STUDY FOR IMPROVING EUROPEAN CITIZENS' CONTRIBUTION TO REDUCING THE ENVIRONMENTAL IMPACT OF PACKAGING

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1. Introduction

The European Concept for Accessibility (ECA) network was established in Doorn (The Netherlands) in 1996 to meet the need for harmonising the criteria to allow all European citizens to access everything that is offered by society under equal conditions. Since then, this European network of professionals has joined forces to provide the administrations and society in general with the necessary strategies and resources to achieve a society without exclusions.

Over the years, the initial approach has evolved, thus adapting to the present and future challenges and, therefore despite the main objective initially being focused on the rights of individuals with disabilities, the current approach now encompasses the expectations and needs of all individuals in all their diversity, including aspects such as age, gender, cultural knowledge, beliefs, eating habits, sexual orientation, education and any other aspect that differentiates certain individuals from others. All from a perspective of inclusion and respect for differences, but also, as is to be expected, from a perspective of sustainability as the only way to guarantee these rights for the generations to come.

The aim of the European Concept for Accessibility network is to offer "design for everyone", which is known internationally as *Design for All* or *Universal Design*, to society with a view to ensuring that the environments, products and services respect human diversity and promote equal opportunities in relation to current challenges and for future generations, that is, promoting universal design as a tool for achieving sustainability, placing the main focus on its social perspective.

Along the line of previous publications, as of the *ECA for Administrations* report [Aragall, F., Neumann, P. and Sagramola, S. (2008)], we recommend using the seven Interdependent Success Factors (ISF) in projects for improved reduction and recycling of packaging. According to that approach, the systematic implementation of approaches based on design for all, should be based on 1. Committed decision makers, 2. Proper coordination of initiatives, 3. Broad networking with stakeholders, 4. Evolutive action plans 5. Consequent knowledge management, 6. Continuous optimisation of resources and 7. Coherent communication and marketing of contents.

2. Objectives of this study

Among the challenges currently faced, the overexploitation of resources generated by consumerism and environmental degradation, caused by waste, entail a serious threat for environmental balance and for guaranteeing quality of life, even impacting on the survival of future generations.

Global warming and environmental degradation, both natural and urban, as the consequences of the contamination generated by transformation industries, means of transport that use fossil fuels as a source of energy, but also by the construction and textile industries, to name a few of the most contaminating sectors, without forgetting the heating and cooling systems that both shops and homes overuse.

The Administrations, and ourselves on an individual level, are responsible for reducing this excessive consumption of resources and pollution that is leading us to an inevitable disaster.

ECA considers that we should also contribute to reverting this climate emergency which entails grave social risks, due to which we have decided to make our contribution from our area of expertise.

For this we have focused our efforts on analysing one of the types of waste that has the most impact on our planet, i.e. packaging waste, which represents significant contamination of our seas and natural areas. To this end, we have decided to carry out this initial study with the aim of analysing:

- How citizens could act in a more responsible manner.
- How the Administrations and private sector can contribute to an improvement in the habits of citizens.
- How citizens' involvement could improve the life cycle of packaging and the systems implemented for their processing.
- How to ensure that nobody is excluded from their right and duty to minimise the use of packaging, while contributing to its recycling.

Without rejecting the possibility of embarking on future studies on this issue from a more global stance, as well as approaching examples of practical case studies on waste, in this initial study we have decided to review a vast amount of references on the reuse, selection and recycling of packaging, while also having interviewed citizens from various European countries in order to determine that challenges they face in relation to their part of responsibility in so far as recycling and discover which aspects of human diversity are critical to facilitate citizens' involvement.

3. Environmental and economic impact of packaging

The most common packaging is manufactured using various types of plastics, glass, metal or a combinations of these, but it is the plastic ones that are causing the greatest environmental impact in the world and in Europe, having contaminated water, flora and fauna and, obviously, the actual bodies of people.

Greenpeace is one of the Non-Governmental Organisations that most vigorously defends the planet's ecological balance. These are the figures they have provided in relation to contamination caused by plastic:

- 8 million tonnes of rubbish reach the seas and oceans each year (this is equivalent to the weight of 800 Eiffel Towers, sufficient to cover Manhattan Island 34 times or the weight of 14,285 Airbus A380 aeroplanes).
- Each second more than 200 kg of rubbish ends up in the planet's oceans.
- The exact amount of plastic waste currently in the oceans is unknown, but it is estimated there are between 5 and 500 billion fragments of plastic, that is without taking into consideration the pieces that are resting on the sea beds and on beaches.
- 80% of which originate on land.

- 70% is left on the sea beds, 15% in the water column and 15% on the water surface. Therefore, the waste we see is only the tip of the iceberg.

- There are five garbage patches that are mostly made up of microplastics, somewhat similar to “soup”. Two of these can be found in the Pacific Ocean, another two in the Atlantic Ocean and one in the Indian Ocean.

- It is estimated that in 2020, the speed at which plastic is produced will have increased by 900% in comparison to the levels recorded in 1980 (more than 500 million tonnes per year). Half of this increase would have occurred in the last decade.

- According to the United Kingdom government, a waste collection campaign that was held on 229 British beaches recovered, on average, 199 pieces of rubbish every 100 metres of beach.

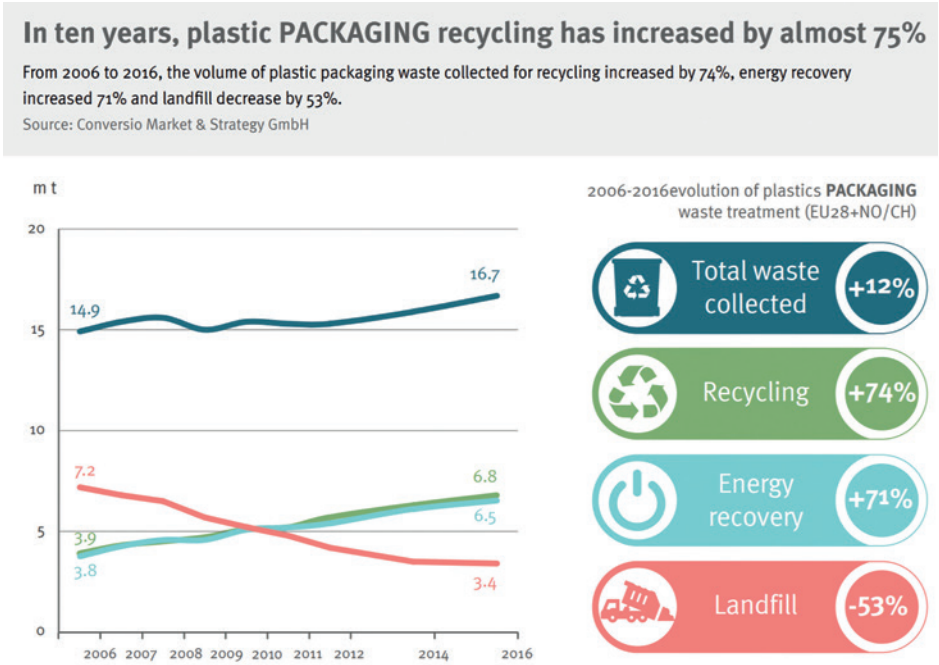
On the other hand, the following are the objects most commonly found on beaches and coastal areas (by number):

- Cigarette buts
- Plastic fragments smaller than 2.5 cm
- Plastic bottles
- Wrappers
- Plastic bottle caps
- Straws
- Other plastic bags (other than supermarket bags)
- Glass bottles
- Plastic supermarket bags
- Metal bottle caps
- Plastic caps (other than bottle caps)

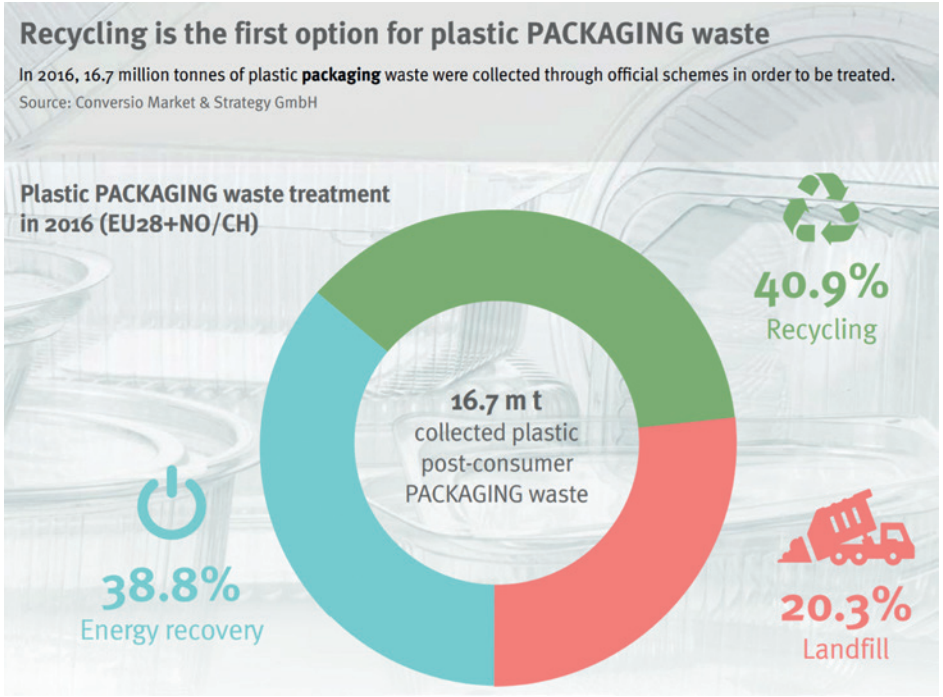
Source: Ocean Conservancy 2016

Consumers purchase large amounts of plastic products, of which China is the main producer, followed by Europe, North America and Asia (excluding China). In Europe, more than two-thirds of the demand for plastic mainly originates from five countries[1]: Germany (24.9%), Italy (14.3%), France (9.6%), United Kingdom (7.7%) and Spain (7.4%).

