfrage_Takeaway_forsa_final.pdf

4. Support of bring-your-own packaging will not be sufficient to create a transition towards a circular packaging sector.

The action of refill, as defined in the PPWR proposal, means an operation by which an end user fills its own container, e.g. with food or drinks offered by the HORECA sector, in the following referred to as 'bring your own'¹⁵. As a representative survey conducted in Germany at the end of January 2023 shows, only a minority of consumers use 'bring your own'. Just 11 percent of the respondents have ever used their own reusable box for food, compared to 32 percent for reusable cups for beverages. In turn, if we look at those who use takeaway more than once a month, just 15 percent use their own reusable cup. Refill as a concept has already been advertised in Germany for almost 10 years in municipal campaigns as well as by restaurants and cafés. Beyond that, the HORECA sector in Germany has been obliged to enable refill by law since the beginning of January 2023. However, 'bring your own' remains a concept for a niche of highly motivated consumers which does not sufficiently contribute to levelling the playing field between disposable and reusable packaging solutions. In some countries, like The Netherlands, consumers are offered a discount if they bring their own packaging. However, the discount offered is often so small that it does not create sufficient incentive for a consumer to bring their own packaging. Therefore, 'bring your own' can be seen as a complementing measure to reuse quotas, but it is not sufficient to tackle the increase in single-use take-away packaging.

5. Safe refilling of reusable packaging is possible in compliance with hygiene standards.

The refill either for 'bring your own' or for reusable packaging in a reuse system can be well-implemented, taking hygiene standards into account. As an example, in Germany there are already hygiene guidelines for refill, e.g. from the Food Federation Germany (Lebensmittelverband)¹⁶ or the German Federal Institute for Risk Assessment¹⁷ (BfR) that can serve for a European-wide blueprint. According to the BfR, the risk of infection with hot drinks is generally considered to be rather low, as most bacteria are killed off at high temperatures. Principles, like defining areas on the counter for the acceptance of containers or using trays so that the employees don't have to touch the consumer owned box, can be easily applied. Still, employee training plays a crucial role for safe refilling to further ensure a rapid workflow in day-to-day business. However, using reusable take-away containers within a reuse pool system gives more handling security to the restaurants and cafés as they clean the containers in their stores or by a professional rinsing facility. This again implies that the sole support of 'bring your own' measures will not be sufficient for an effective and efficient transition to reuse.

¹⁵ Deutsche Umwelthilfe (2023): Repräsentative Umfrage unter Verbraucher*innen zu ihrer Nutzung von Ein- und Mehrwegverpackungen für Take-away Speisen und Getränke
https://www.duh.de/fileadmin/user_upload/download/Projektinformation/Mehrweg/230329_Mehrweg_Umfrage_Takeaway_forsa_final.pdf

¹⁶ <https://www.lebensmittelverband.de/de/medien/leitfaeden-und-leitlinien>

¹⁷ https://www.bfr.bund.de/de/fragen_und_antworten_zur_nutzung_kundeneigener_mehrwegbecher_fuer_coffee_to_go-204767.html

6. Paper packaging exerts pressure on forests and is not always recyclable.

With the rise in e-commerce and take-away, as well as the move away from single-use plastics, the use of paper and cardboard packaging is constantly growing. “Paper and cardboard” generated 32.7 million tonnes of waste in 2020¹⁸, and was the main packaging waste material from 2009 to 2020. In the EU, half of all paper produced is now used for packaging¹⁹. At the same time, three billion trees are cut down annually around the world to meet the demand for paper packaging²⁰.

Relatively high recycling rates for paper are often put forward to downplay this trend. However, the paper industry itself states that only half of paper is produced using recycled materials²¹. The remainder comes from “virgin pulp” - i.e. forests. 30% of EU woody biomass goes to pulp and paper production²². Industry pressure on forests bears known negative environmental consequences - replacement of biodiverse forests with monoculture plantations²³, clear-cuts²⁴ a general bad state of European forests²⁵. Because all paper-based recycled material is already being used, further increases in packaging demand will result in increased needs for virgin pulp and increased pressure on forests. This should be kept in mind when claims are made about the ‘renewable resources’ that paper is presumably made of. Trees needed for the production of paper do not grow back at the same speed as they are cut down and should therefore not be regarded as a renewable resource²⁶. Additionally, because packaging products are very short lived, paper packaging does not store carbon in the way wood products used in construction do, resulting instead in emissions²⁷.

On top of this pressure on forests, paper packaging is often mechanically laced with other materials like plastic and aluminium²⁸. The packaging industry itself, despite misleading conclusions on plastic, warns of poor recycling of paper composites²⁹ which often end up in landfills or incinerated. As well as mixed materials, packaging is frequently contaminated by food, which makes recycling impossible. The costs and complications of recycling contaminated pizza cardboard boxes were even cited as a reason to abandon recycling as a public service³⁰.

