PACKAGING FREE SHOPS IN EUROPE

AN INITIAL REPORT

eunomia

ZERO WASTE EUROPE

Réseau Vrac

CONTENTS

INTRODUCTION

Eunomia, Zero Waste Europe (ZWE) and Réseau Vrac are pleased to present this report, which seeks to better understand the opportunity to expand and promote packaging free shops in Europe.

OBJECTIVE

The objective of this study is to introduce this business model into circular economy discussions in Brussels and beyond, and explores three topics:

- THE BIG PICTURE OF THE STATE OF PACKAGING FREE SHOPS IN EUROPE;
- ITS POTENTIAL FOR GROWTH AND ASSOCIATED ECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACTS; AND
- RECOMMENDATIONS FOR THE EU TO ALLOW FOR THIS POTENTIAL TO BE REALISED.

The aim of this report is not to provide all the answers for how growth in this sector could be achieved. Rather, through primary research in the form of a survey of shops and zero waste membership organisations, to provide insight into the state of play of the sector and potential growth scenarios. These surveys will help us better understand how the sector is evolving, and any national or EU level policy barriers that may be preventing this sector from reaching its full potential.

SCOPE

In this piece of work the focus has been shops where products that are offered for sale are predominantly packaging free. In other words, customers bring their own reusable packaging, and products are sold by weight or volume. These types of shops are commonly smaller, locally owned, or linked to specific producers. Some of these types of shops may also sell a small amount of conventionally packaged products.

How this definition of packaging free maps onto the context of individual shops may vary between countries. For instance, due to local and national expectations regarding the proportion and criteria of products that should be packaging free to be defined as a 'packaging free shop', some shops could be considered as packaging free in certain countries and not others. Harmonising this definition is an ongoing task and this report has used the best information available at the time of writing to inform its analysis.

For the purposes of this report, conventional supermarkets with packaging free aisles have not been studied. The study also only includes retailers – it does not consider wholesalers. In addition, this report's focus on packaging free shops means it does not comment on impacts relative to other sectors or business models.

STRUCTURE

The structure of this report is as follows:

- **In Section 2.0** we outline the approach taken to the research and analysis in this report;
- **in Section 3.0** we present the results of the data analysis and modelling undertaken;
- **in Section 4.0** we discuss the policy findings;
- **in Section 5.0** we summarise the results of the work and make recommendations for next steps to stimulate discussion with key stakeholders.

1.0 APPROACH

DATA COLLECTION

The approach taken for this research consists of the following key components:

1. DATA COMPILATION AND FIELD RESEARCH
2. DATA ANALYSIS AND MODELLING AND
3. POLICY RESEARCH

Eunomia, ZWE, and Réseau Vrac worked together to develop a survey to assess the current state of the market in the packaging free shop sector. This survey consisted of two parts:

- A 'general survey' that was issued to ZWE, Réseau Vrac and national participant organisations associated with ZWE[1] with an aim of getting one response per country. This included questions on the general history of packaging free shops, policy barriers to growth, and any research that has previously been done;
- A 'retailer survey' that was issued by ZWE and Réseau Vrac to shops. This was a much more detailed survey that included historical, financial, employment, product, and sales information from each shop.

The surveys were carried out between September and November 2019. ZWE and Réseau Vrac circulated both surveys to their representative country organisations (hereinafter 'participant organisations'). The participant organisations were then responsible for distributing the 'retailer survey', and recruited shops to participate from their existing networks, as well as identifying shops through online searches. The sampling strategy was therefore reasonably broad and not designed to deliver a specific outcome, beyond shop self-identification as packaging free, or shops being identified as packaging free by ZWE or Réseau Vrac. Given that the objective of this report is to deliver high-level findings this does not present a major challenge to the outcomes of the research, but it should be borne in mind that the findings may represent some sampling bias.

National participant organisations were also asked to report the total number of packaging free shops in their country. It is apparent from discussions with participant organisations that different criteria were used for classing a shop as 'packaging free', with implications for the numbers of packaging free shops that are considered to exist in each country. For example, certain countries expected shops to deliver higher proportions of their products packaging free than in other countries, in order to be defined as a packaging free shop (France and Belgium, for example, expect 50% of products – excluding fruit and vegetables - to be packaging free). The reported total number of packaging free shops in each country may therefore not be directly comparable due to these different definitions. It is important for future studies in this area to improve the alignment of definitions of 'packaging-free' to address this challenge.

The final retailer survey responses include 268 shops across 10 countries: Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Latvia, Slovenia, Spain and Ukraine. When the survey was designed it was anticipated that data would be received from shops in every EU Member State, and therefore this response rate is smaller than hoped for. Consequently, results from 10 countries have been extrapolated across the EU-28. The sample has therefore provided sufficient insight to deliver high level findings, however the small sample size should be taken into consideration when interpreting the results. This is particularly the case when results have been extrapolated to an EU wide scale - these findings should be considered as order of magnitude estimates, not absolute values. Future research would benefit from receiving data from more Member States, but given this is the first attempt (to the author's knowledge) to provide some data driven insight into Europe's packaging free shop sector, the findings are valuable and lay foundations for further study.

The participant organisations in each of the 10 countries that have contributed to the research also completed a 'general survey'. This sought information on the current state of the packaging free sector in their country, including the history of this market sector and the potential barriers preventing growth.

It should be noted that the countries that responded to the survey include both members of the EU and countries outside the EU. Forecasting models developed in this study have focussed on the EU only (including the UK), but used data from Ukraine, which sits outside the EU, to inform these estimates. Where models are discussed as relating to Europe, this is equivalent to the EU in the context of this report.

DATA ANALYSIS

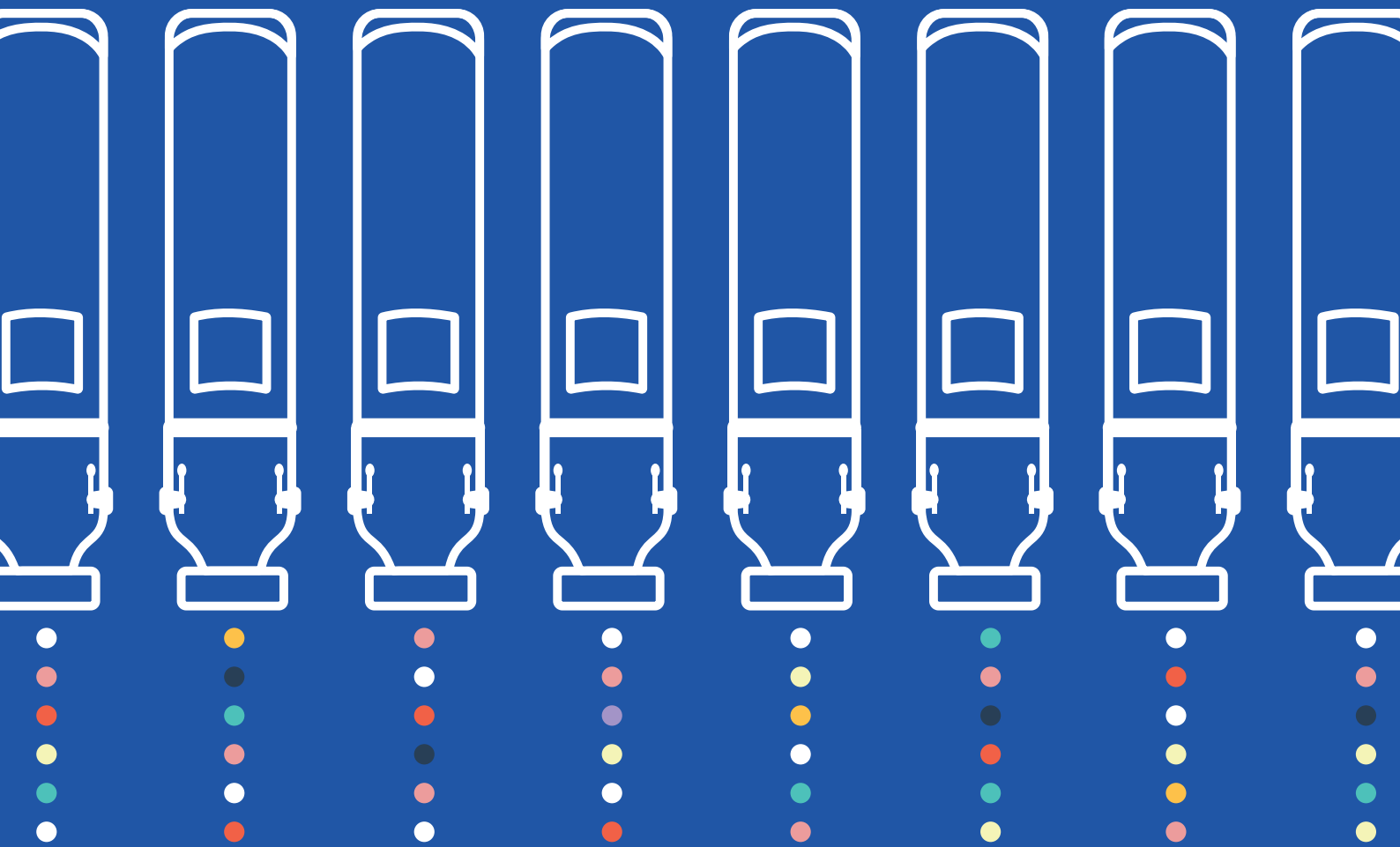
Once the retail survey was complete, the data was compiled and translated by ZWE, and provided to Eunomia for analysis. The data analysis that was undertaken is summarised in Section 3.0 below. The aim of this work was to conduct a high-level modelling exercise to explore the potential opportunities for packaging free shops. The findings generated have been categorised into four subsections:

- **History and growth of the packaging free sector:** this section focuses on shop numbers, changes over time, and potential future trends;
- **Economic context:** this section focuses on shop turnover, market turnover, and potential future trends;
- **Social context:** this section focuses on shop locations, customer profiles, job creation, and potential future trends; and
- **Environmental context:** this section focuses on product transport, avoided packaging, avoided carbon emissions, and potential future trends.

Finally, in Section 4.0 we investigate the findings of the general survey filled out by the participant organisations. This section includes an evaluation of current policy in relation to packaging free shops, limitations of the current legislation, and what potential legislation may be needed in the future to help facilitate the growth of this business model.

[1] The national participant organisations associated with ZWE are: Ecologists Without Borders (Slovenia), Friends of the Earth (Czech Republic), Rezero (Spain), Za Zemiata (Bulgaria), Zero Waste Alliance (Ukraine), Zero Waste Austria, Zero Waste Kiel (Germany), Zero Waste Latvija. The participant organisations associated with Réseau Vrac are: Réseau Vrac Belgium and Réseau Vrac France.

2.0 AN OVERVIEW OF PACKAGING FREE SHOPS IN EUROPE



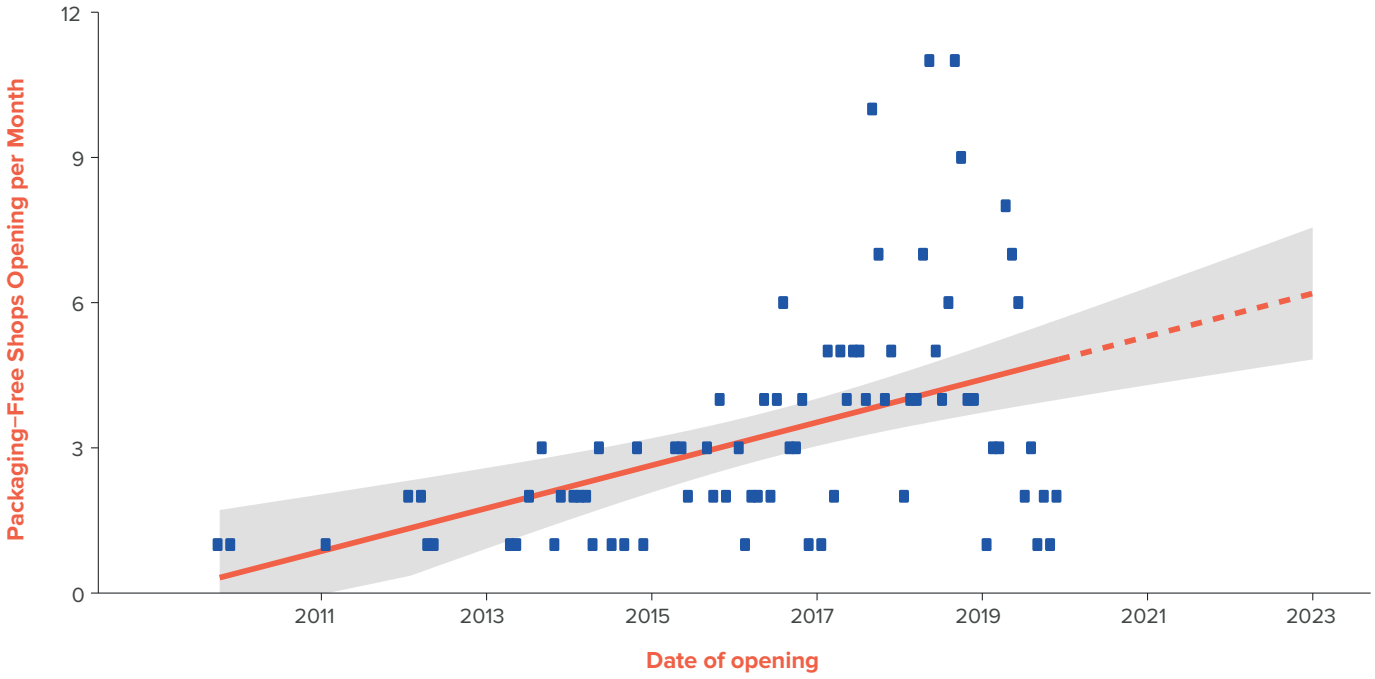
2.1 HISTORY AND GROWTH OF THE PACKAGING FREE SECTOR

Shops responding to the survey were asked to report the month and year when they were established as packaging free. This data has been used to understand how numbers of packaging free shops have increased over time, and to form a prediction of how the numbers of packaging free shops may change in the future.

Figure 1 shows the monthly opening rate of packaging free shops from 2009 - 2019 based on the opening dates reported in the retail survey. This data has been used to fit a linear model to predict the average number of packaging free shops opening for the next three years, from January 2020 to the beginning of January 2023. The orange line represents the mean predicted number of shops opening per month, and grey error bars represent the range into which there is a 95% confidence for this estimate.

The figure shows, based on the rate of opening of the surveyed shops, it is likely the number of packaging free shops opening per month within the surveyed countries will continue to increase in the near future. The opening rate suggests between 5 and 8 shops will open across the EU in January 2023, with a mean estimate of 6 shops.