In the past, a large percentage of these plastics would end up in landfills, contaminating both land and water flows. However, plastic recycling, specifically packaging, is increasing year-on-year and 80% is recycled or processed, according to Conversio Market & Strategy GmbH.



As can be seen in the previous graph, 12% more plastic packaging waste are collected, 74% more are recycled, energy is recovered from 71% more and 53% less is dumped at landfills.



1 Plastics Europe, 2015 "Plastics - the Facts 2015, 2016. An analysis of European plastics production, demand and waste data"

The graph shows that, even though plastic packages are among those least recycled, at present recycling (40.9%) is already in percentage terms the first option in the processing of these kind of plastic.

4. Packaging management system in Europe

In Europe, there are currently two systems for collection and processing of packaging which coexist:

- **EPR: (acronym for Extended Producer Responsibility)**, which is the major player in the EU, consisting of, either by means of door-to-door collection or via containers, collecting all domestic and urban waste, normally
  separately, to then be classified for its subsequent recycling, u sed for obtaining energy and, if possible, its shipment to landfills.
  In general, manufacturers, packers and distributors pay the management company for the packaging they place on the market and the latter obtains revenue from the sale of materials to companies that recycle and recover the packaging that are collected separately.

EPR is more efficient as the citizens improve in so far as separating waste. For this, the closer the containers are to homes, the more accessible and identifiable they are and the greater the awareness of the citizens is, the better the recycling process becomes. However, when an end user does not deposit the packaging in the recycling container, even when this is due to lack of knowledge, this leads to an increase in the rubbish collection rates affecting all citizens.

- **The Deposit and Return System (SDDR in Spanish) in combination with EPR (SDDR+EPR)**, implemented in Germany, Austria, Croatia, Belgium, Lusembourg, Norway, Denmark, Finland, Holland, Estonia and Sweden, with different regulatory systems depending on each country. This consists in increasing the
price of packaged products by up to 30% (only reusable glass in some countries, whereas in others this affects any glass and plastic bottles and beverage cans; and some even include Tetra Briks), between €0.02 and €0.30 depending on the type, size and country.

When the consumer returns the package to the store in good condition or inserts it into a machine, the consumer is reimbursed for the amount initially charged for the packaging, that is, if the consumer cannot or will not return the packaging correctly, he/she will assume the cost of this failure to return and the SDDR system reaps an economic benefit from this. Ultimately, this packaging that is not recycled ends up having an effect on the cost of waste collection and, therefore, on the rubbish collection rate.

To ensure the efficiency of this combined system, it is necessary to ensure the proximity and accessibility of the containers and the collection points in shops, with special attention paid to the fact that the citizens must carry the packaging to either the containers or the shops.

On the one hand, shops either invest between €3,000 and €20,000 per machine (depending on their features and capacity) and allocate around 15 to 20 m^2 for each reading and compacting machine with their respective containers or will have to dedicate 1 m^3 for every 500/700 packaging materials that are not compacted for these to be subsequently counted and identified at the processing plants.

The packaging materials to be reused are transported from the shops to the bottling plant and the others follow the same process as in EPR. The packaging materials not accepted into this cycle, around 70% of the total (Fullana et al. 2017) (food tins, detergent packaging and cleaning products, food trays, broken bottles, alcohol bottles, ready-made meal packaging, glass jam and food jars, sauce containers, sweeteners and legumes, coffee tins and breakfast packaging, aerosol sprays, hygiene and perfumery packaging, among others), must also be placed in the container for packaging of the local EPR or are collected door-to-door if this is the collection system that has been implemented.

It should be noted that these two systems coexist with the packaging processing that is carried out in hotels, restaurants and bars (called HORECA sector), in which the drinks distributor also collects the packaging that is susceptible of being reused, which currently represents nearly a quarter of the total.

As it happens, neither of these two systems have implemented procedures that encourage the use of reusable packaging.

It should be borne in mind that, despite in-home waste sorting allowing for better utilisation of the materials that are collected, these are rarely responsible for the packaging materials we find on streets, beaches and in parks. Packaging materials that are incorrectly disposed of are mainly due to uncivil behaviour outside of the home (during work breaks, leisure activities, etc.).

As reflected in the following two graphs provided by Eurostat, the official figures on a global scale and for each EU country show that recycling and recovery is gradually increasing, despite not having yet reached the desired levels.