¹⁸https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Generation_and_recycling_per_inhabitant

¹⁹ Coelho et al (2020), [Sustainability of reusable packaging – current situation & trends](#)– Resources, Conservation & Recycle, Vol 6, quoted in COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT REPORT Accompanying the document Proposal for a Regulation of the European Parliament and the Council on packaging and packaging waste, amending Regulation (EU) 2019/1020, and repealing Directive 94/62/EC

²⁰ FERN (2023), [Unwrapping a disaster: the human cost of overpackaging](#)

²¹ <https://sustainability.cepi.org/policy-blocks/circular-economy/>

²² <https://unece.org/forests/joint-forest-sector-questionnaire-jfsq-country-replies>

²³ See Laakkonen, Hujala, and Pykäläinen, ‘Defining the Systemic Development of the Finnish Pulp and Paper Industry’s Business Network’; Hanna Lundmark, Torbjörn Josefsson, and Lars Östlund, ‘The Introduction of Modern Forest Management and Clear-Cutting in Sweden: Ridö State Forest 1832–2014’, *European Journal of Forest Research* 136, no. 2 (2017): 269–85,

<https://doi.org/10.1007/s10342-017-1027-6>; Hanna Lundmark, Torbjörn Josefsson, and Lars Östlund, ‘The History of Clear-Cutting in Northern Sweden – Driving Forces and Myths in Boreal Silviculture’, *Forest Ecology and Management* 307 (2013): 112–22,

<https://doi.org/10.1016/j.foreco.2013.07.003>.

²⁴ https://foresteurope.org/wp-content/uploads/2016/08/SoFF_2020.pdf

²⁵ <https://www.nature.com/articles/s41467-020-19493-3>

²⁶ R. Luick et al., “Primeval, natural and commercial forests in the context of biodiversity and climate protection – Part 2: The Narrative of the Climate Neutrality of Wood as a Resource”, *Naturschutz und Landschaftsplanung (NuL)*, vol. 53, no. 1, pp. 22–35, Dec. 2021, doi: 10.1399/NuL.2022.01.02.e.

²⁷ https://environmentalpaper.org/wp-content/uploads/2018/04/StateOfTheGlobalPaperIndustry2018_FullReport-Final-1.pdf

²⁸ Beverage cartons (as multi-material), coffee cups, waxed paper bags, metalized boxes, plastic coated packaging and even biodegradable containers commonly wrongly disposed, source: [EU Commission Impact assessment](#)

²⁹ <https://packaging360.in/news/study-on-paper-composites-confirms-more-waste-and-less-recycling/>

³⁰ <https://media4.manhattan-institute.org/sites/default/files/declining-case-for-municipal-recycling-HH.pdf>

7. Best Practices for the entire EU: Existing legislation and well-established reuse systems already in place in progressive Member States

Many Member States have already put in place in their national legislation specific measures supporting or mandating reusable packaging for the takeaway and horeca sector, for instance:



[France: Circular Economy Law - Loi n° 2021-1104 du 22 août 2021 portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets](#), from 1 January 2023, meals and drinks consumed on site must be served in reusable containers.



[Luxembourg: Loi du 9 juin 2022 modifiant la loi modifiée du 21 mars 2012 relative aux déchets : et la loi modifiée du 31 mai 1999 portant institution d'un fonds pour la protection de l'environnement](#). (Article 9, paragraph 2) - Luxembourg mandated that, as of January 2025, containers, trays, plates and cutlery used in the context of takeaway meals have to be reusable.



[Germany: The legislation on the placing on the market, return and high-quality recycling of packaging](#) mandates for restaurants and take away establishments over 80 square metres and 5 employees to offer reusable cups and food containers by January 2023.



[Portugal: Decreto-Lei n.º 78/2021 de 24 de setembro - Article 6](#). Portuguese law mandates that by January 2024, restaurants are required to provide reusable packaging to its customers (through a deposit) for takeaway or delivery of food and beverages. It also instructed that the price of reusable packaging should not be higher or less advantageous than the single-use packaging. Also, restaurants must provide reusable utensils for onsite consumption of food or beverages in their establishments



[Netherlands: Regeling kunststofproducten voor eenmalig gebruik](#) mandates that horeca operators shall provide the end user with a reusable alternative to single-use plastic drinking cups or single-use plastic food containers for the consumption of beverages or food outside the food delivery site.

Also, many initiatives of reusable packaging for takeaway food and drinks already exist across Europe. Some examples below:



Austria, Germany, France: [Vytal](#) is offering reusable and returnable containers for the catering industry in these countries.



Belgium: provision of reusable meal containers in connection with a network of restaurants - [SwapBox](#) (food) and [BillieCup](#) (beverage).



France: provision of reusable containers with a deposit return system: [GreenGo deposit](#), [Pyxo](#) (plastic and glass containers).



Germany: For takeaway and delivery, the German systems [Recup](#) and [Vytal](#) have proven the effectiveness of a low-tech deposit system and high-tech library model respectively. Recup has more than 20.000 HORECA partners throughout Germany including larger chains like Burger King, Dean & David and Ikea. Vytal is already applied in 5 countries and has 350.000 users, more than 5 million single-use packages avoided and a return rate of 99,3% with partners including Domino's, KFC and Uber Eats.



Netherlands: [Ozarka](#) and [Swapbox](#) provides reusable containers for a network of restaurants in the country.



Spain: development of a digital deposit return system allowing reuse as [Retornado](#) or [Reusam](#) (reusable coffee cups).



Switzerland: provision of reusable meal containers in connection with a network of restaurants: [RestoboxLausanne](#) ; [ReCircle](#).