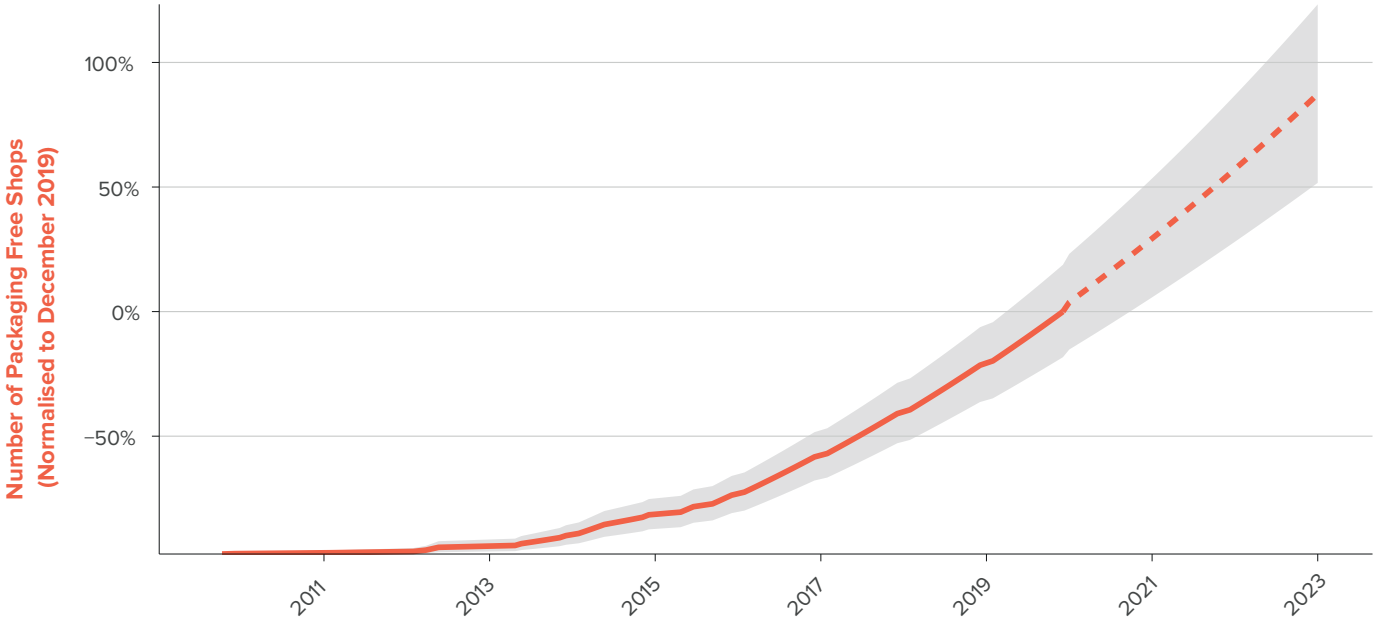
Figure 1: Forecast of the Number of Shops Opening per Month to 2023



This trend was used to model the future number of total shops opened to the beginning of 2023 relative to the number open in 2019, shown in Figure 2. The orange line represents the mean value for the total shops open relative in January 2023 relative to the number open in December 2019, and the grey error bar represents a 95% confidence interval around this estimate. There is a steep increase in the cumulative numbers of packaging free shops based upon the sample of 10 countries which responded to the survey.

On the grounds of the mean estimate (shown by the orange line), in January 2023 the total number of packaging free shops would be 87% greater than those open in December 2019.

Figure 2: Forecast of the Total Number of Packaging Free Shops in 2023 Relative to 2019



The data presented in Figure 1 and Figure 2 are based directly on information gathered in the retailer survey. Given the retailer survey only includes data from 10 countries, and the process by which shops were requested to participate in the sample was not systematic, it is challenging to draw firm conclusions regarding how this trend might play out at the scale of the EU. However, using the following method an attempt has been made to deliver an order of magnitude estimate for numbers of packaging free shops at the European scale by the beginning of 2023:

- The association between the total number of packaging free shops in the 10 sample countries (as reported by the participant organisations in each country) and each country's PPP (purchasing power parity[2]) was estimated using a linear model (Packaging free shops = 55.2 + 0.0537*PPP (billions), p = 0.0635) (see Figure 3);
- The number of packaging free shops in 2019 in each Member State was estimated based on their PPP, using the orange mean trend line and the 95% confidence bounds in Figure 3;
- Using the rate of shop openings identified in Figure 2, the estimated total number of packaging free shops in the EU in December 2019 was extrapolated to 2023, shown in Figure 4.

[2] Purchasing Power Parity is an adjusted measure of GDP which enables comparison between countries based on considering the cost of a wide range of goods and services.

[3] Data regarding the total number of packaging free shops in each of the surveyed countries is influenced by how packaging free is defined by the national participant organisations in this study. This means the total numbers of packaging free shops in each country may not be directly comparable. Please see the "Scope" section of the report for further information

Figure 3: Number of Packaging Free Shops Reported per Country in the Retail Survey Plotted Against PPP

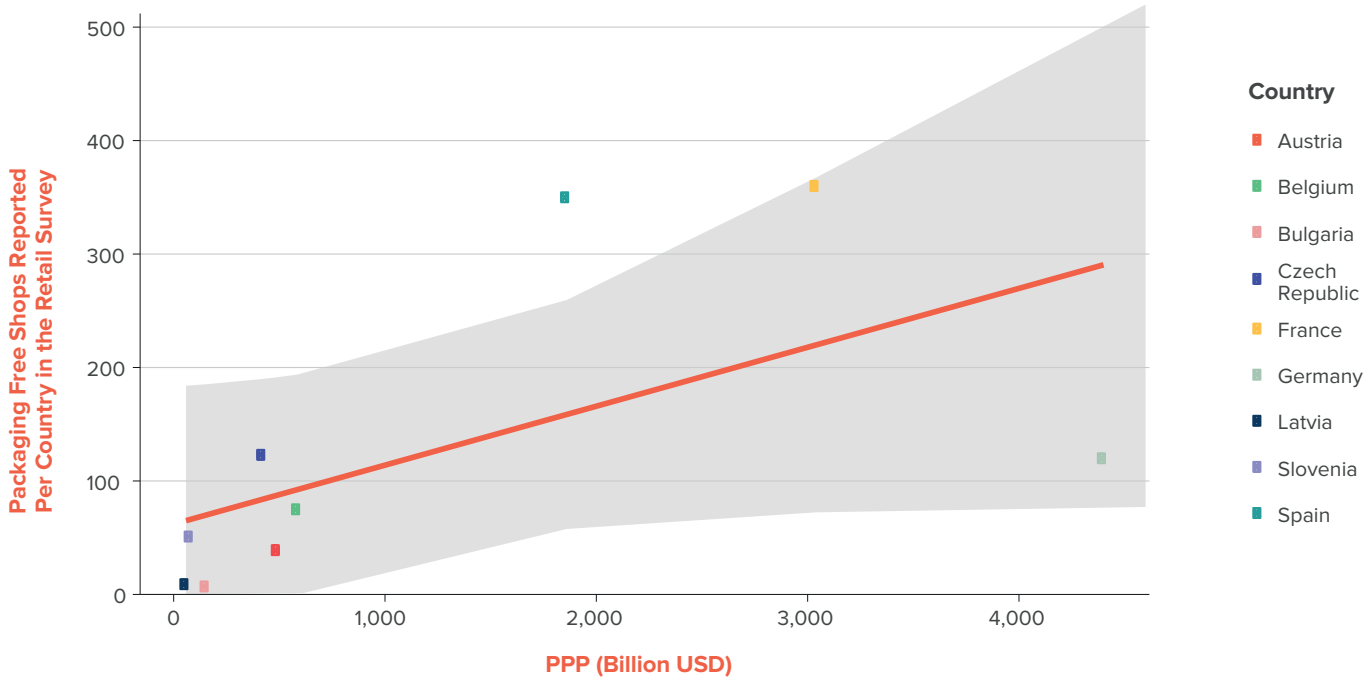
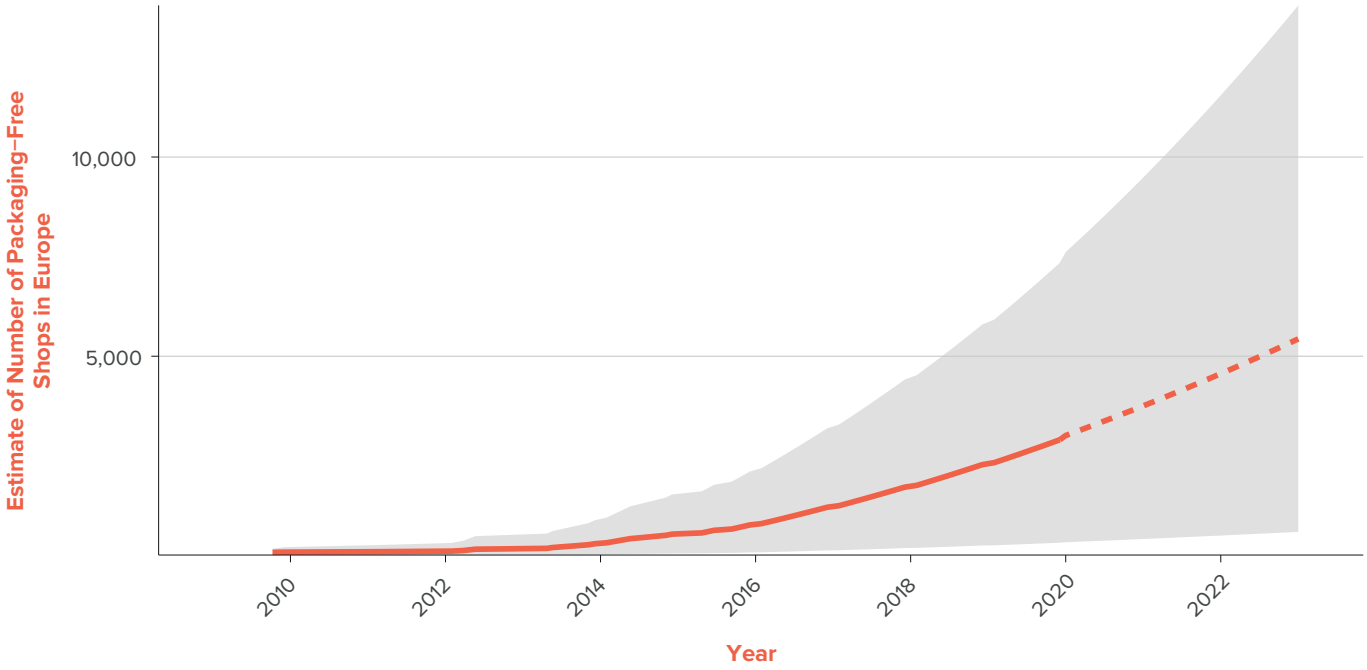


Figure 4: Extrapolation Showing the Potential Number of Packaging Free Shops in Europe in 2023



The grey shaded areas in Figure 3 and Figure 4 represent the 95% confidence limits of these estimations. The estimate for the total number of packaging free shops in Europe in December 2019 is 2902, with a 95% confidence interval of 319 to 7,344 shops. The confidence interval of this forecast is large, and it is therefore useful to present the final estimate of total EU wide packaging free shops in 2023 with a lower, mean, and upper bound, shown in Table 1.

Table 1: Range of Estimates for the Number of Packaging Free Shops in Europe in 2023

Mean estimate	Lower estimate	Upper estimate
5,435	592	13,807

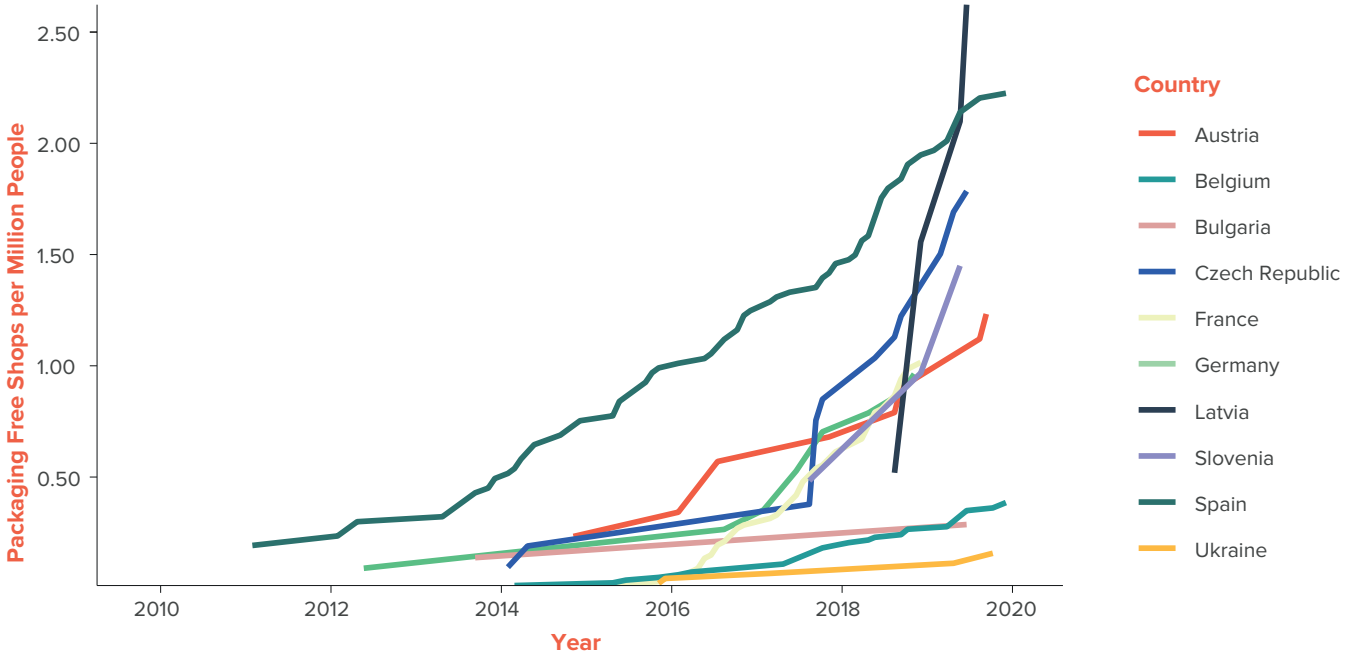
The extrapolation conducted to arrive at these estimations means they can only be used as order of magnitude indications of the future size of the packaging free market. Several assumptions have been made to arrive at the estimates, including:

- The 10 countries from which data was collected in the retailer survey provide a reasonable representation of the state of the packaging free shop market across Europe – this may not be the case;
- A linear growth rate is maintained over time – it is not possible to estimate the actual growth rate in packaging free shops across Europe, and a linear model gives the best approximation of future growth rates in shops;
- The total number of shops in each of the 10 countries, which was reported by the participant organisations, is reasonably accurate. This may not be the case as it is often challenging for the organisations to keep accurate records of the number of packaging free shops in their countries, and these figures are likely to be best estimates. The real number of packaging free shops in each of the 10 sample countries is therefore likely to vary from the reported figures that underpin these EU wide predictions; and
- Purchasing power parity is associated with the number of packaging free shops in European countries. In reality this is a substantial simplification of the factors that will be affecting the development of the packaging free sector at the country level, such as economic drivers, shopper preferences and behavioural trends.

In addition to looking at Europe wide trends, the sample of shops which responded to the survey provides insight into how shop numbers have grown over time in different countries. To draw comparisons between countries Figure 5 uses the date at which shops opened in each country, and how national populations have changed over time, to plot packaging free shops per million people in each of the sampled countries. It should be noted this graph is produced only using information from shops that responded to the survey, and is not based on the total number of shops in each country. The rate of growth, rather than the number of shops per million people, is therefore the important trend illustrated.

A similar rate of growth is shown between Spain, Czech Republic, Slovenia, Austria, France, and Belgium. Presenting relatively slower growth rates are Germany, Bulgaria and Ukraine. Latvia shows a very quick growth over a short period, possibly the result of its smaller population and a quick increase in shop numbers over a couple of years. Future research would benefit from examining these trends further and understanding the specific national factors leading to these similarities and differences.

Figure 5: Packaging Free Shops per Million People[4]



[4] This figure does not show which countries have the most packaging free shops. It is only based on data from shops that responded to the survey, the numbers of which varied between countries.