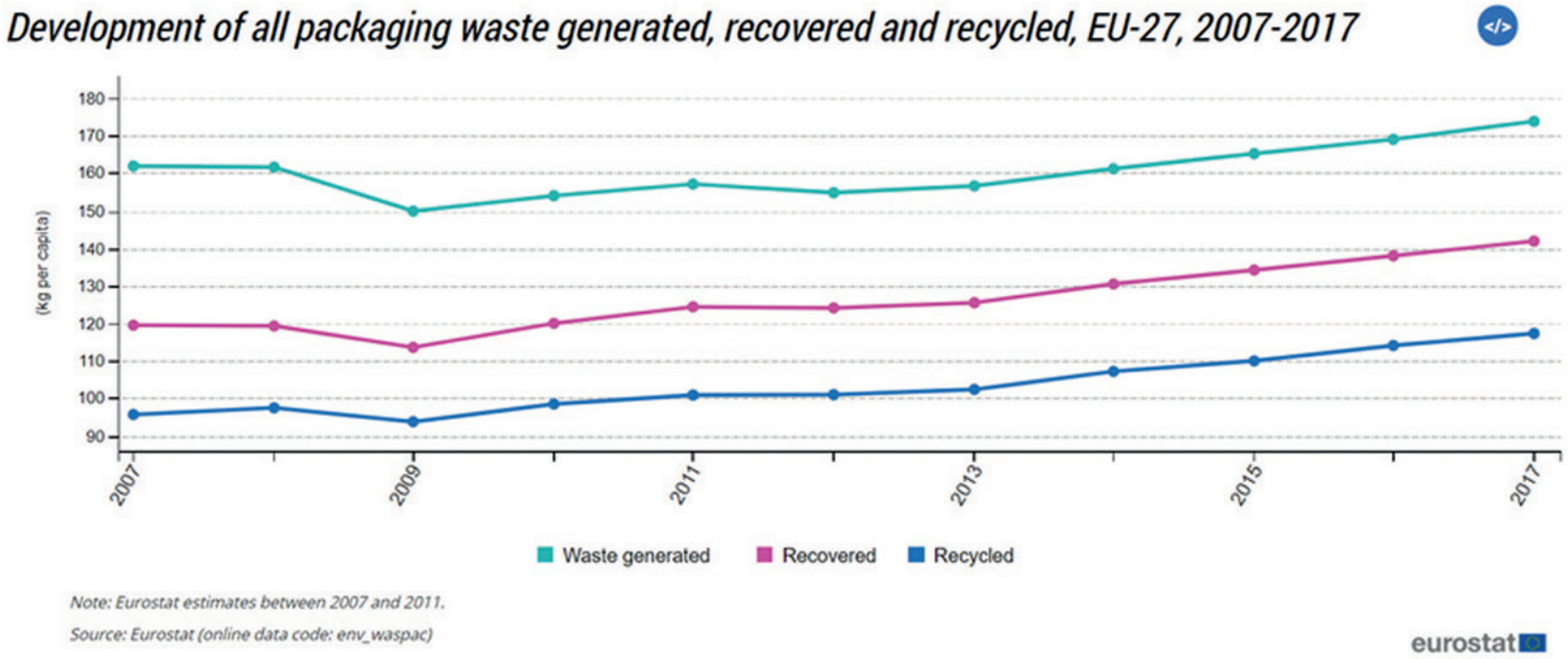
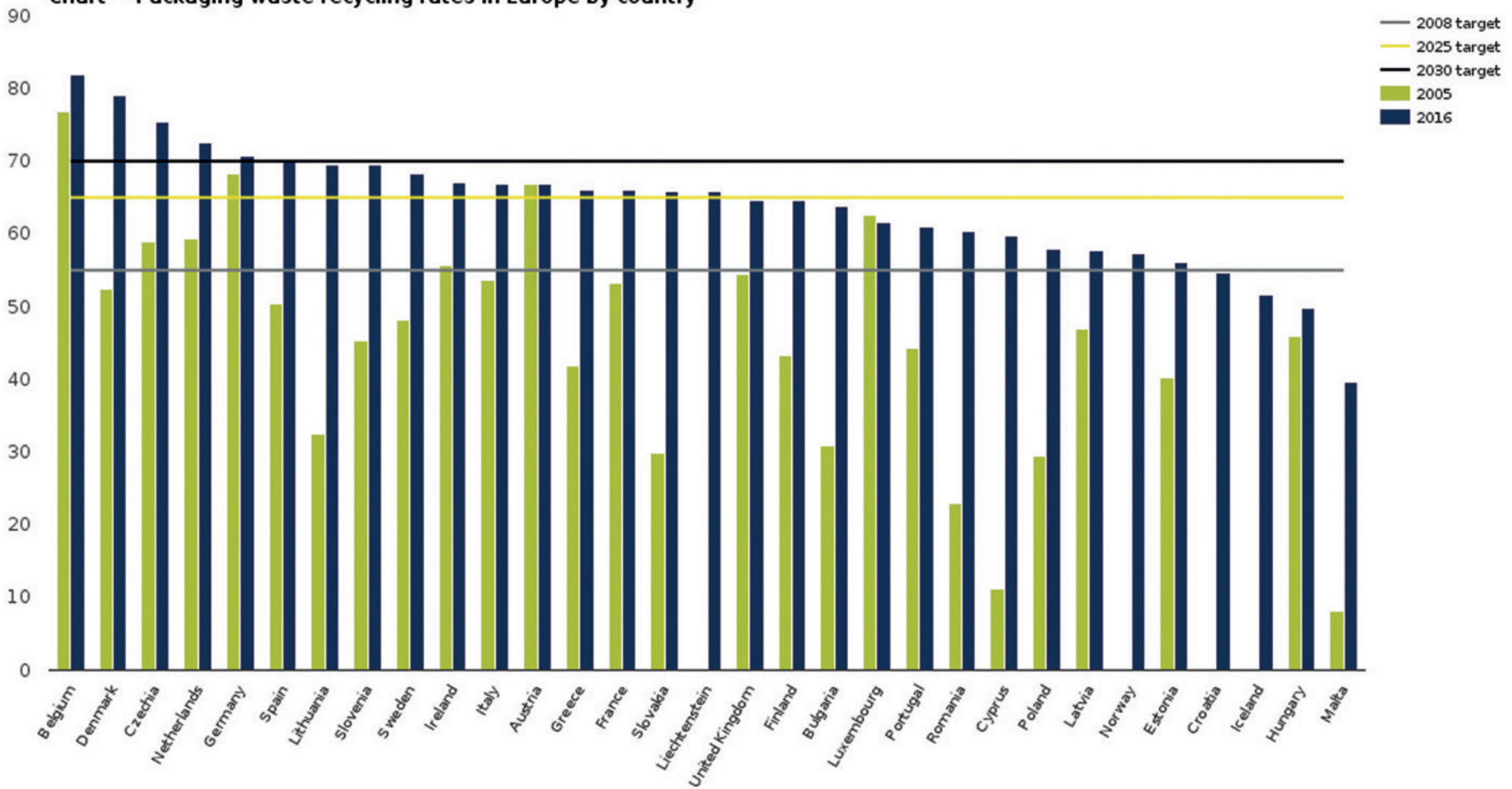
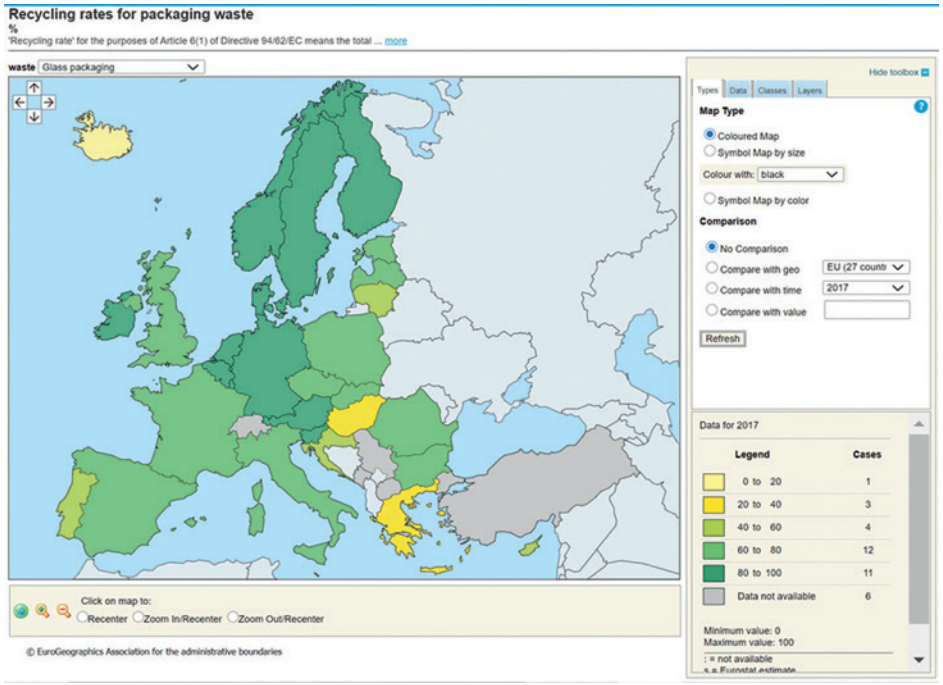


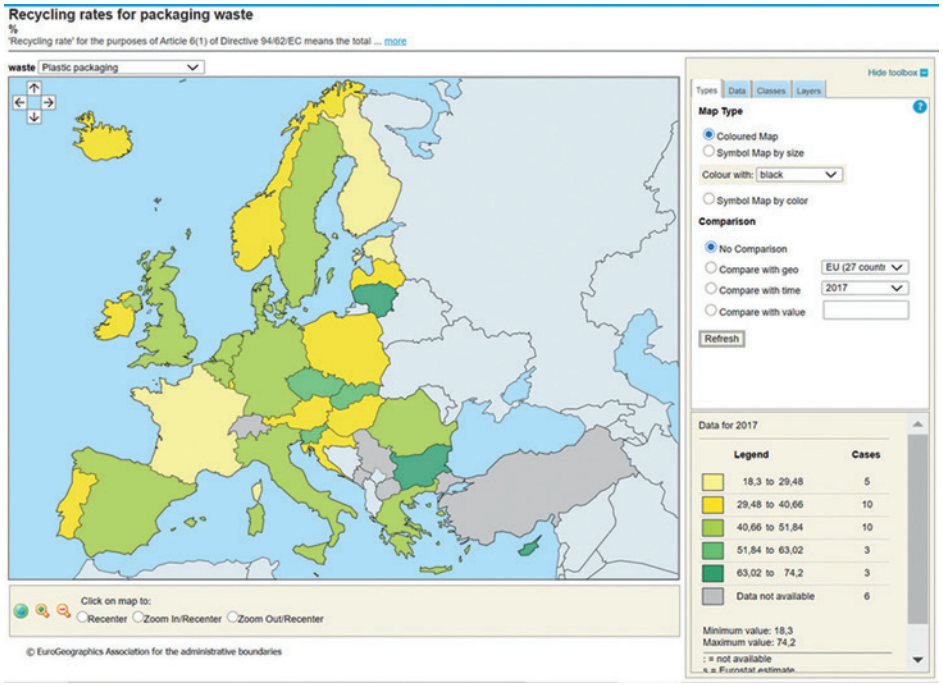
Chart — Packaging waste recycling rates in Europe by country



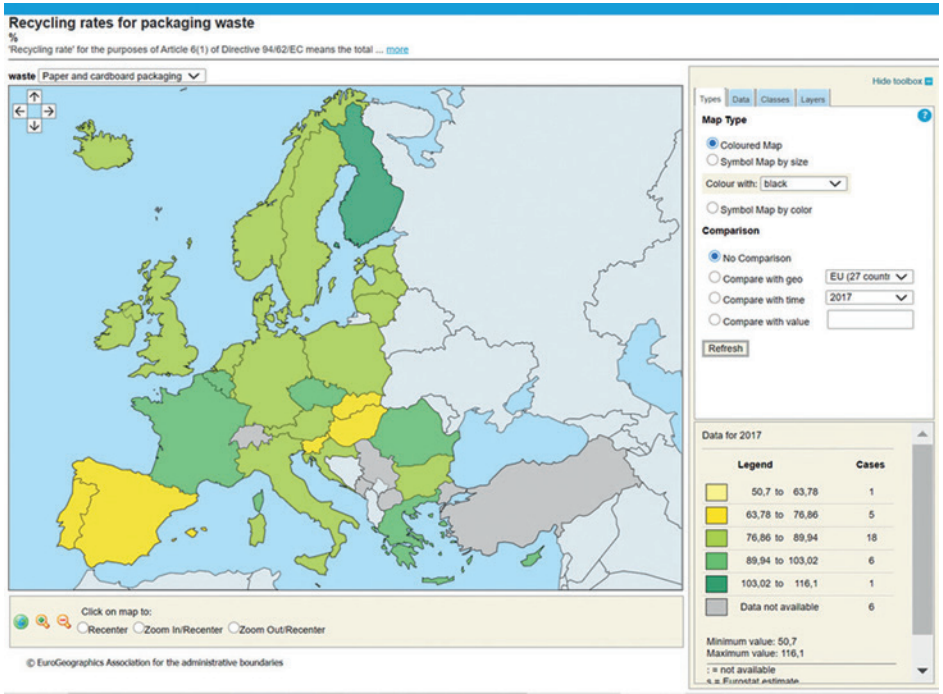
And as seen in the following maps, also by Eurostat, the percentage of packaging recycling according to type of material varies significantly among the different EU countries.



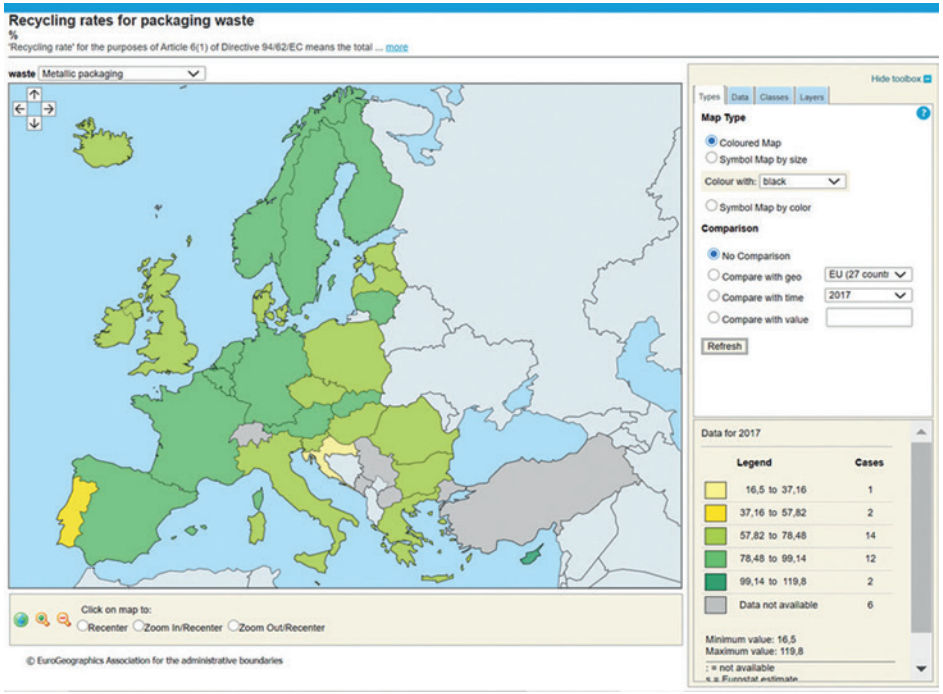
Recycling glass containers. The most efficient countries for glass recycling are Sweden, Norway, Finland, Denmark, Germany, Belgium, Holland, Luxembourg, Austria, Ireland and Slovenia. Those with the lowest recycling rate for this raw material are Greece and Hungary.



Recycling plastic containers. Lithuania and Bulgaria, followed by the Czech Republic, Slovakia, Slovenia, Sweden, the United Kingdom, Spain, Germany, Holland and Belgium. France, Finland and Estonia are the countries with the lowest recycling rate.



Recycling paper and cardboard. Finland is the country that recycles the most, while Spain, Slovakia, Hungary and Croatia are the countries that recycle the least.



Recycling metal containers. Nordic countries, in addition to Germany, France, Holland, Belgium, Spain and Austria, are the ones which recycle the most metal containers, while Slovenia and Portugal recycle the least.

5. European Directive 2018/852, on packaging management

This Directive, which all EU Members should have transposed into their legislation before 5 July 2020, amends Directive 94/62/EC relating to packaging and packaging waste, identifies the environmental impact generated by packaging and determines the packaging minimisation, reuse and recycling targets.

From its wording, the following paragraphs are worthy of note:

Waste management in the Union should be improved, with a view to protecting, preserving and improving the quality of the environment, protecting human health, ensuring prudent, efficient and rational utilisation of natural resources, promoting the principles of circular economy, enhancing the use of renewable energy, increasing energy efficiency, reducing the dependence of the Union on imported resources, providing new economic opportunities and contributing to long-term competitiveness. A more efficient use of resources would also bring substantial net savings for Union businesses, public authorities and consumers, while reducing total annual greenhouse gas emissions.

Waste prevention is the most efficient way to improve resource efficiency and to reduce the environmental impact of waste. It is important therefore that Member States take appropriate measures to encourage an increase in the share of reusable packaging placed

on the market and the reuse of packaging. Such measures can include the use of deposit-return schemes and other incentives, such as setting quantitative targets, taking reuse into account for the attainment of recycling targets, and differentiated financial contributions for reusable packaging under extended producer responsibility schemes for packaging. Member States should take measures to incentivise the take-up of reusable packaging and to achieve a reduction in consumption of packaging that is not recyclable and of excessive packaging.

Fostering a sustainable bio-economy can contribute to decreasing the Union's dependence on imported raw materials. Bio-based recyclable packaging and compostable biodegradable packaging could represent an opportunity to promote renewable sources for the production of packaging, where shown to be beneficial from a life-cycle perspective.

Litter, whether in cities, on land, in rivers and seas, or elsewhere, has direct and indirect detrimental impacts on the environment, the well-being of citizens and the economy, and the costs to clean it up present an unnecessary economic burden for society. Many of the most commonly found items on beaches include packaging waste and have long-term impact on the environment while affecting tourism and the public benefit of these natural areas. Additionally, the presence of packaging waste in the marine environment entails subverting the priority order of the waste hierarchy, in particular by avoiding reuse, recycling and other recovery.

No later than 31 December 2025, the following minimum objectives in weight of recycled specific materials will be achieved, as indicated followed by the content of packaging waste:

i) 50% of plastic
ii) 25% of wood
iii) 70% of ferrous metals
iv) 50% of aluminium
v) 70% of glass
vi) 75% of paper and cardboard

No later than 31 December 2030, the following minimum objectives in weight of recycled specific materials will be achieved, as indicated followed by the content of packaging waste:

i) 55% of plastic
ii) 30% of wood
iii) 80% of ferrous metals
iv) 60% of aluminium
v) 75% of glass
vi) 85% of paper and cardboard

6. Impact of the residential model on managing packaging at home

6.1. Compact urban structure

When a city presents a compact urban structure, as is the case of most large cities on mainland Europe, the homes are mainly located in apartment blocks that usually have small and medium-sized shops close-by, enabling their inhabitants to walk to these shops.

For example: GoogleMaps© allows users to see how Münster (Germany) with 300,000 inhabitants and Madrid with over 3.000.000 inhabitants have a very high density of supermarkets distributed across the entire urban area.

Münster (Germany)

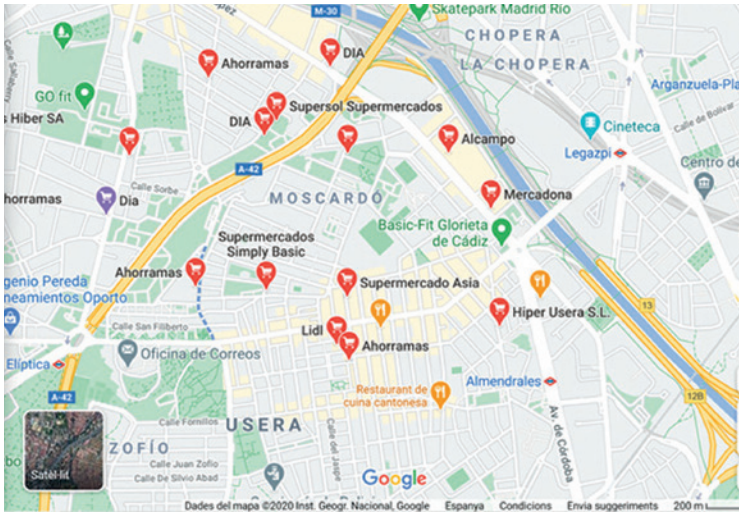
In most of these European cities, the waste collection system is carried out by means of specific containers, in the form of large selective containers that belong to each residential block and, in some cases, the collection is carried out door-to-door . In countries such as Germany and Norway, where the SDDR+EPR management system has been implemented, consumers sort the packaging accepted in the SDDR and separate them from those that are not accepted. They take the first packaging to the shop, normally when they go shopping.