2.2 ECONOMIC CONTEXT

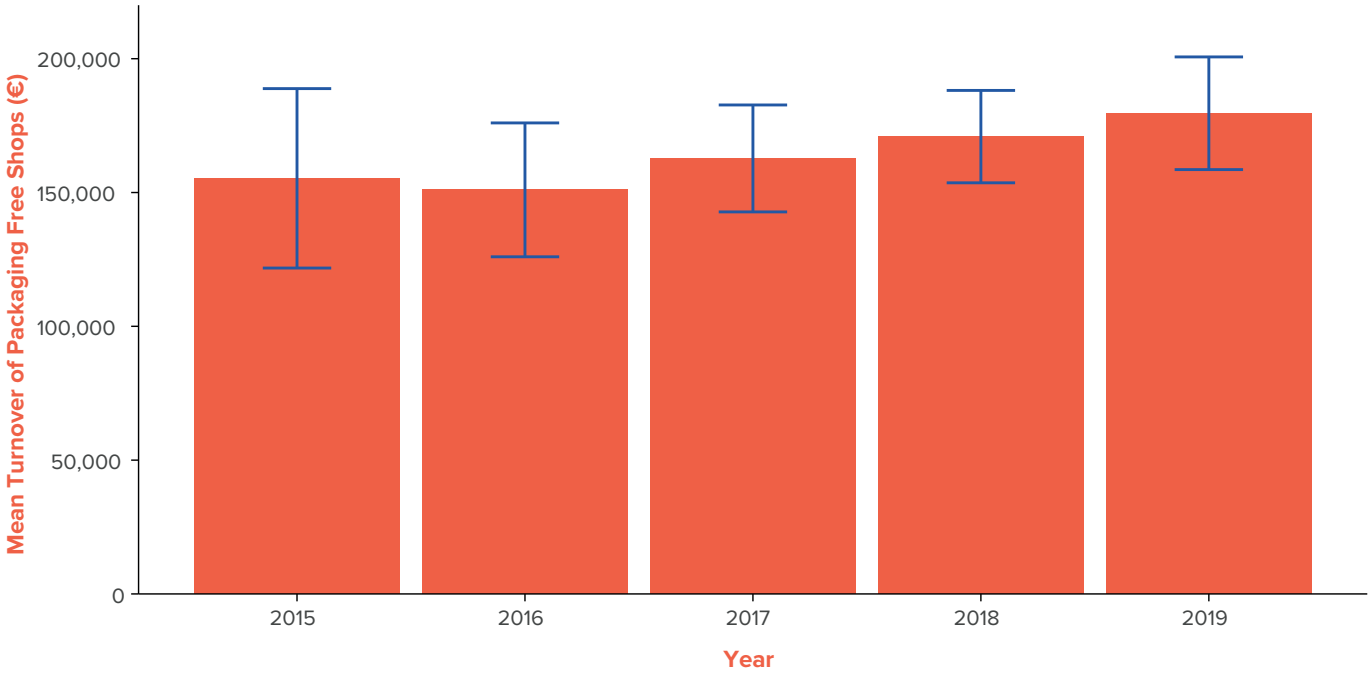
SHOP TURNOVER

A question of interest for this survey, and an important component of understanding the economic context of packaging free shops, is the approximate turnover being generated in this sector. Shops were asked to report their annual turnover over the past five years, to enable trends to be assessed. Figure 6 shows the results of this question.

From 2016 to 2019 a gradual increase in mean annual turnover is identified, which is a positive sign for the sector. It is important to note this is a mean figure, and different trends may be present depending on factors such as the age and location of shops.

Due to only being able to access five years of data it is difficult to assess whether this trend will continue over time. The mean turnover is approximately €170,588 across all years of the data, with a 95% confidence interval of €157,830 to €183,346.

Figure 6: Mean Turnover per Shop Over Time



Shops were also asked to report the proportion of their turnover that is attributable to packaging free products – i.e. products sold in bulk. From these results it has been possible to generate an estimate of average turnover generated purely from the sales of bulk goods, which is presented in Figure 7 for all countries excluding France and Belgium, which are displayed in Figure 8. The reason these two groups of countries are displayed separately is that shops participating in the French and Belgian surveys were subject to particular selection criteria with regard to how much of their stock was packaging free in order to be classed as a packaging free shop (for example, packaging free fresh fruit and vegetables are not included in the French and Belgian data). It is therefore useful to show these two countries separately. The data for France and Belgium is also for 2018, whereas data for the other countries is for 2019.

Figure 7: Mean Turnover per Shop Attributable to Bulk Goods (all countries excluding France and Belgium)

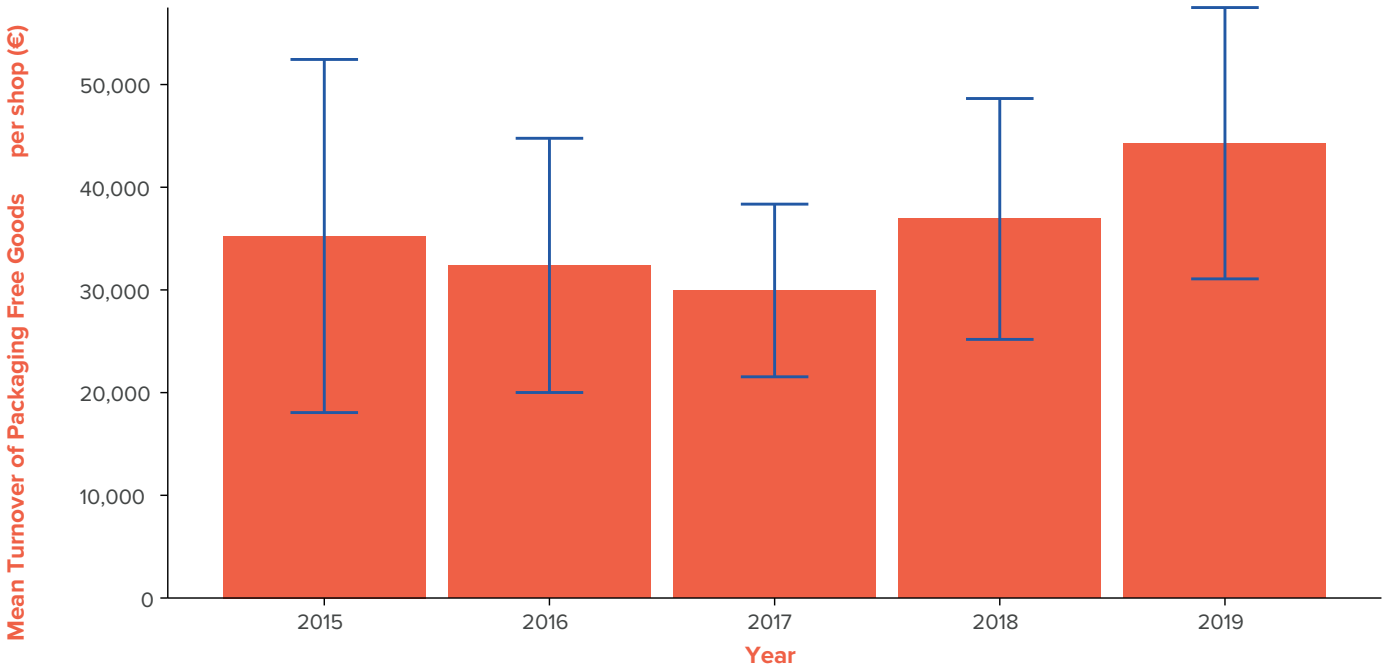
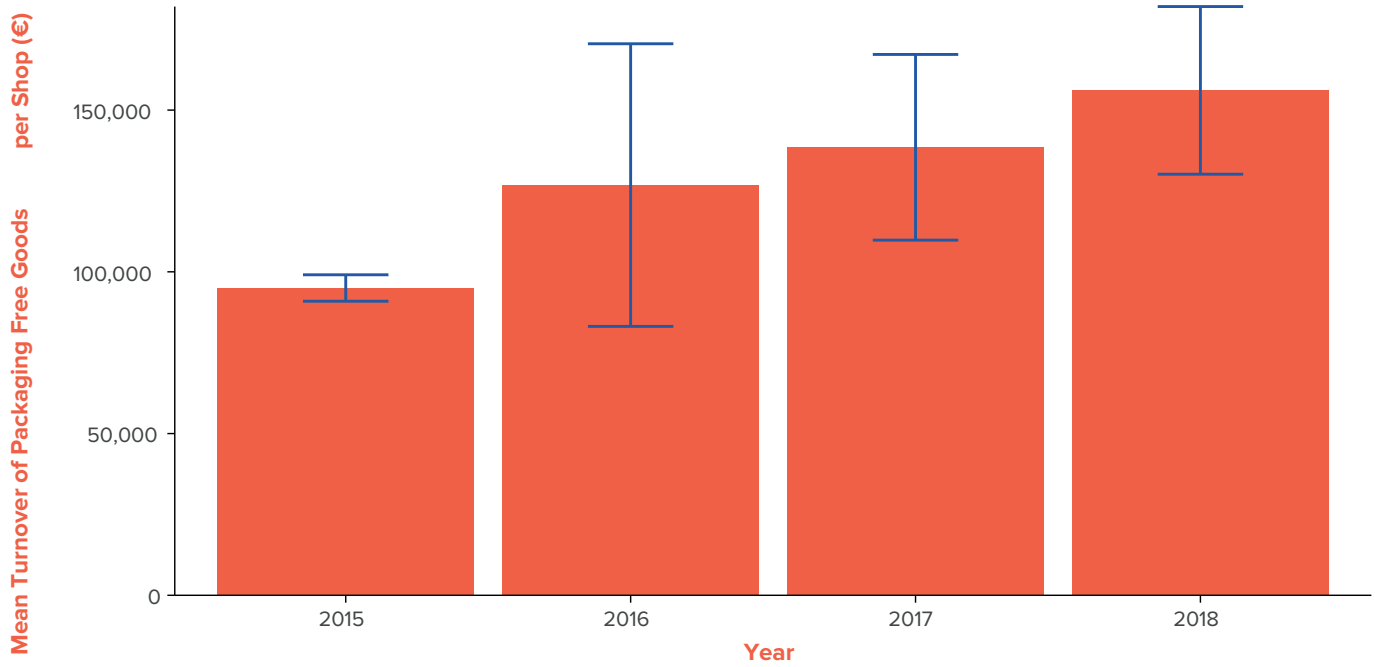


Figure 8: Mean Turnover per Shop Attributable to Bulk Goods (France and Belgium)



For the purposes of modelling future trends, it was decided that a value annual turnover per shop attributable to bulk good sales should be used that:

1. Is stationary over time; and
2. Is an average across all countries in the sample.

A stationary figure was chosen because it is challenging to predict how the average turnover trend may continue, based on only 5 years of data collected in this sample. The authors acknowledge this is a conservative assumption but it means turnover forecasts reflect information gathered in the survey, rather than hypothetical future scenarios. An average across all countries was chosen to best capture the variety of national contexts sampled in the research. Of course, national differences mean countries are unlikely to follow one uniform trajectory, but for the purposes of modelling average market conditions this assumption is appropriate.

The figure used in our modelling is average shop turnover from the sale of bulk goods for 2018 across all countries (including France and Belgium). 2018 was selected as there was the greatest number of responses to the survey for this year (n=153). The mid-value was €94,500, with 95% confidence limit giving a lower estimate of €77,198 and upper estimate of €111,801.

TURNOVER TRENDS

A prediction of future total turnover generated by packaging free goods across the EU has been made using the following method:

- Using data from the retail survey, total turnover in 2023 relative to 2019 has been estimated, shown in Figure 9. This prediction assumes that newly opened packaging free shops (numbers of which are derived from the workings behind Figure 1) confirm to the average turnover from packaging free goods in 2018 of €94,500. This gives a mean estimate of an 87% increase in the number of packaging free stores in 2023, relative to 2019. The grey shaded area indicates the 95% confidence limit, and produces a large range in estimations in the possible turnover attributable to packaging free goods at the beginning of 2023, with between a 24% and 164% increase relative to present levels.
- Figure 10 presents an EU wide prediction for the turnover of packaging free shops until the beginning of 2023. The approach followed is similar to that described in section 2.1 (using PPP to establish shop turnover levels in countries that did not participate in the survey).

Turnover for all packaging free shops in Europe for December 2019 was predicted to be €274 million with a 95% confidence interval of €25 to €821 million. The mean projection, shown by the orange line, provides a mean turnover estimate for 2023 of €514 million, with the 95% confidence limit giving a lower estimate of €46 million and an upper estimate of €1,544 million.

Figure 9: Forecast of Turnover from Packaging Free Goods to 2023, Relative to 2019

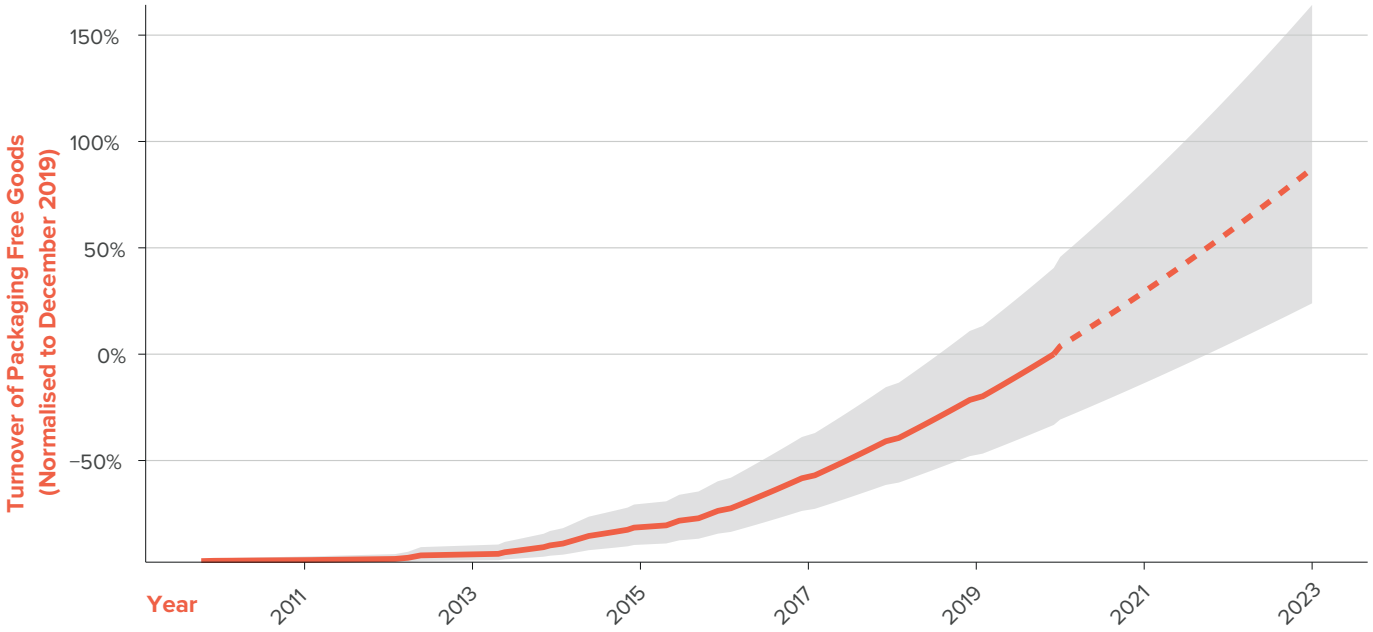
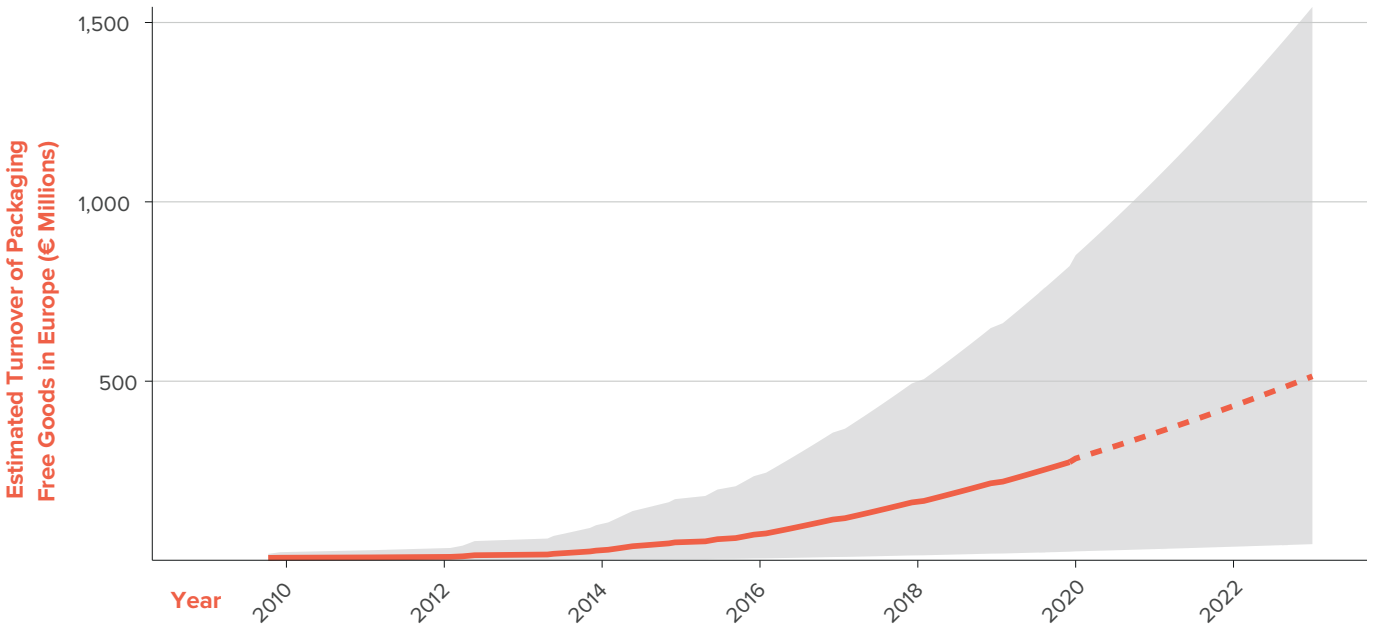


Figure 10: Extrapolation of Turnover from Packaging Free Goods Sales in Europe to 2023

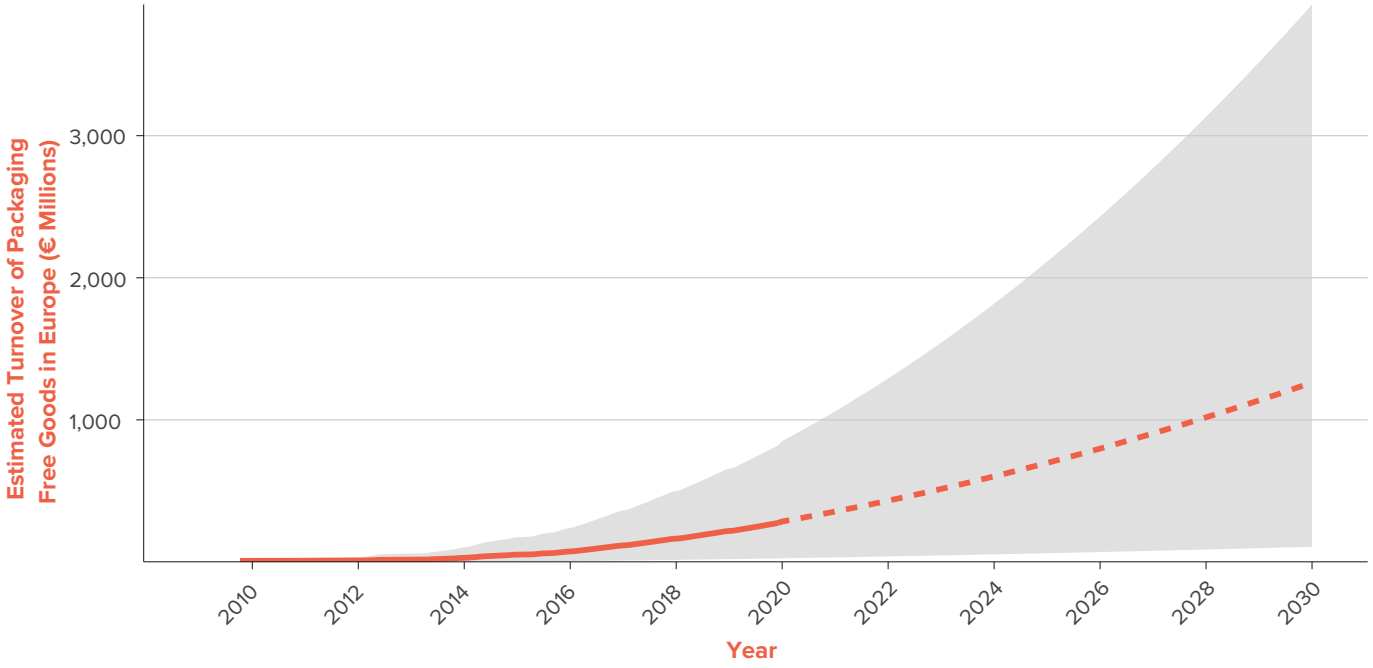


FORECASTING TURNOVER TRENDS TO 2030

To make a long-term prediction of turnover growth in the packaging free sector, the same method used to estimate turnover from packaging free shops across Europe in 2023 has been extended to provide an estimate for 2030. The longer time horizon for this estimate means the error bars are large, a result of the combined uncertainty associated with growth in shop numbers and turnover per shop. However, the projection serves to represent a possible growth scenario if the underlying assumptions hold true.

Figure 11 shows this scenario, arriving at a mean turnover estimate of €1,262 million, a lower bound of €106 million and an upper bound of €3,923 million. The scale of these results demonstrates the substantial potential for the sector to play an important role in the EU's economy over the next decade.

Figure 11: Extrapolation of Turnover from Packaging Free Goods Sales in Europe to 2030



Both the 2023 and 2030 turnover forecasts represent one possible growth scenario for the sector. They are relatively conservative, including the assumptions that average shop turnovers remain constant, and the shop growth rate follows historical trends. Reality may of course depart from these assumptions. As the sector grows average shop turnover may increase as present stores expand their customer base and product offerings. Transformational shifts in consumer behaviour and/or the regulatory context in favour of packaging free products may also cause growth to accelerate faster than the trend identified from the survey data. It is challenging to quantify the impacts changes like this may have on the sector, however if they do occur more substantial market growth than that shown in the modelling for this report may be realised.

UNDERSTANDING DIFFERENCES BETWEEN COUNTRIES

Our modelling has assumed every new shop opening conforms to an average annual turnover attributable to packaging free goods. Using an average figure of course means underlying variability in mean shop turnover between countries is obscured, and it is important to consider this variation when assessing the economic context of packaging free shops. Figure 12 shows this country level breakdown of turnover attributable to packaging free goods, and the underlying data is presented in Table 2. There is considerable diversity between countries, illustrating that high-level trends do not fully reflect the circumstances of individual countries, or indeed, individual shops. It should also be borne in mind that whilst turnovers are reported in Euros, differences in PPP between countries mean straightforward comparisons between countries may not be appropriate.

Figure 12: Country Breakdown of Mean Shop Turnover from Packaging Free Goods for 2018

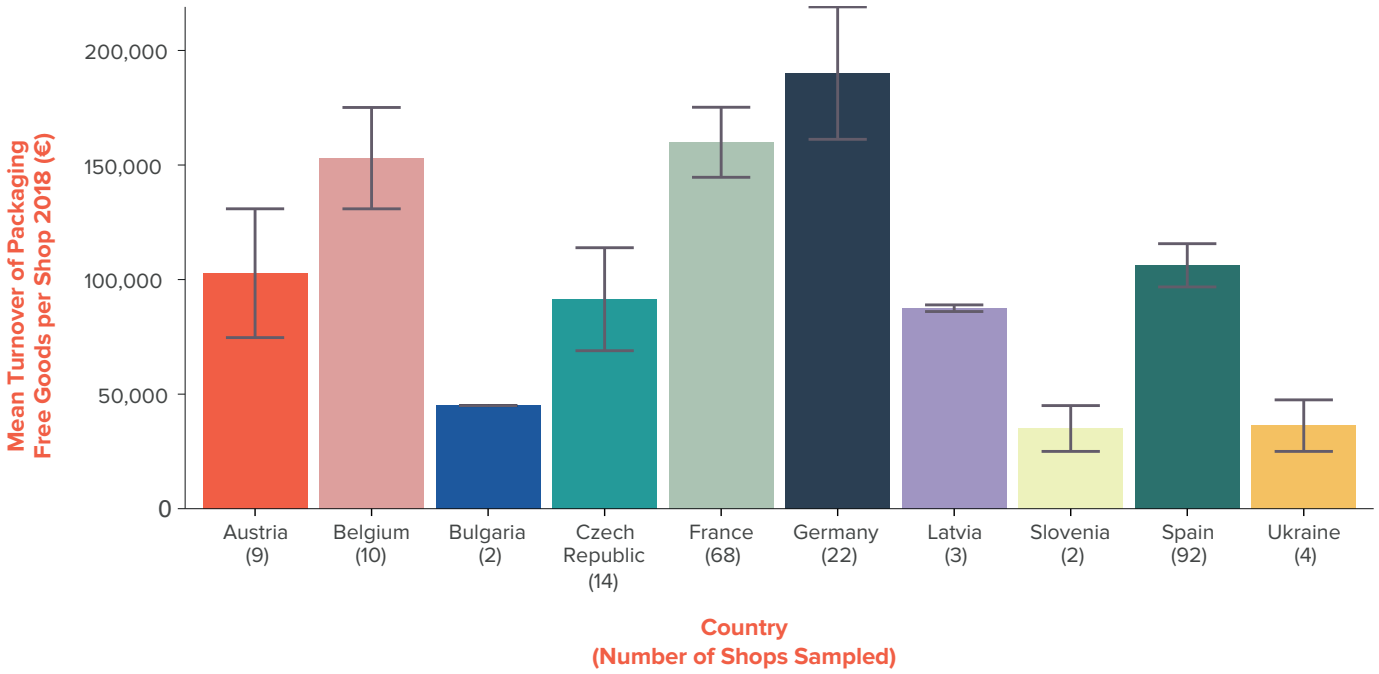


Table 2: Country Level Shop Turnover and Bulk Sales in 2018

Country	Number of Responses	Mean Turnover per Shop (€)	Mean Percentage of Products Sold in Bulk	Mean Turnover of Products Sold in Bulk per Shop (€)
Austria	9	227,778	50	102,778
Belgium	10	175,000	89	153,000
Bulgaria	2	100,000	45	45,000
Czech Republic	14	128,571	66	91,429
France	68	173,188	91	159,928
Germany	22	240,909	76	190,114
Latvia	3	150,000	70	87,500
Slovenia	2	100,000	35	35,000
Spain	92	157,609	71	106,223
Ukraine	4	100,000	36	36,250

2.3 SOCIAL CONTEXT

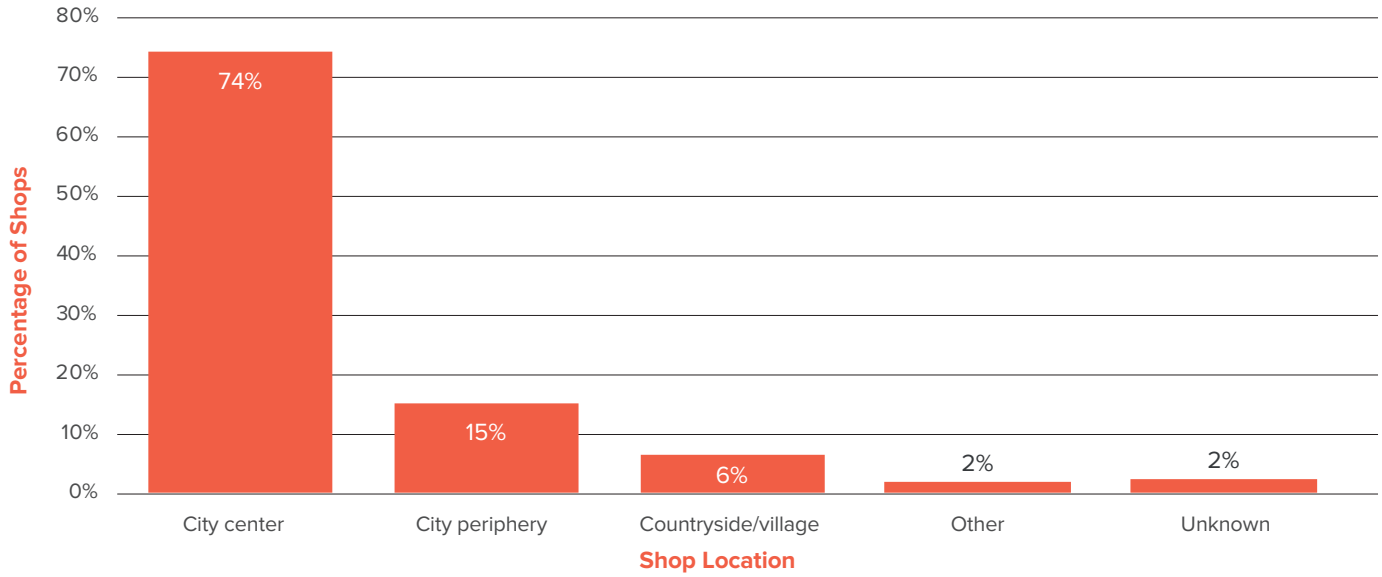
A selection of survey questions sought information to better understand the social context of packaging free shops. This focussed on shop locations, customer profiles, and the nature of employment in the sector.

SHOP LOCATIONS

Shops were asked to self-assess their location type, choosing between the categories of city centre, city periphery, countryside/ village, other and unknown. Figure 13 shows the numbers of shops falling within each category.

The results show the greatest number of shops are located in city centres, and far fewer shops are located in city peripheries and countryside locations. Whilst respondents were not asked to comment on why they chose to establish in their present locations, a logical explanation would be greater levels of demand in city centres, a result of factors such as higher population density. Future research may wish to establish whether this trend presents any notable difference with other shops types.

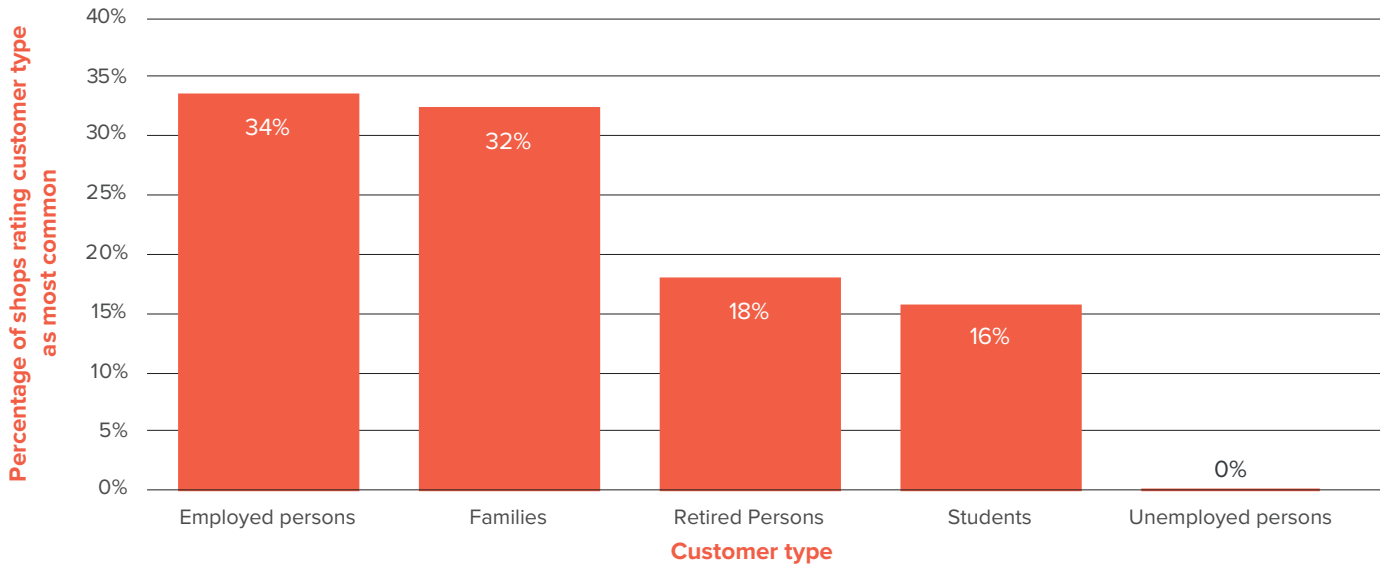
Figure 13: Breakdown of Shops by Location Type



CUSTOMER PROFILES

The survey sought to shed light on the customer types using packaging free shops. Respondents were asked to select their most common customer type, with the results shown in Figure 14. The general category of employed persons had the highest level of representation, closely followed by families. Lower, but similar proportions of customers were made up of retired people and students, with the lowest proportion being unemployed customers. To better understand the significance of this data, future research may seek to draw comparisons with general shopper profiles to understand whether this pattern shows any variation with users of other shop types. It would also be useful to investigate the relative proportion of each customer type using packaging free shops to the total number of that customer type in the population as a whole. This would enable us to understand if customer numbers are reflective of the number of that customer type in the population generally, or if a particular preference (or lack-of) is shown for packaging free shops. It may also be useful to understand the motivations of different shopper groups who use packaging free shops, to identify opportunities for market growth or barriers to overcome in order to increase market share.