The high density of population that generates a compact urban structure allows for the containers to be located no further than 150 to 300 metres from each home.

6.2. Low density urban structure

The urban structure is one of low density when the homes are mainly semi-detached or detached houses, as can be seen in many cities in the United Kingdom, but also in small cities across Europe.

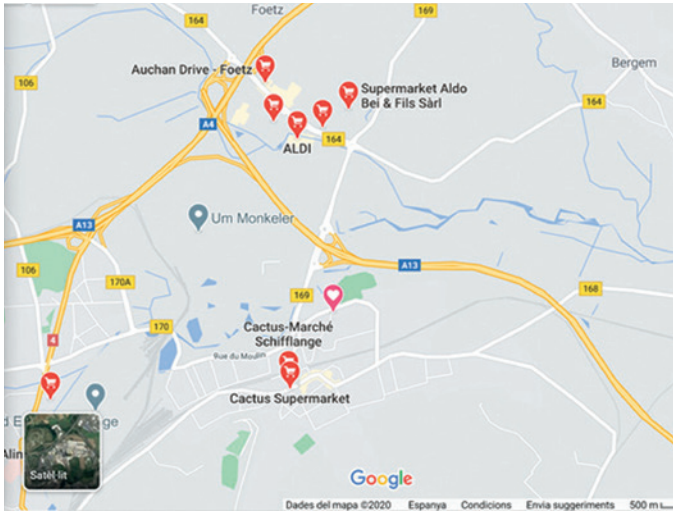
Low urban density leads to both the shops and the rubbish containers being further from the houses and, in the case of small towns, the shops are normally located in shopping areas outside of the urban centre, thus forcing their inhabitants to mainly use their cars to go shopping.



Madrid (Spain)

Durham (United Kingdom)

Example: GoogleMaps© allows us to view how in Durham (United Kingdom) with 40,000 inhabitants and Schifflange (Luxembourg) with 12,000 inhabitants, there is a low supermarket density and these are mainly located along a commercial street or on the outskirts.



Schifflange (Luxembourg)

In general, low density urban structures have more available space inside their houses and in their gardens, therefore citizens tend to have large rubbish bins for sorting their waste. This waste is then collected by a door-to-door service or deposited in a container. In countries such as Luxembourg and Norway, where the SDDR+EPR collection system has been implemented, consumers tend to use their vehicles for transporting the packaging waste accepted in the SDDR to their local supermarket.

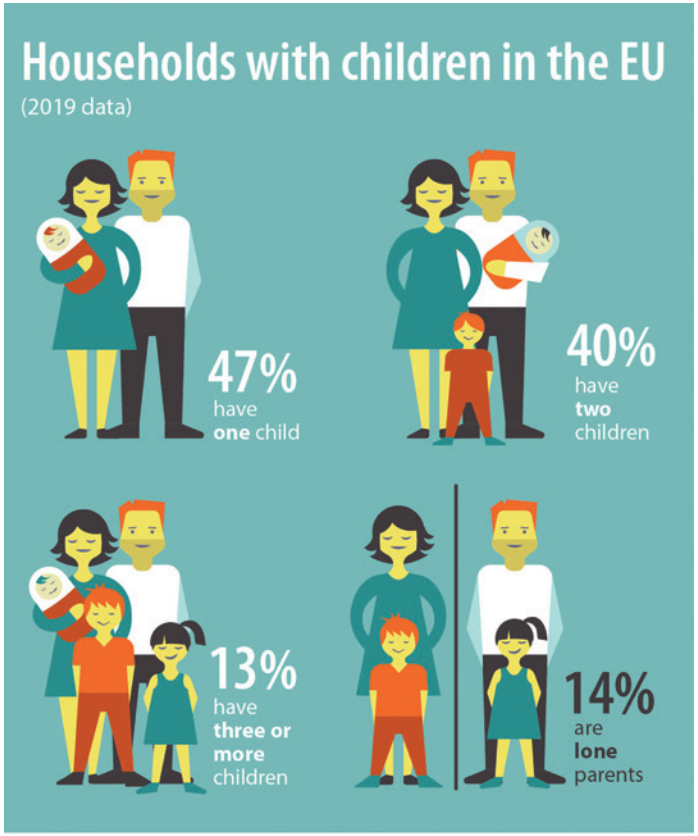
ABC News
ABC News, Recycle Centers On
Drop & Go - Dansk Retursystem

7. Impact of demographic aspects on managing packaging at home

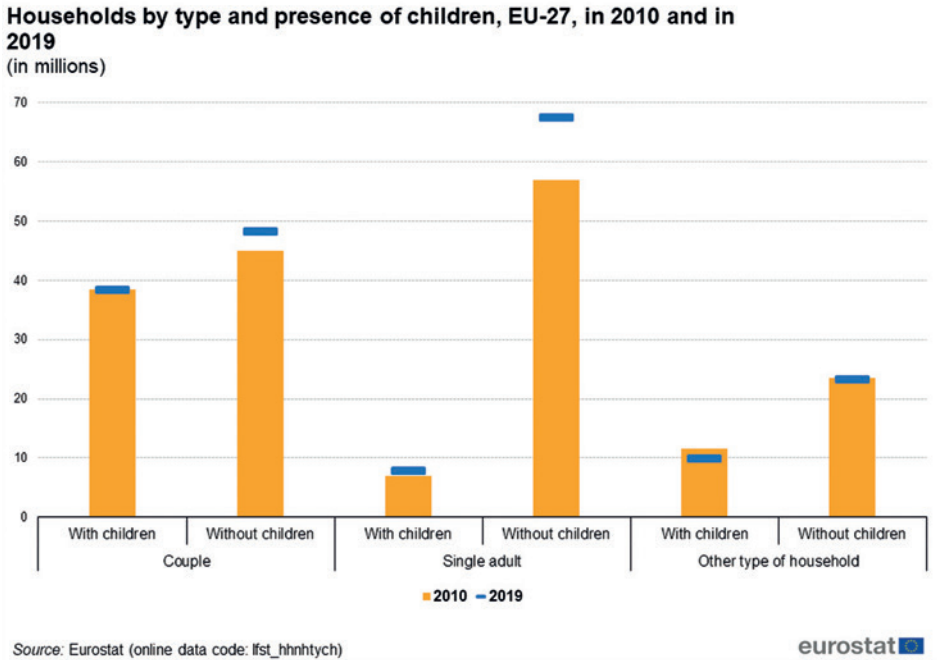
There are several demographic aspects that affect the habits and difficulties for correctly sorting and disposing of packaging waste, but also as regard the convenience or problems associated to the waste management model, whether this be the SIG or the SDDR+EPR

For this study we have decided to analyse the impact of the home structure, age of the residents, physical and sensory abilities of the citizens and their nationality.