Figure 14: Breakdown of Customer Types



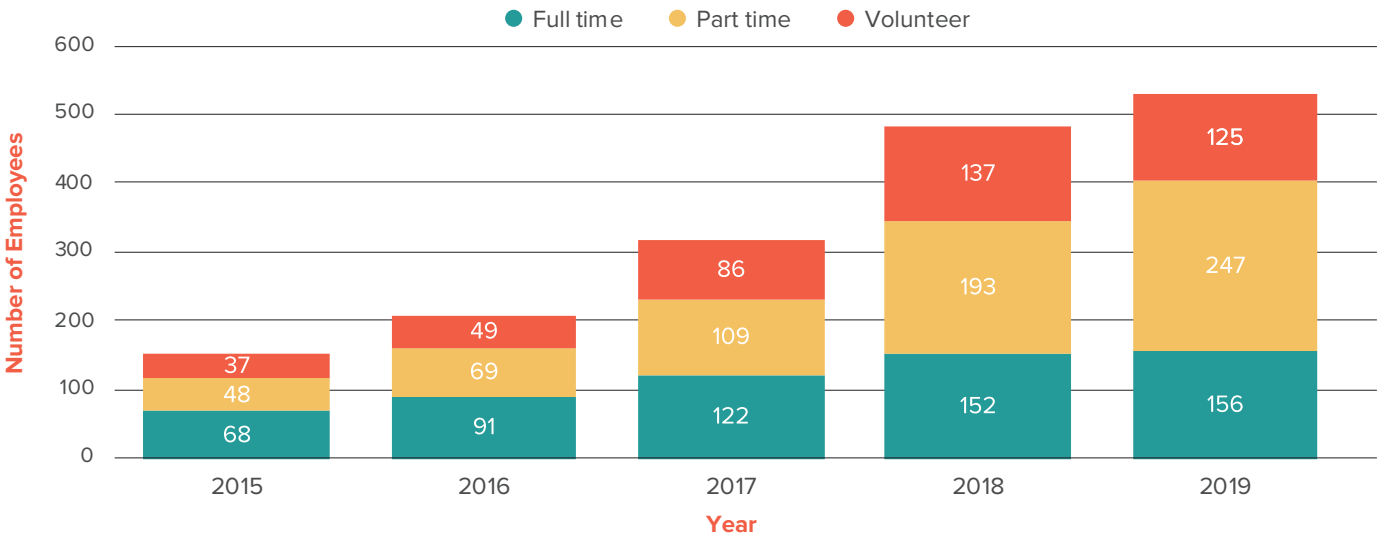
EMPLOYEES

The retailer survey gathered data to provide a high-level understanding of the employment trends in the sector, and enable predictions of job numbers that may be generated over the next few years.

A general overview of the quantity and nature (contract type) of employment in the sector is provided in Figure 15. The first clear trend demonstrated is an increase in the total number of employees across all contract types since 2015. This is as expected given the growth in shop numbers over this period. A second clear trend, and one less obviously anticipated, is the increasing proportion of jobs performed by both part-time and voluntary employees over the same period, whilst the number of full-time employees has grown at a slower rate.

The identification of this second trend presents an interesting avenue for further investigation. It raises the question of what is driving the growth of voluntary and part-time jobs, and whether this trend is sustainable in the longer term. One possible explanation is the type of employment varies with the maturity of the shop, with recently opened shops having a greater reliance on volunteers – the data used to develop Figure 15 does not take into account shop age. Further detailed investigation into these trends may benefit from qualitative surveys or interviews with a sample of shops, in addition to the present quantitative research.

Figure 15: Growth in Employee Numbers Over Time, by Contract Type



To explore employment trends further, Figure 16 presents a high-level prediction of future job creation in the packaging free shop sector across the EU. It assumes that new shops opening conform to a mean number of per shop working hours, based upon the retail survey data. Employee data from the total number of shops with turnovers less than €200,000 was used for calculating forecasts of jobs created, as the majority of packaging free shops fall into this category.

The mean number of full-time jobs from these shops was calculated by combining the total hours worked by full-time, part-time and volunteer staff per store and converting this into full-time working jobs by dividing by 37.5 (the number of hours in the standard working week). This gave an average of 1.85 full-time jobs worked per week per store, with an upper bound of 1.9 and a lower bound of 1.76. Combining these working hours with the shop opening rate prediction shown in Figure 2, produces a predicted number of full-time jobs per year, shown in Figure 16. **Using the mean of this prediction (the orange line), in January 2023 the number of full-time jobs worked in packaging free shops is likely to be 87% greater than December 2019.** The grey shaded section shows the 95% confidence limits of this finding, ranging between a 43% and a 135% increase in full-time positions by January 2023.

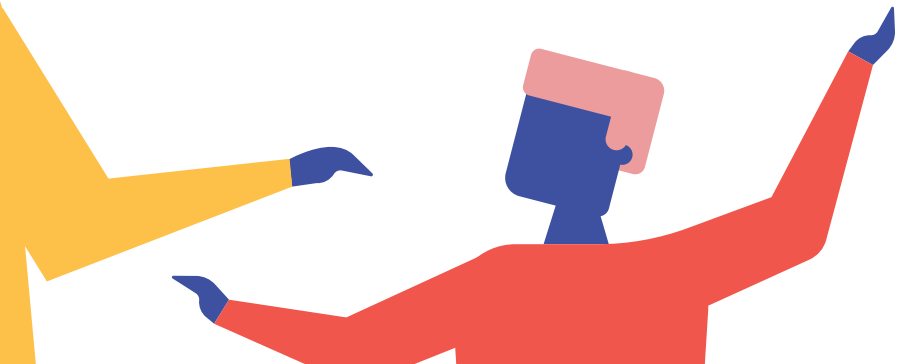
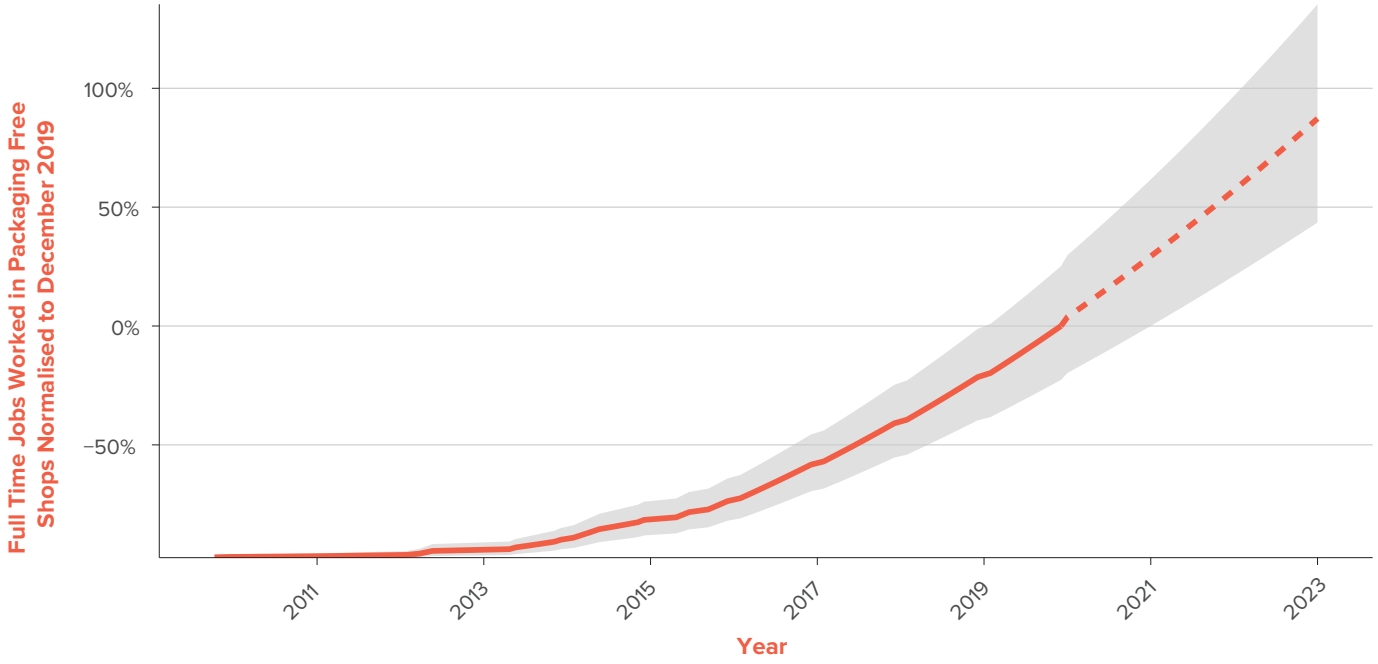
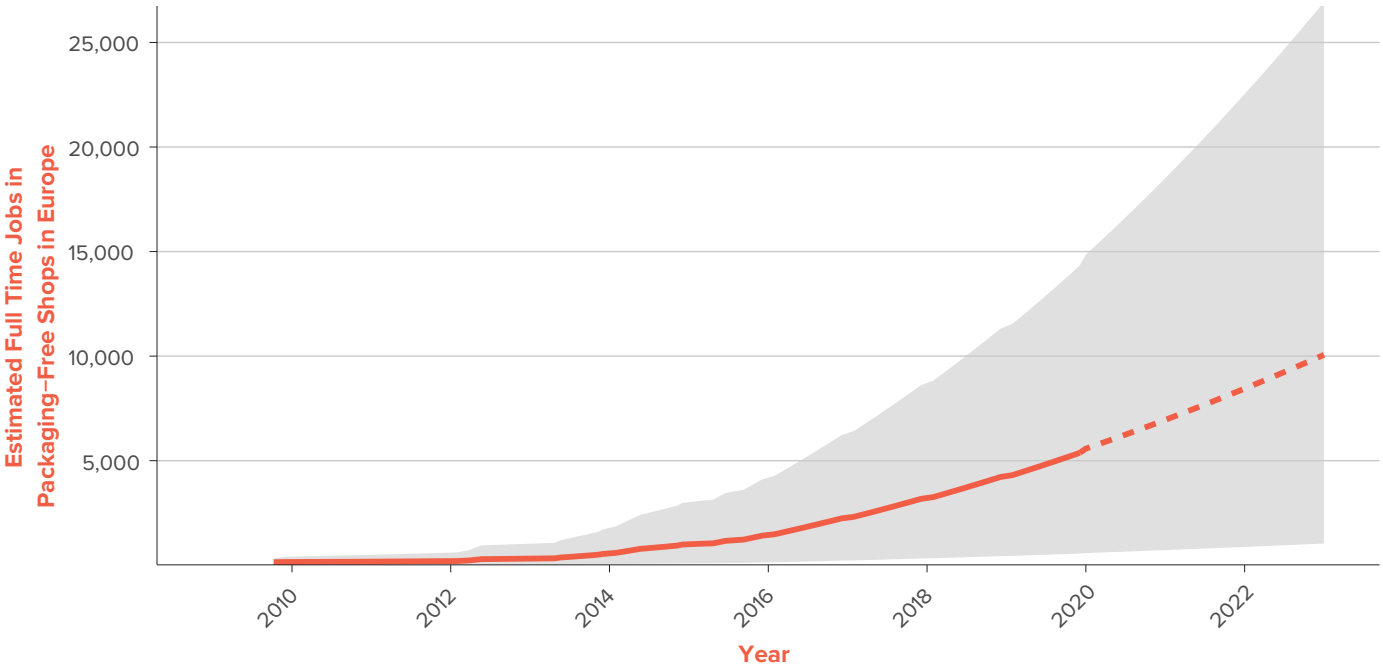


Figure 16: Forecast of Full-time Jobs in Packaging Free Shops in Europe to 2023, relative to 2019



Using the same approach applied to predicting future shop numbers and turnover levels (which uses the correlation between shop numbers and country PPP to estimate shop numbers in countries which did not respond to the retailer survey) enables a prediction of future jobs created in the sector to be made, shown in Figure 17. **In December 2019 the number of full-time jobs in packaging free shops was predicted to be 5,274** with a 95% confidence interval of 558 to 14,328. **A future scenario for January 2023 presents a mean of 10,062 full-time jobs**, with bounds of 1,036 to 26,937 jobs.

Figure 17: Forecast of the Number of Full-time Jobs in Packaging Free Shops in the EU to 2023



2.4 ENVIRONMENTAL CONTEXT

This section features findings relating to several of the environmental benefits of packaging free shops.

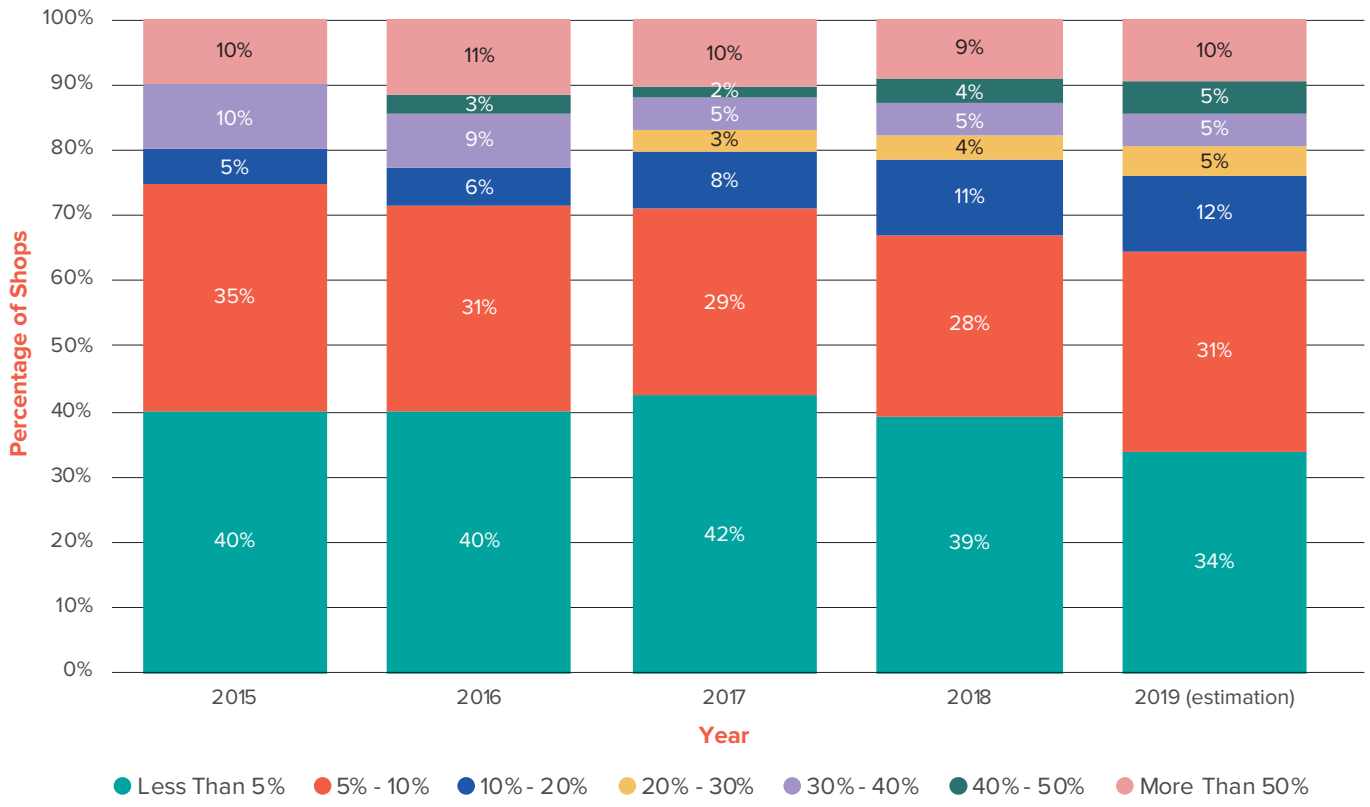
USE OF RETURNABLE CONTAINERS

Shops were asked to provide information relating to the proportions of their products sold in returnable containers each year. Returnable containers are hereby defined as those embedded in a 'deposit-return systems' (DRS) whereby consumers buying a product pay an additional amount of money (a deposit) that will be reimbursed upon the return of the packaging/container to the shop or a collection point. Figure 18 displays these results and can be read as follows. For example, the 'Less than 5%' category in 2017 indicates that 42% of shops in the survey said that Less than 5% of their products were sold in returnable containers in 2017. As another example, the '10 - 20%' category in 2019 indicates that 12% of shops reported that 10 – 20% of their products were sold in returnable containers in 2019.

With regard to trends, Figure 18 shows from 2015 – 2019 a reduction in the proportion of shops providing less than 5% of products in returnable containers. In contrast, an increase in the proportion of shops delivering more products in returnable containers is apparent over time, particularly in the 10-20% category. The highest category of more than 50% of products sold in returnable containers remains reasonably consistent over the sample period. **A possible conclusion that can be drawn from this analysis is more shops are delivering more of their products in returnable containers over time, however there may be a limit to the proportion of products that are sold in returnable containers, of approximately 50% of products sold.**

These results provide some high-level insight into the use of returnable containers, and would benefit from further research. For example, providing a consistent method for shops to apply when calculating the proportion of products sold in returnable containers, such as whether to report figures in terms of product weight, volume, items or value, would be beneficial, as at present this has not been defined. Asking shops to report total volumes of stock sold would also enable an analysis that looks at total products sold in returnable containers, not only proportions of products.

Figure 18: Proportion of Products Sold in Returnable Containers per Year

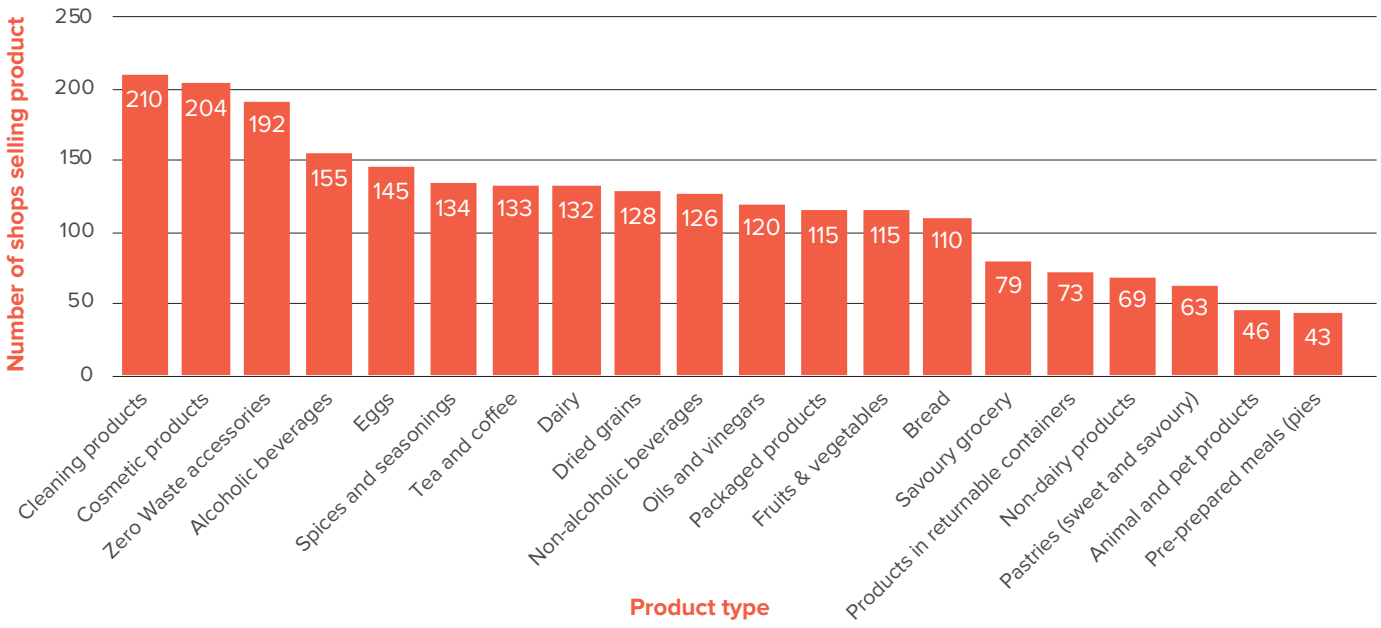


PRODUCT TYPES SOLD

Data collected from survey respondents has enabled an analysis of the types of products sold by packaging free shops. Shops were asked to select the types of products sold from a multi-selection list, and the number of shops selecting each product category is displayed in Figure 19. **When considered cumulatively, food and drink products are the most sold products types, with particularly prominent categories being alcoholic beverages, eggs, and spices and seasonings. For non-consumables, cleaning products, cosmetic products, and zero waste accessories were the most commonly sold.** Animal and pet products, and pre-prepared meals, were the least commonly stocked items. There is some potential overlap between the categories, for example, there is a stand-alone category for products in returnable containers, which could cover a wide variety of goods, from cosmetics to dried spices. Given that shops were asked to select all products they sold, there may be some double counting as a result of these categorisations.

Shops were not asked to indicate why they stocked certain products and not others, so it is challenging to draw conclusions regarding why these trends have emerged, or what interventions may be necessary to increase the number of shops stocking some of the lower stocked items. It may be the case that there is less demand for those goods less widely stocked, or there may be other barriers to their sale. Understanding how shops select the types of products they stock would be an interesting avenue for further investigation, and may shed light on challenges and opportunities faced by the sector.

Figure 19: Product Types Stocked by Packaging Free Shops

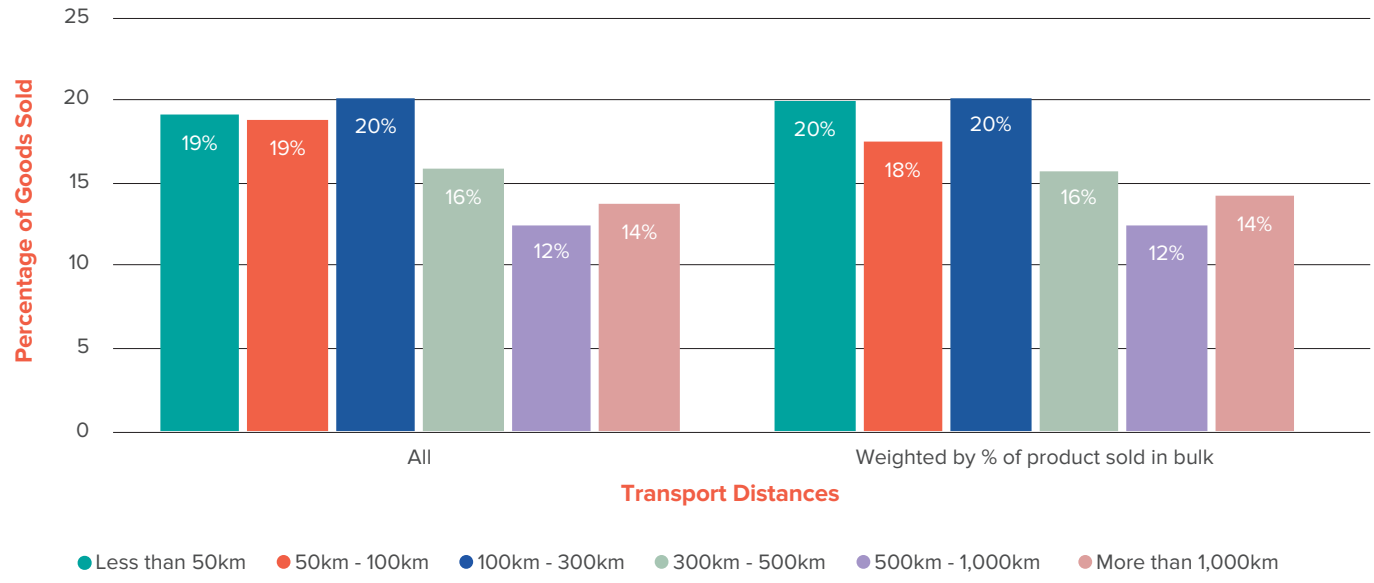


PRODUCT SOURCING DISTANCES

Shops were asked to report the average quantity of goods sold that are sourced from a range of distance categories (e.g. 25% of goods from 0-50km away, 15% of goods from 50 – 100km away etc.) to provide an overview of product sourcing distances in packaging free shops. Figure 20 presents the average proportion of goods sold within each distance category across all shops. The left-hand set of bars show the results for all products sold within packaging free shops, and the right-hand bars show the results weighted to only goods sold in bulk.

As the distance between the packaging free shops and their suppliers increases, the quantity of goods sourced decreases. Hence the data suggests packaging free shops prefer to source from closer suppliers. Future research may interrogate this trend further and compare with similar data from other shop types, to determine how packaging free shops perform relative to other industry sectors with regard to product transport distances.

Figure 20: Product Transport Distances



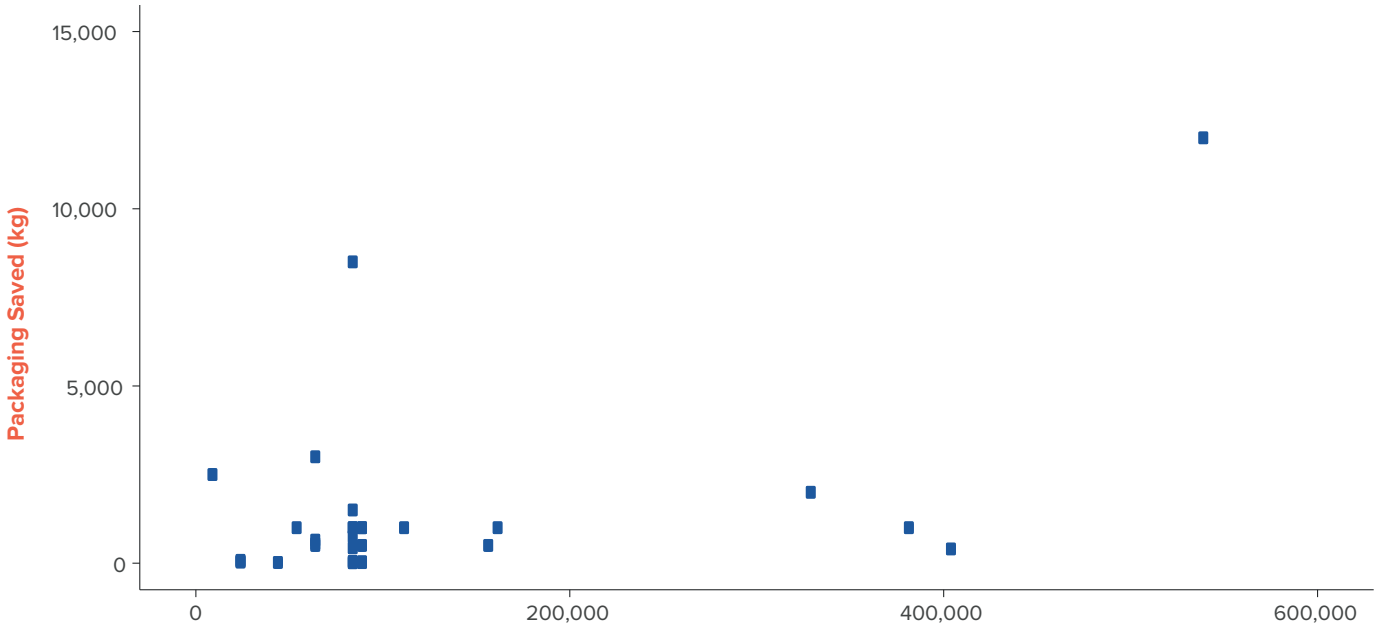
PACKAGING AVOIDED

Perhaps the most important environmental impact to explore in the context of packaging free shops is the quantities of packaging avoided through customer use of reusable containers.

The means by which the survey sought to understand this was to ask shops to make their own estimates of avoided packaging.

This question proved challenging for many shops and a large number chose not to respond to the question. The responses from those that did are shown in Figure 21 (some erroneous results have been excluded).

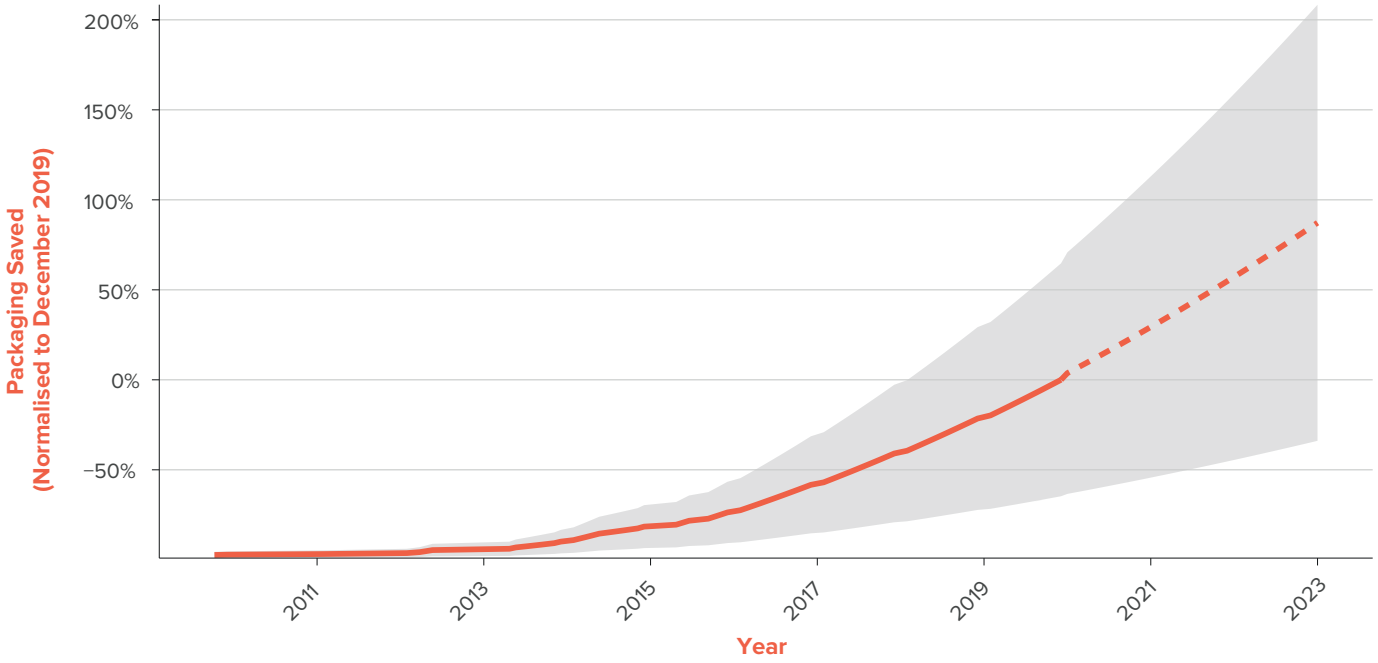
Figure 21: Summary of Survey Responses Regarding Quantities of Packaging Avoided per Year



There is no discernible correlation apparent from these results, but instead a clustering of results in the bottom left of the graph. It must be recognised that shops undertook their own assessments and therefore a variety of estimation methods will have been used to come to these figures. Therefore, whilst the data in Figure 21 is the best available, it must be treated with caution and the following associated findings can only be considered as illustrative.