7.1. Structure of homes

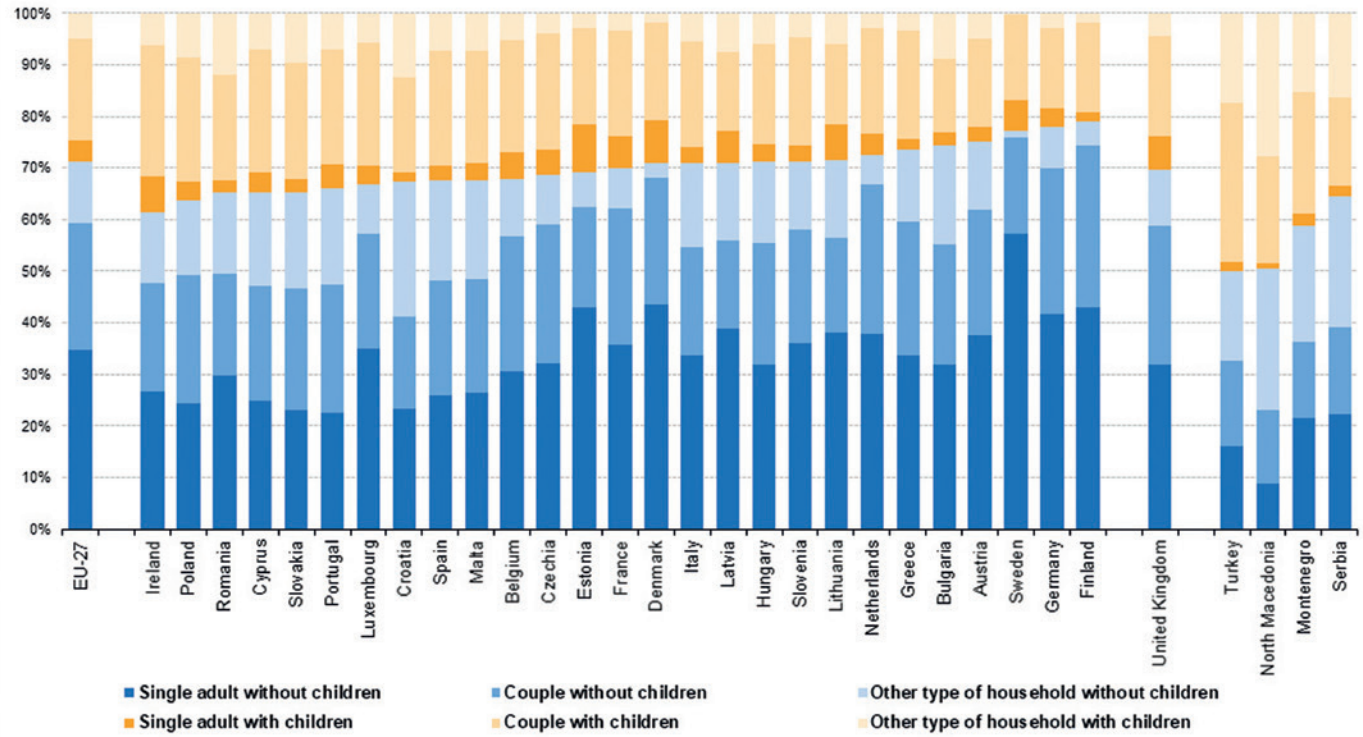


As described in the previous graph, only 13% of European homes with children have three or more, whereas 40% have two, 47% have one and 14% correspond to single-parent families.



However, as seen in the graph, the percentage of parents without children has gone from 45% to nearly 50% in nine years, while that of adults living alone has gone from 57% to 67%.

Households by type, presence of children and country, 2019
(% of total households)



Source: Eurostat (online data code: lfst_hhnhtych)

eurostat

As reflected in the previous graphs, the numbers of children in these homes is falling and there is an increase in the number of people living alone. Attention is drawn to the fact that more than 40% of women over the age of 65 live alone and, specifically in Sweden, nearly 60% of homes are occupied by only one person.

In fact, given that only 13% of homes are occupied by families with more than two children, the replacement rate of the population is exceedingly low and, consequently, we see an increasingly ageing population.

On the other hand, people living alone tend to consume less packaging than homes where more people live together and in those where there are children (according to Eurostat, in 2018, the European average was of 174 kg per person, from the 67.8 kg in Croatia to the 227.5 kg in Germany), however, in principle, they have more time and space to correctly manage their packaging waste.

7.2. Age

Young people and children are the age group that have received the most environmental information and education, and the vast majority of schools sort their packaging waste.

However, when there are large concentrations of young people, but also of adults, be it on beaches, at concerts or protests, environmental education seems to lose its effect, either due to laziness or a lack of sufficient bins or containers for this kind of events.

By means of the surveys conducted by the authors of this study, it has been confirmed that, in families with children, these are the ones who often generate awareness among the rest of the family, even though in many cases the parents also include waste sorting as part of their children's education. While for many elderly people, recycling is still a novelty.

In turn, we have noticed a different sorting behaviour between everyday and special occasions, since during the latter there is a tendency to be less meticulous when it comes to separating.

We must also bear in mind that, as previously seen, there is an increasing number of elderly people living on their own. It is normal for this population group to live in old buildings that do not have a lift, due to which the transfer of packaging waste and all other rubbish entails considerable effort.

7.3. Abilities

People have varying degrees of physical, sensory and cognitive abilities, that evolve throughout their lives.

Sometimes, these limitations can also entail a problem when it comes to sorting and disposing of packaging waste.

For blind people, the use of containers doesn't represent a significant problem provided they are always in the same location and order, but in any case a problem arises if the maintenance of the container is deficient and it is dirty, since a blind person cannot avoid touching it. However, current SDDR machines entail an accessibility issue (incompatible with the recently approved Directive (EU) 2019/882 of the European Parliament and of the Council, dated 17 April 2019,

on the accessibility requirements of products and services) for blind people, since they must interact with a non-accessible touchscreen that prints a ticket which a visually-impaired person is unable to read. On the other hand, it is impossible for blind people, while also very complicated for people with poor eyesight, to read the label on the packaging that indicates whether it is included in the SDDR return and the value of that specific packaging.

It should be noted that in countries such as Sweden and Luxembourg, where glass is recycled by colours, this task is impossible for blind people who live on their own.

The height of the containers' receptacle and of the SDDR machines can also entail a problem for short people, either due to their age or growth issues.

Example of containers that have been designed from a "design for all" perspective.

Photo: Regional Government of Catalonia.

People suffering from limitations of an organic nature that cause fatigue or people with mobility problems have significant difficulties when it comes to carrying weight or walking moderate distances, and these problems are further aggravated when reaching the recycling point or shop and entails them having to climb stairs, either to leave their home or to enter the shop.

The people find door-to-door collection much more convenient, followed by the use of containers, and the use of SDDR machines is the least appropriate for them as it entails travelling to two different places. From the interviews conducted in Norway, we have become aware of the existence of organisations that create jobs for people at risk of social exclusion, who are offered to elderly people and those with limitations to collect their packaging waste from their home in exchange for receiving the money for returning the packaging.

It should also be noted that some packers have implemented improvements in the design of urban containers to improve their accessibility for people with impaired vision or mobility.

7.4. Nationality

People arriving from other regions or countries, either due to work, studies or leisure, tend to have adaptation issues in relation to the recycling system used in the country to which they have relocated.

It may also occur that, if they have come from countries where recycling is not a habit that is integrated among that society, they may simply not be aware of its importance.

Finally, we have also seen that, during holiday periods, people tend to disconnect from their everyday tasks and responsibilities and, unfortunately, their contribution to recycling tends to be one of these. So, it is common to find that in tourist areas, during festivities and at large events, there is a vast amount of packaging waste that has not been sorted.

According to the people interviewed in Norway, where SDDR+EPR is widely implemented, groups of people from other countries travel there during the months in which events are held to obtain the payments received for returning abandoned packaging waste.

8. Packaging management in European homes, aspects that hinder the process and proposal for potential improvements

Given that, as mentioned, the proportion of mixed waste is alarmingly high and there are many social and demographic factors that influence the generation and selection habits relating to domestic waste, we will now analyse each of the management stages of packaging waste in homes to decipher the problems that hinder the process and what could be improved, with a view to coming close to 100% of packaging waste susceptible of being reused or recycled.

However, it should be noted that despite a poor choice of domestic packaging preventing its reuse or recycling, rarely does domestic packaging waste end up scattered in the environment.

8.1. Reducing packaging

Consumers are currently exposed to a vast selection of single-use packaging, others that combine several materials and overly packed packaging, and it has only been in recent years that we have seen an emergence of shops that are recovering the tradition of selling in bulk and even supermarkets that allow customers to bring their own packaging from home.

Among these, we also find shops that sell cleaning and hygiene products in bulk.

Bulk sale premises

It is also possible to avoid using single-use water bottles if we drink tap water, either directly or filtered, or wine and beer packaging, since traditional wineries continue to offer wine in bulk and some of the newer craft breweries offer customers the option of buying their beer and having it poured into the customers' own containers.

Furthermore, there are many small commercial premises, such as bakeries, market stalls, fish mongers, cheese shops, butchers and many others, that sell their products without packaging but that, when the customer fails to bring a suitable container, they offer them a plastic or paper bag, although they could also offer reusable packaging, as already seen in some shops.

However, this remains a very small percentage of the offer, which entails that travelling to this kind of shops still entail travelling further distance.

But possibly the most significant barrier is the inconvenience of planning one's shopping and bringing containers from home, in addition to having to wash then after using them.

Although awareness campaigns help, greater involvement on the supermarkets' part in so far as promoting a reduction in the use of packaging is also necessary.

8.2. Reusing packaging

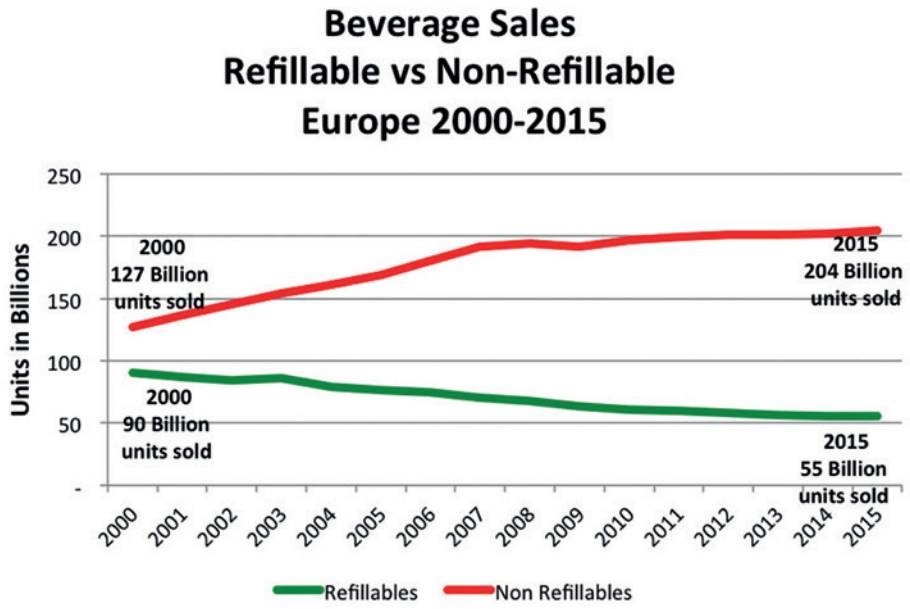
Catalonia's Waste Agency is one of Europe's administrations that has conducted an in-depth study of the potential behind reusing packaging. It has determined that there are returnable glass containers that, after a suitable washing process, can be reused for the same purpose. A glass bottle can be reused between 40 and 60 times with an energy consumption of 5% in comparison to the expense arising from its recycling. Therefore, this is the best option from an environmental perspective.