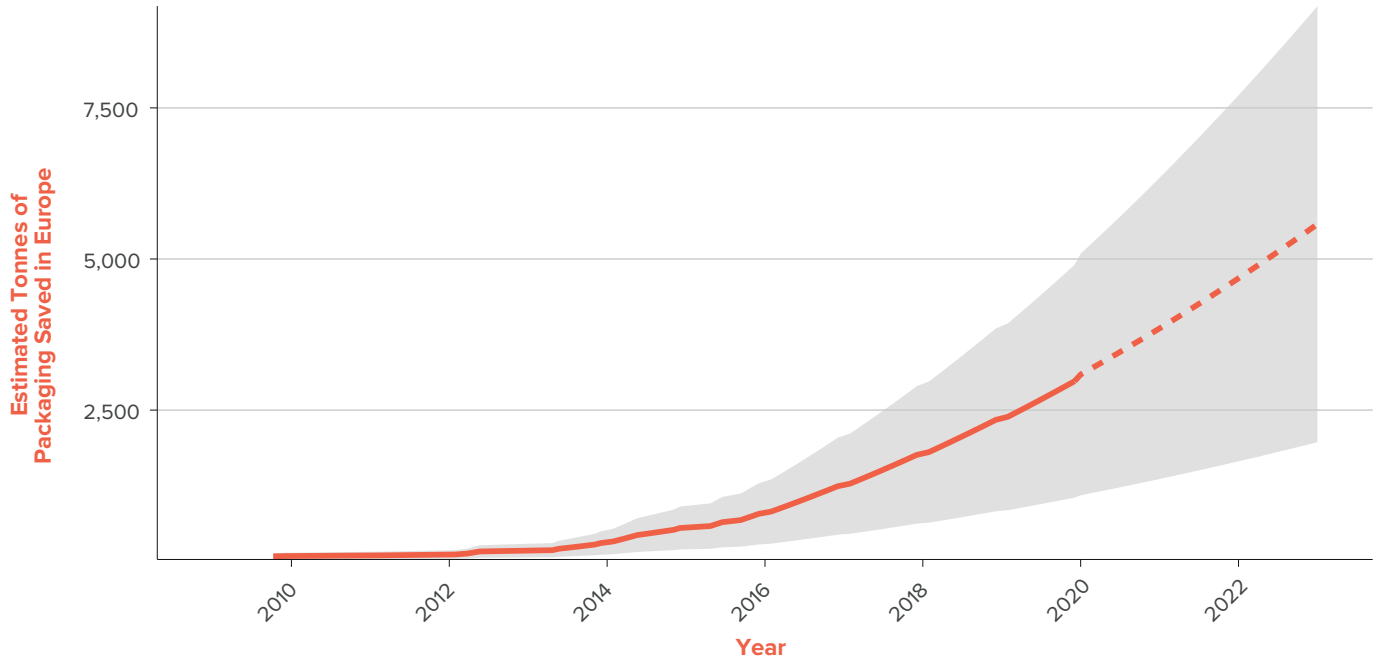
On the grounds of the clustering in the bottom left of Figure 21 **it is judged that each packaging free shop in the survey sample saves on average 1026kgs of packaging per year, with an upper bound of 1690kg and a lower bound of 362kg.** These estimates have been sense checked by Eunomia and appear to sit within the right order of magnitude. Combining this range of average packaging avoided per shop with estimated growth in shop numbers, Figure 22 shows the predicted quantities of packaging avoided in January 2023 relative to December 2019.

Figure 22: Forecasted Quantities of Packaging Saved in 2023 Relative to 2019



The upward trend presents **a mean scenario of an 87% increase in quantities of packaging avoided through sales of packaging free goods by 2023, relative to 2019. Figure 23 shows this trend extrapolated to the scale of the EU using the previously applied PPP method, giving a mean estimate of 5,576 tonnes of avoided packaging in Jan 2023.** The 95% confidence limits of this estimate provide a lower estimate of 1,968 tonnes and an upper estimate of 9,185 tonnes.

Figure 23: Forecasted Quantities of Packaging Saved across Europe in 2023



GHG EMISSIONS AVOIDED

Using the estimated quantities of packaging avoided it is possible to develop a high-level prediction of GHG emissions avoided through goods sold packaging free. In reality there are a large number of factors that will influence the quantity of emissions avoided, such as:

- The alternative materials used for refill containers;
- How many times the refill containers are used in their lifetime;
- How the refill containers are washed and how this washing is accounted for; and
- Where the packaging free goods are sourced from relative to goods that would otherwise be purchased.

An assessment in this level of detail is beyond the scope of the current report. Therefore, to develop an indicative estimate of avoided carbon emissions, only emissions associated with producing the displaced packaging have been considered. It is recommended that future studies undertake a more detailed analysis of the GHG implications of the growing packaging free shop market.

Using the 2023 projection of avoided packaging across the EU from Figure 23, Table 3 presents a low, mid, and high estimate of GHG emissions avoided through the displacement of packaging (i.e. packaging not produced due to purchases made in packaging free shops). The carbon factor applied is for polypropylene, and is sourced from the UK Government's emission reporting factors[5].

Table 3: Estimated Tonnes CO2e avoided by Packaging Free Shops in 2023, as a result of Reduced Packaging Demand

Low estimate	Mid estimate	High estimate
6,046	17,131	28,219

[5] Greenhouse gas reporting: conversion factors 2019, https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019

3.0 POLICY CONSIDERATIONS

As part of this study, the participant organisations working to expand the development of packaging free shops in their country were contacted to establish their views on barriers to uptake of the packaging-free model. The responses received suggest a number of predominant themes that can be broadly grouped as follows:

BETTER REFLECTING THE FULL COSTS OF PACKAGING

Disposable packaging being effectively 'subsidised', because true end-of-life costs, including 'external' costs associated with mismanaged packaging (such as littering) are not at present adequately reflected in the price of the packaging. A related point was that much packaging – specifically plastic packaging – is not being recycled, yet there is typically no 'penalty' associated with placing such packaging on the market. This was seen as giving packaged goods an arguably unfair financial advantage.

REGULATORY CLARITY AND CONSISTENCY

A lack of clarity and consistency of application from regulators, in respect of how bulk sales are defined, and practices relating to food hygiene for packaging free shops. While respondents from one country noted that their national food hygiene authorities had welcomed the approach, most others reported problems due to laws being outdated and/or inapplicable to bulk selling of products through self-service approaches.

DEVELOPMENT OF SUPPLY CHAINS

Supply chains not yet being fully developed for the packaging free model meaning they are much less efficient than the 'mainstream' supply chains for packaged goods. The latter benefit from economies of scale, and with well understood processes at all levels of the supply chain.

Each of these themes and recommended actions are discussed on the following pages.

3.1 BETTER REFLECTING THE FULL COSTS OF PACKAGING

On the first point, Article 8a of the revised Waste Framework Directive introduces specific minimum requirements for EPR schemes for packaging, meaning that producers' financial contributions should cover:[6]

- **THE SEPARATE COLLECTION OF WASTE**
- **THE SUBSEQUENT TRANSPORT AND TREATMENT OF WASTE, INCLUDING TREATMENT NECESSARY TO MEET THE UNION'S WASTE MANAGEMENT TARGETS**

This transfer of the responsibility of costs towards producers, will typically mean higher producer fees, which are likely to be reflected to some extent at least in higher prices for packaging. **However, the Directive does not require the costs of the fraction entering the residual stream to be covered, nor does it require the costs for dealing with littering of all packaging items to be covered.** In addition, there are certain circumstances where Member States can exempt producers from having to cover 100% of the costs. It is important to note that the Directive imposes minimum requirements and individual Member States have the freedom to go beyond these if they wish. If Member States were to require producers of packaging to cover more of the costs associated with the end-of-life phase of packaging, this would move closer to a situation where the full costs associated with packaging are reflected in its price.

Article 8a also requires producer fees to be modulated (i.e. varied), where possible. **Fee modulation within EPR is a key economic tool that has the potential to encourage producers to better design their products.** It is likely for packaging that this modulation will focus on the extent to which the design of the packaging means it can readily be recycled, and/or the actual recycling rate achieved for the different packaging formats. This will serve to make packaging that cannot readily be recycled and/or is only recycled at a very low rate (or not at all) more expensive. For reusable packaging, the EPR fee should arguably only be paid when it is first placed on the market. This means for packaging that is reused multiple times the effective fee per use will be reduced accordingly.

In addition, under Article 8 of Directive 2019/904, Member States are already required to apply EPR for specific single-use plastic items explicitly to cover the costs of managing litter, and the costs of treating those single use plastic products that are discarded by users and collected through public mixed waste collection systems. The following items are included:[7]

1. *Food containers, i.e. receptacles such as boxes, with or without a cover, used to contain food which:*

(a) is intended for immediate consumption, either on-the-spot or take-away,

(b) is typically consumed from the receptacle,

(c) is ready to be consumed without any further preparation, such as cooking, boiling or heating, including food containers used for fast food or other meal ready for immediate consumption, except beverage containers, plates and packets and wrappers containing food;

2. *Packets and wrappers made from flexible material containing food that is intended for immediate consumption from the packet or wrapper without any further preparation;*
3. *Beverage containers with a capacity of up to three litres, i.e. receptacles used to contain liquid such as beverage bottles including their caps and lids and composite beverage packaging including their caps and lids, but not glass or metal beverage containers that have caps and lids made from plastic;*
4. *Cups for beverages, including their covers and lids;*

Depending on what is being sold in packaging free shops, the provisions of Directive 2019/904 may make unpackaged products more financially attractive. Of course, **Member States may choose to broaden the scope of packaging items that have to make a contribution towards litter clean-up costs to other materials beyond plastic. If this occurs, depending on what such an expanded scope would look like, it would represent a further move towards the full costs of end-of-life management being internalised in the costs of packaging.**

To complement these measures, which would increase packaging costs, further financing mechanisms which are supportive of packaging free business models would be extremely beneficial to the sector. **Combining increased packaging costs with additional funding sources for shops or financial incentives for consumers would further incentivise the purchasing of packaging-free over packaged products.**

[6] European Parliament and the Council of the European Union (2018) Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on Waste, 2018/851

[7] Available at https://eur-lex.europa.eu/legal-content/EN/TXT PDF/?uri=CELEX:32019L0904&from=EN

3.2 REGULATORY CLARITY AND CONSISTENCY

There appears to be a pressing need for the development of a harmonised approach to the way in which packaging free shops are treated by national regulators across EU Member States.

3.2.1 EUROPEAN FOOD REGULATION

At present, the term 'bulk sales', i.e. goods sold without being pre-packaged (except for traditional "over the counter" businesses: delicatessen, caterer, bakery, fishmonger's, etc.) via self-service, is not subject to any legal definition in European legislation. Given the large number of new business models emerging in Europe, it is important to define "bulk sales" in regulations to provide a secure environment in terms of hygiene and consumer information.[8]

Several European texts relating to certain foodstuffs specifically restrict the sale of some items in bulk, i.e. without primary pre-packaging. **To address this, it would be useful for Regulation (EU) No 178/2002 on food safety to include a definition of bulk sales and the affirmation of a general principle that all food should be able to be sold in bulk, except where justified on public health grounds.**

Concerning the Regulation on the hygiene of foodstuffs, the European Commission notes that:[9]

EU rules regarding food hygiene cover all stages of the production, processing, distribution and placing on the market of food intended for human consumption.

In this context "placing on the market" means the holding of food for the purpose of sale, including offering for sale, or any other form of transfer, whether free of charge or not, and the sale, distribution and other forms of transfer themselves.

Regulation (EC)852/2004 on the hygiene of foodstuffs includes provisions applicable to the wrapping and packaging of foodstuffs.[10] There is no explicit mention of unpacked food, although Chapter V on equipment requirements notes that:[11]

1. *All articles, fittings and equipment with which food comes into contact are to:*

(a) be effectively cleaned and, where necessary, disinfected. Cleaning and disinfection are to take place at a frequency sufficient to avoid any risk of contamination;

(b) be so constructed, be of such materials and be kept in such good order, repair and condition as to minimise any risk of contamination;

(c) with the exception of non-returnable containers and packaging, be so constructed, be of such materials and be kept in such good order, repair and condition as to enable them to be kept clean and, where necessary, to be disinfected; and

(d) be installed in such a manner as to allow adequate cleaning of the equipment and the surrounding area.

This would appear to apply to situations faced in packaging free shops where reusable containers are used, albeit there is no specific mention in the regulation of consumers bringing their own containers, the focus of the regulation being on those placing the food on the market.

The accompanying guidance document does make reference to unwrapped or unpacked foodstuffs, in the context of the transport of bulk foodstuffs in liquid, granulate or powder form, with the example being given of sugar or grains that have been husked, washed or prepared, but:[12]

that are to be wrapped/packaged for sale to the final consumer.

It would be helpful for European regulations to specifically enforce the cleaning and disinfection of sales equipment at each batch change, as a minimum, as well as rules on hygiene relating to the transfer of foodstuffs into the sales equipment.

[8] Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25th October 2011 Council concerning consumers information on foodstuffs only contains applicable provisions to the sale of non-prepackaged products in the context of traditional "over the counter" businesses (with assisted service). It does not contain any specific provision for self-service bulk sales. In this regulation, specific labelling provisions should be adopted for self-service bulk sales in order to make mandatory the mentions of the DMD or of the Best Before Date, nutritional values etc. on sales equipment labels.

[9] See https://ec.europa.eu/food/safety/biosafety/food_hygiene/legislation_en

[10] See https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02004R0852-20090420&from=EN

[11] Emphasis added

[12] See https://ec.europa.eu/food/sites/food/files/safety/docs/biosafety_fh_legis_guidance_reg-2004-852_en.pdf

3.2.2 EUROPEAN COSMETICS AND DETERGENTS REGULATIONS

Current European cosmetics and detergent regulations do not address the sale of such products in the bulk model. Nevertheless, these products and other household cleaning products - that usually come in a liquid formats - are increasingly being sold in packaging free shops across Europe.

In France the bulk sales of these products are made in a safe environment (see Section 4.2.3), but it is not the case in all European countries, such as Belgium for example. Regarding Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products, and Regulation (EC) No 648/2004 of the European Parliament and of the Council of the 31st of March of 2004 on detergents, it would be useful for these to be amended to cover bulk selling rules of these products, especially when they are in a liquid form.

3.2.3 NATIONAL REGULATIONS: THE FRENCH EXAMPLE

For the purposes of this study our research has been limited to consideration of the perspectives of participant organisations, in addition to high level analysis of relevant EU policy. However, a fuller investigation into the existing policy provisions and their interpretation is recommended, in addition to liaison with national regulators on these topics. This would be with a view to determining whether new guidance would be appropriate, or indeed new supplementary regulations would be required to allow for the effective and appropriate regulation of packaging free shops.

It should be noted that France has taken a step ahead on these issues, with law N° 2020-105 of February the 10th of 2020[13] relating to the fight against waste and to the circular economy. This contains several provisions relating to bulk sales and in particular a definition as follows (article N°41 of the law):

"Bulk sales are defined as the sales of products presented without packaging to the consumer, in quantities chosen by the consumer, in refillable containers or in reusable containers. Bulk sales are offered as self-service or as assisted service when sales points are itinerant.

"Bulk sales can be concluded under a distance selling contract.

Any consumer product can be sold in bulk, unless exceptions duly justified on public health grounds.

The list of exceptions is set by decree."

The law furthermore establishes the principle that the consumer is responsible for the cleanliness and the suitability of the reusable container (article N°41)."

Article N°45 of the law requires Management and Defence Organizations of PDO and PGI products to provide the conditions under which these products are sold in bulk.

Finally, bulk sales of cosmetic products and liquid detergents in France have a well-regulated and secure practice, with consumer's containers adapted to the products and with a requirement to be pre-labelled. In-store displays for the attention of the consumer have been made mandatory to display the rules to reuse containers (which material, principle of same use, cleaning protocols, etc.). For cosmetic products, distributors are required to make a declaration of conditioners to the competent French authority (ANSM).