In the HORECA distribution channel (hotels, restaurants, cafés and other establishments), packaging susceptible to reuse has traditionally been collected by the packers.

According to the Spanish Federation of Hospitality and Catering Distribution Companies, 5,500 million reusable packaging materials are managed each year.

However, it seems that the tendency among manufacturers is that of producing an ever increasing amount of single-use packaging materials, since it is more cost effective for them.

To satisfy the citizens' preference for reusable packaging, several online sales companies offer the option of delivering different types of beverages, water, milk, beer, wine, juices and other products in boxes that, by way of a small deposit, are later collected from the citizen's home, thus facilitating their reuse.



According to this graph presented by Reloop, the offer of reusable containers is gradually decreasing.

Given the environmental advantages of reusing packaging, it would be advisable to study how it would be possible for the industry to place on the market a higher percentage of reusable packaging and that this type of packaging were encouraged in order for it to become the preferred option among citizens, despite it representing a low percentage among all the types of packaging.

Some of the possible measures to be implemented would be to demand that packers maintain or increase the percentage of reusable packaging or to implement incentives for small commercial premises to have access to the HORECA distribution, as well as to ensure that all commercial premises offer reusable beverage packaging.

8.3. Selecting packaging

One of the main problems generated by the industry are packaging containers consisting in a mix of various materials (usually cardboard and plastic), since these lead to citizens being uncertain on whether they should take them apart or not, and into which container they should dispose of them.

Another problem that consumers face is the excessive amount of packaging that many food products are presented with (for example, a cardboard box of biscuits wrapped in cellophane and containing biscuits that are individually wrapped in plastic).

In any case, as mentioned previously, according to the INE, more that 30% of citizens has yet to begin separating waste. From interviews conducted in various European countries, it would seem that, in many cases, friends and neighbours can help to resolve or influence others to carry out appropriate packaging sorting. In some towns, such as those in the Charleroi region (Belgium), where collection is carried out door-to-door, they refuse to collect rubbish bags containing packaging or paper among mixed waste, and this encourages those citizens to be more careful when sorting their rubbish.

Aside from information campaigns, it might be interesting for civic agents to sporadically be by containers during suitable hours to explain to citizens how to sort their waste, especially in areas where deficient sorting has been detected.

8.4. Storing packaging at home

The majority of homes currently have separate bins for each type of waste. In fact, in many municipalities where rubbish is collected door-to-door, it is the City Council itself that provides the different bins for each type of waste.

In some countries, such as Germany, citizens are obliged to place packaging waste that is not cardboard or glass into yellow bags specifically used for this purpose (those that are not subject to SDDR).

In homes in which few people live, storing packaging is not normally a problem except when there are family celebrations. However, the proximity of containers in high density urban areas avoids the need for accumulating packaging waste at home.

In municipalities with a low population density where containers are far away or not even available (where collection is carried out door-to-door), some residents who have sufficient space in their homes prefer to accumulate the packaging and take it directly to the recycling facility by car.

In many homes, citizens compress the packaging waste (plastic bottles, beverage cans, Tetra Briks and others) to reduce the space these take up and thus reduce the number of trips to the container. However, this is not possible if the packaging must be deposited in SDDR machines, since they do not accept compressed packaging materials. This entails that both citizens and small commercial premises that cannot acquire the counting and compacting machines, due to a lack of resources or space, find themselves having to accumulate the packaging containers in large bags which are difficult to transport.

Furthermore, another inconvenience is that of being unable to recover the amount paid for the packaging containers whose label has been lost, broken or whose barcode is illegible.

The storage of packaging containers that are not glass or dry cardboard means that some of them release liquid residue (Tetra Briks, food tins, etc.), which means they need to the stored in a bag or, as would be preferable, washing out the bins after emptying these packaging containers.

In any event, the market already offers specific bags for packaging and it would be advisable to study whether the obligation to use specific bags for each type of waste (as already carried out with compostable bags for organic material) could increase the percentage of correctly separated packaging containers.

While in some cases the recycling facilities are located at a fair distance from the homes, it would be interesting to encourage citizens by means of incentives, such as a reduction in rubbish collection rates, to take their packaging waste directly to these facilities.

8.5. Transferring packaging to the various collection systems

There are various alternatives for transporting packaging waste to the collection points. Since they all have their advantages and drawbacks, we will analyse them individually.

8.5.1. Urban containers

This is the most widely used system in cities and also the most flexible one, since it allows to dispose of packaging at any time of the day or night.

If they are sufficiently well distributed in densely populated urban areas, they are accessible to all the homes and, if they are in the same order, they are also accessible to persons who are visually impaired. The models for which accessibility has been maximised can also be used by children, elderly people with strength or mobility limitations, provided the routes to access them are accessible and free from obstacles (tree pits, parked motorcycles, etc.) to facilitate their use.

One of the aspects worth addressing would be their receptacle mouth. The opening of the packaging containers is normally designed for inserting containers one by one, not for bags of containers. Furthermore, the receptacle mouth of the cardboard waste containers makes it complicated to insert large packaging originating from electronic commerce, for example.

One of the design features of the containers that are most widely liked by citizens are those that have been fitted with automatic opening either by a foot pedal or handle, and in which the lid remains open for sufficient lapse of time to insert the bag.

The main problems associated to the containers are:

- There is no prior control over the waste sorting, which is left exclusively to the responsible behaviour of the citizens.
- When the container is full, the users do not return home with the waste neither do they look for another container, they tend to just leave the waste next to the container.

As discussed above, for the first of these cases, we must continue to implement the ongoing awareness and information task, but it would also be a good idea for civic agents to inform users at the containers regarding the correct separation, especially at containers where deficiencies are detected and impose fines when they detect a reiterated irresponsible attitude.

As regards full containers, there are systems that alert the central management system when the containers are close to reaching their maximum capacity. However, it would also be interesting to plan a more frequent collection schedule during certain periods, such as Christmas, when it is expected there will be an increase in use.

8.5.2. Door-to-door collection

This system is the one that requires the least travel for citizens to dispose of their waste and it enables a relatively high monitoring of the sorting process that is carried out in homes.

Its greatest disadvantage is the strict days and times for collection of each type of waste and, in some cases of its volume, given that as it is the same system for all homes, it may not adapt to the frequency, volume or habits of each of these homes. For example, if the frequency for collecting packaging is two days a week, a person living alone who consumes few drink containers will deposit bags that are pretty much empty, while a family with many members will be forced to endure the smells generated by decomposing organic material and will accumulate several bags until the next collection day. Finally, in a municipality with a lot of weekend residents, and which does not coincide with the collection calendar, may lead to these visitors exporting the rubbish to other municipalities or, even worse, dumping it in the environment.

All of the above added to the fact that in countries such as Luxembourg, where the rubbish collection rates are linked to the volume of these in each domestic use container, some citizens dispose of part of their rubbish in municipal bins.

In our opinion, elements should be provided that enable greater flexibility in the management so as to better adapt it to the needs of each home, thus reducing the inconveniences described above.

8.5.3. Recycling facilities

Recycling facilities were initially designed as small plants where people could dispose of industrial and domestic waste, especially those of a large volume.

The wide range of types of waste currently produced (furniture, aluminium capsules, small electrical appliances, household appliances, etc.) lead to the need for providing a larger network that is closer to homes.

Although these facilities are unable to provide the flexible working hours of containers or the immediate nature of door-to-door collection, they do enable users to dispose of waste of an uncommon nature.

If their proximity and number were sufficient, they could be used as places for delivering these specific containers, reusable packaging or those with a high recovery potential, and find a way to award the people who use them, since this would reduce the number of packaging containers to be produced and the volume to be collected by means of the other collection systems.

8.5.4. Commercial premises

In countries in which an SDDR+EPR collection system has been implemented, packaged products subject to SDDR (normally beverage containers) are levied with an extra cost which is reimbursed to the consumer when the latter returns the containers in good condition to the premises.