[13] See https://www.legifrance.gouv.fr/affichTexte.do;jsessionid=9E5BA8DC7A98B9A560E368975B46EB54.tplgfr43s_1?cidTexte=JORFTEXT000041553759&dateTexte=29990101

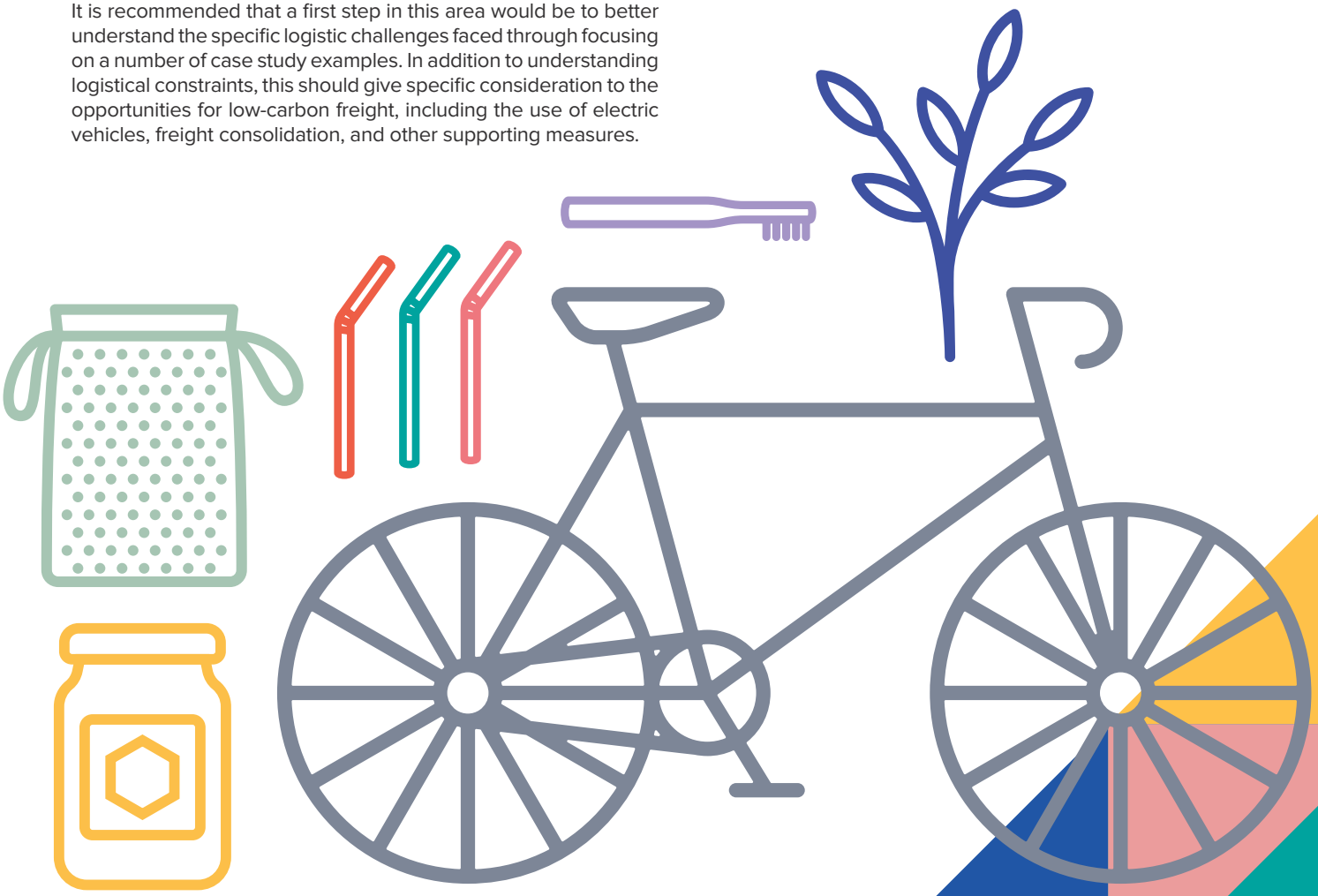
3.3 DEVELOPMENT OF SUPPLY CHAINS

Obtaining clarity over the approach to be taken to bulk sale definitions and food hygiene regulations would be expected to help unlock greater potential for packaging free shops across EU Member States. Alongside this, the transfer of significant financial responsibility for end-of-life management to packaging producers should increase the relative attractiveness of packaging free alternatives, helping to grow the sector. Growth could be further encouraged through incorporating the purchase of unpackaged goods in public sector green procurement policies.

Such growth should, of itself, stimulate increased efficiencies in the supply chain. However, there may be a role for:

- Specific studies to determine where improvements can be made in the supply chain; and potentially;
- Targeted grants to assist with investments to boost supply chain efficiency.

It is recommended that a first step in this area would be to better understand the specific logistic challenges faced through focusing on a number of case study examples. In addition to understanding logistical constraints, this should give specific consideration to the opportunities for low-carbon freight, including the use of electric vehicles, freight consolidation, and other supporting measures.



SUMMARY AND RECOMMENDATIONS

SUMMARY OF FINDINGS

This study is one of the first that attempts to evaluate the state of play, and potential future growth scenarios for the packaging free shop sector in Europe. Having conducted surveys with packaging free shops across ten European countries through the participant organisations in each of these countries, a set of findings regarding the overall packaging free shop landscape, and potential future growth scenarios, can be drawn. These findings must be viewed in the context of the underlying dataset and are subject to many assumptions and uncertainties. The utility of the findings therefore lies in their capacity to present high-level trends and characteristics, rather than accurately present absolute values.

The evidence collected for this study suggests strong growth in the sector over the past 10 years, with increases in shop numbers, turnover, and job creation. Mean growth scenarios suggest that over the next three years **the number of packaging free shops in Europe could increase by 87% to approximately 5,500, with an associated turnover of €514 million.** A mid-estimate long range forecast to 2030 suggests **total turnover from the sale of packaging free goods could total approximately €1.2 billion, and in a 'best case' scenario over €3.9 billion. Should these predictions play out, there is a positive future ahead for Europe's packaging free sector.**

Data collected from shops has also enabled an exploration of the economic, social, and environmental context of packaging free shops. **The mean annual turnover of packaging free shops sampled is approximately €170,000, and there are signs this has been increasing over recent years.** With regard to the social context of shops, the vast majority are located in city centres, the most common customers are those in employment and families. **The growth in the sector is associated with increases in employment opportunities, with a mid-estimate of cumulative jobs created in the sector in 2023 of 10,000. Environmentally, assumptions made in the modelling for this report suggest a mean estimate of around 5,500 tonnes of packaging would be avoided in 2023.**

In addition to collecting data from packaging free shops, this study sought to understand policy barriers to the uptake of the packaging free model. Ten national packaging free membership organisations contributed to a separate 'general survey' to contribute views on this topic. Three key findings emerged from the responses:

1. **Ensuring the price of packaging represents true 'costs' of packaging waste would benefit the packaging free sector.** This report has noted the content of Article 8a of the revised Waste Framework Directive, which sets minimum requirements for packaging EPR schemes, and anticipates that progress towards this goal will gradually be made. However, the speed of change is uncertain and there are opportunities to further expand the costs covered by EPR schemes.

2. **There is a need for clarity and consistency with respect to regulatory definitions of bulk sales and food hygiene in packaging free shops.** Further investigation into the status of legislation in this area at EU and national levels, and potential areas for refinement would be a useful next step to work towards this goal.

3. **Further development of packaging free supply chains would benefit the sector.** Members reported the relative underdevelopment of packaging free supply chains relative to those for conventionally packaged goods means the sector struggles to benefit from economies of scale. General market growth may help address this challenge to some extent. However, more thorough research into the logistics of these supply chains and opportunities for efficiency improvements would enable more targeted recommendations in this area.

RECOMMENDATIONS

In addition to identifying these high-level trends in the sector, several recommendations for future work have emerged from this study. These can be grouped into four categories:

1 Further enhancing our quantitative understanding of the sector

There are several opportunities to build upon the quantitative understanding of the sector developed in this report, including:

- Expanding the survey to include more European countries – ideally receiving responses from all EU Member States;
- Setting a standardised process for recruiting shops into the survey;
- Undertaking specific research into the total number of packaging free shops in each country;
- Undertaking a more standardised approach to estimating quantities of packaging avoided, and associated GHG emission impacts;
- Receiving more detail from shops regarding the numbers of units sold in different product categories;
- Considering samples of shops that opened in the same year to understand how they have evolved over time; and
- Developing survey questions which specifically align with conventional market analysis statistics to enable comparisons to be drawn.

2 Further enhancing our qualitative understanding of the sector, including:

- Investigating causal factors behind trends, such as how types of employment change from shop start-up to growth phases; and
- Understanding why certain product types are stocked in preference to others.

3 Investigating customer views regarding packaging free shops, for example:

- Why customers choose to shop in packaging free shops;
- Differences in purchasing habits between customers using packaging shops and conventional shops;
- What would enable more frequent visits to packaging free shops; and
- Targeting shoppers who don't use packaging free shops, to understand why this is the case and what barriers need to be overcome to encourage changing shopping habits.

4 Undertaking further investigation into the identified policy and supply chain barriers, specifically:

- Reviewing current bulk sale definitions and food hygiene legislation in the context of packaging free shops to identify challenges and design solutions;
- Investigating packaging free shop supply chains in detail to understand blockages and identify opportunities to enhance cost effectiveness; and
- Ensuring EPR schemes are implemented with modulation of fees covering the full end-of-life costs of packaging and supporting the waste hierarchy.

This study has sought to make good headway into enhancing general understanding of the packaging free shop sector, and the authors hope it will help stimulate further interest in the development of this shopping model. Addressing these recommendations would enable further progress to be made above and beyond existing growth of the packaging free shop market across Europe.

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Zero Waste Europe is the European network of communities, local leaders, experts, and change agents working towards the elimination of waste in our society. We empower communities to redesign their relationship with resources, and to adopt smarter lifestyles and sustainable consumption patterns in line with a circular economy.

Réseau Vrac is the only professional organisation dedicated to the bulk industry - sale of products to consumers without packaging - in France and worldwide. Since its creation in 2016, Réseau Vrac has supported the development of this new market and promoted this means of consumption to tackle food and packaging waste generated by pre-packaged goods. Réseau Vrac represents and federates more than 1,300 professionals in the sector: suppliers, shop owners and project holders in France and worldwide.

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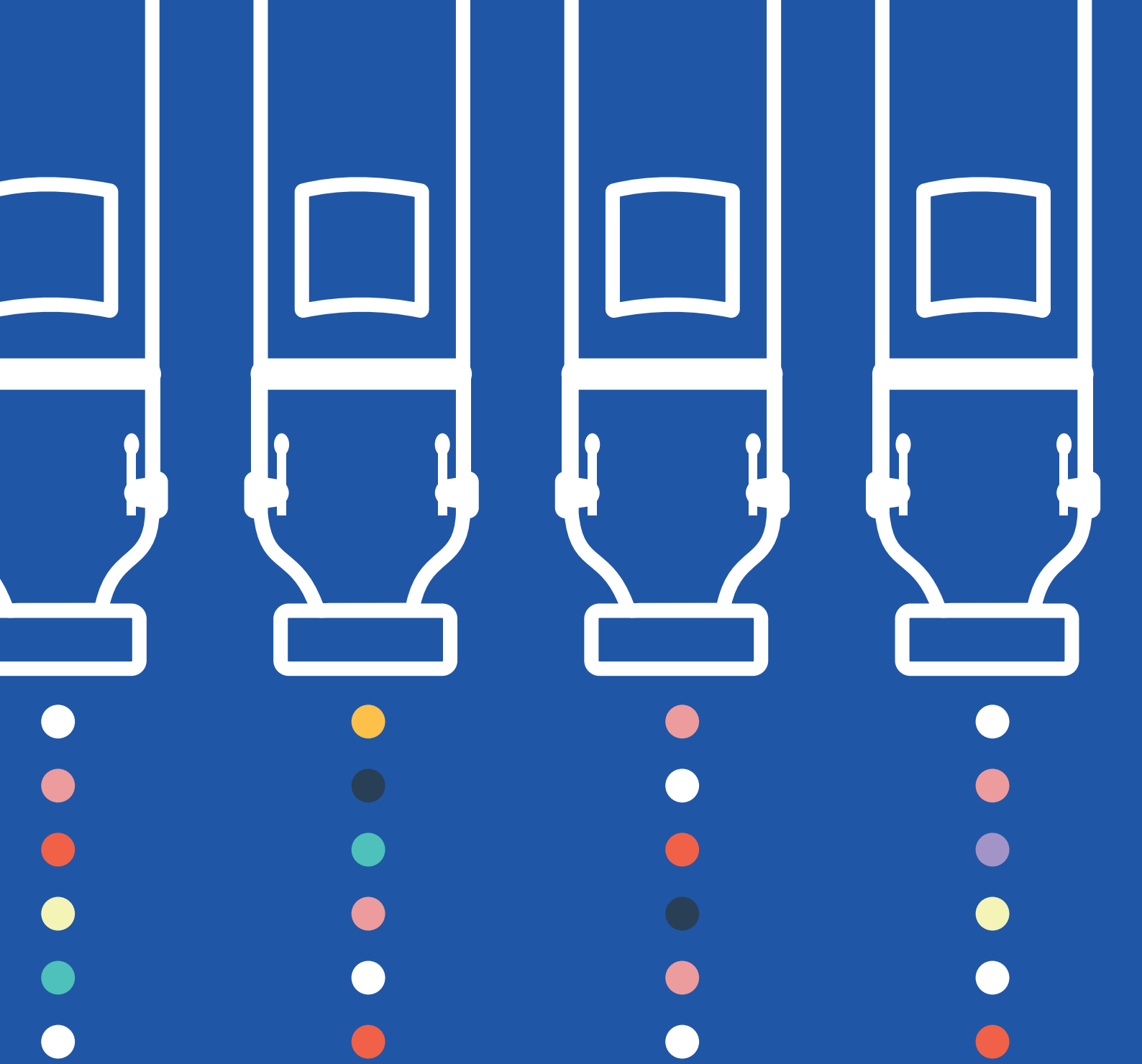

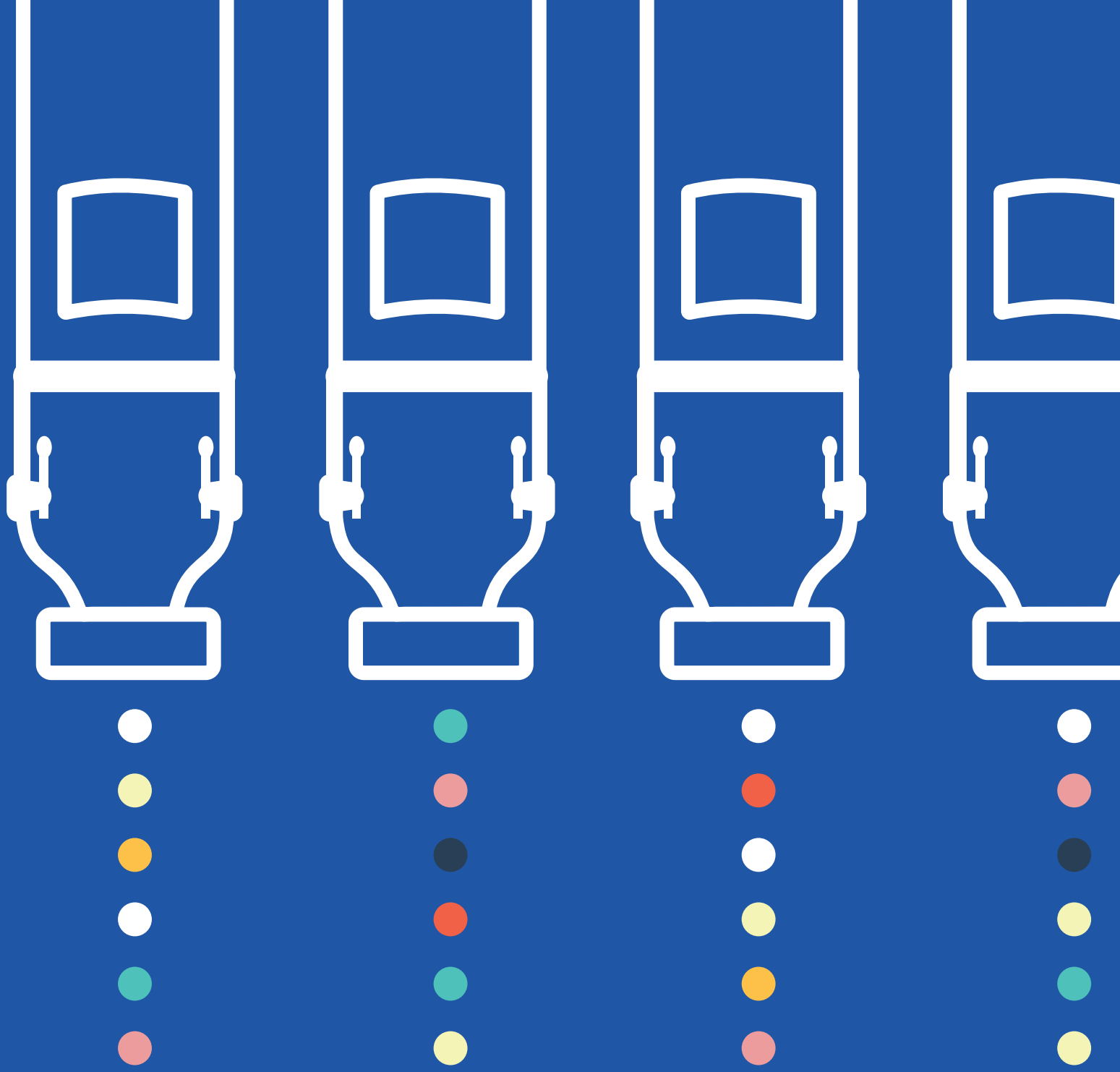

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