The biggest advantage to this system is that it enables large premises to receive the containers in optimum conditions to then be reused or recycled, with the option of the latter being compressed (in the case of plastic or metal) and therefore reducing the volume to be transported.

This system is suitable for people who are in good physical condition, who have space in their home to separate the different types of packaging containers and in areas where driving to shops is nearly the only option.

However, it should be noted that the coexistence of SDDR with EPR entails the need to travel to two different places to dispose of packaging.

In fact, in some countries such as Norway, there are NGOs that offer their services to elderly people for collecting the containers from their homes, thus obtaining the money for returning them. This practice seems logical and appropriate in a country in which elderly people have a high pension, however in southern and eastern European countries, where pensions are not quite as high, elderly people who are unable to return (due to volume or distance) the packaging would be forced to pay the additional cost, and this would increase their living expenses.

Therefore, the SDDR in some way involves a penalty system that does not discriminate between those who do not want to recycle and those who cannot travel to return the containers subject to this system and, on the other hand, it has no impact on an optimum selection of the remaining containers.

Furthermore, small local shops which are unable to purchase the SDDR machines, due to these costing between €3,000 and €20,000, would have to increase their storage space by dedicating 1 m^3 for every 500/700 packaging containers that are not compacted and which they could not compact, thus reducing the space available for selling their own products. In fact, given that consumers would

find it more convenient to return the containers at large retail premises, this would mean further erosion on small businesses.

For that matter, as we have confirmed through our interviews, this type of small retailers is nearly non-existent in countries such as Norway or Germany that have implemented the SDDR+EPR system.

One of the claims in favour of the SDDR+EPR system is that it helps to reduce the number of containers abandoned in the environment, given that, either to recover the money paid for the container or to obtain revenue (when the container belongs to somebody else), these packaging items are returned to retail premises in a higher percentage, but given the inconveniences that this system generates among the more fragile segments of the population, we believe it is unfair to apply this charge to domestic packaging since, as discussed previously, the majority of these are not abandoned.

9. Packaging management outside European homes, aspects that hinder the process and proposal for potential improvements

Packaging containers used outside the domestic sphere are mainly those that end up abandoned in the environment. Therefore, special attention should be paid to analysing how and where these containers are consumed and how their management can be improved.

9.1. Reducing packaging waste outside the domestic sphere

In general, citizens perform many activities outside of their workplaces and these often involve a desire or need for consuming liquids. The best way to reduce the amount of packaging used is to take the bottle we will need with us. In fact, there are already many academic and work centres which have water fountains for students and employees to refill their bottles, while there are also a large number of work centres that have allocated areas for eating or taking a break where each employee has their own reusable cup or dishes which are for collective use.

Another good habit is to buy large bottles (preferably reusable) to distribute the liquid among various people instead of buying several small bottles.

9.2. Purchasing packaged products outside the domestic sphere

When we have not been able to foresee our need for liquids, we have a wide range of options for quenching our thirst. Here we will analyse each of these options and the recommendations and good practices to reduce the amount of containers used and to facilitate their recycling.

9.2.1. Commercial premises

There are many commercial premises that offer their customers cold drinks and ready-to-eat food. Since this type of consumption represents significant revenue for them, it would be advisable for these premises to install rubbish bins or containers for separating different types of waste between the entrance and the tills, since this would simplify the process of disposing of these containers in a responsible manner.

It would also be advisable for town halls and city councils to detect the areas where this kind of packaged products are consumed, with a view to placing containers close-by.

9.2.2. Bars and restaurants

As mentioned above, bars, hotels and restaurants have a distribution system in place that includes returning reusable containers. That is why, when consuming in one of these premises it is possible to prioritise bulk products (beer, products cooked on the premises, etc.) and products packaged in glass instead of in tins, plastic bags or plastic bottles.

9.2.3. *Vending*

Despite the fact that vending machines in Europe are normally installed outside buildings, they are also found on the façades of buildings and in kiosks. It should be mandatory for these to have specific bins for each type of material that they sell and, as occurs in most public buildings where they are installed, these would also have waste bins identified by colours and signs.

It would also be highly advisable that, when arranging the provision of vending machine, companies and education centres granted priority to those that distribute reusable packaging.

9.2.4. Street vendors

These are much more frequent on beaches and at events, but they are also present in many cities in southern Europe. Purchasing products from street vendors is particularly unwise, given that we are completely unaware of the hygiene conditions of their transport and storage.

Unfortunately, this type of packaging purchased in an unsafe manner normally ends up irresponsibly abandoned on the streets, beaches and in gardens all over the cities.

9.2.5. Consumption at events in Europe

There are many events (concerts, trade fairs, local festivities, etc.) where people can consume drinks and food.

Their organisers should be accountable for minimising the use of packaging and ensure these are recycled. Some of the good practices we have seen include:

- Use of closed containers that can only be refilled by the organiser by means of a special system, made using recyclable materials and bearing the iconography of the event, that each participant purchases and can take home as a souvenir or recover part of their cost when returning them.

- Reusable glasses that can be refilled at different stands. The establishment charges a deposit of 1 or 2 euros per glass and reimburses this amount when the glass is returned at the end of the event. Subsequently, each stand recovers or pays money to the main organisers depending on the difference in the number of glasses available at the start of the event and those returned at the end.

- There are currently quite a few events where visitors are not allowed to enter with glass bottles or cans and, even though in some cases this is already in place, it would be desirable that selective containers were placed at the entrance filters where

this is supervised, in addition to other bins for glasses that are returned in line with the system described in the previous example in order to take advantage of the liquids.

9.3. Discarding packaging outside the domestic sphere

Suitable management of such packaging outside the domestic sphere is essential to avoid them from being abandoned in coastal areas, forests and urban areas, in general, as well as to facilitate their recovery and recycling.

9.3.1. Rubbish bins in urban areas and large buildings open to the public

It is convenient for urban bins to be correctly distributed and placed in similar locations. In Barcelona, for example, they are normally located next to pedestrian crossings.

It is also necessary to equip areas where a larger amount of rubbish is generated with more rubbish bins, i.e. next to benches in parks and, although we must assume that the cleaning services sort the rubbish, it would be convenient, also for educational purposes, that the bins allowed for disposing of waste in a separate manner.

Urban rubbish bins in Oslo Cervic Environment©

Although this is not included in the scope of this study, it would also be highly advisable for bins to be equipped with ashtrays, given that, in the cities where these have been installed, there has been a reduction in the number of cigarette ends found on the ground and those that end up in the water treatment plants.

9.3.2. Containers

It is essential that rubbish containers are as close as possible to homes, but they must also be close to places where a large amount of waste is normally generated (parks, beaches, squares, etc.). It is advisable that the location of these rubbish containers is specified by signs that area easily visible in these areas.

We are unaware of whether this is a public or private initiative, but in some European cities the rubbish containers and recycling facilities are visible on GoogleMaps©, which simplifies their use.

It is also absolutely essential that the route and the actual container are accessible as this guarantees that the entire population will be able to use them.

9.3.3. Specific points (motorways, means of transport, leisure areas)

The resting areas on motorways, but mainly means of public transport, should be equipped with containers or bins for packaging.

In Japan, the country with the most efficient railway network in the world, it is common to see drinks and food being consumed on trains, due to which they have fitted the trains with recycling bins next to all the doors of the individual carriages.

In a leisure area in Luxembourg, where visitors tend to bathe, stroll, drink and eat, plans have been made to provide each group of visitors with paper bags containing a portable ashtray and a compostable bag, as well as instructions for disposing of their waste in a classified manner by means of the rubbish containers located right outside the exit.

9.3.4. Abandonment in urban and natural areas

As is widely known, the uncivil behaviour that causes the abandonment of packaging items in the environment is one of the main environmental issues, as is the significant percentage of packaging that is not recovered.

As mentioned above, in countries where the SDDR+EPR system has been implemented, people who lack income can collect these abandoned packaging items and convert them into a source of income to then buy food and drinks. However, we cannot leave the conservation of the environment in the hands of this precarious activity.

Hence, we believe that, along with the installation of containers close to where these abandonments take place, awareness campaigns should be carried out on the media including social media, but also in person, including information on the possibility of being fined if we fail to dispose of our waste in the correct manner.

One of the problems related to these fines is that, depending on the town in question, these can range from 30 to 3,000 euros, therefore it is necessary to standardise the amount of the fine in line with the importance of the environmental impact caused.

It would also be of interest that, in countries with a significant tourist affluence, foreign visitors are informed of the importance

given to recycling, how to carry this out and the potential penalties for failing to do so.

This does not exclude the possibility of establishing incentives and measures that may favour certain sectors of the population.

These could be some of the examples:

- The European Fisheries Fund offers the fishing sector the possibility of developing projects for the conservation of the marine environment, such as fishing packaging, assures the EC's Commissioner for Fisheries.

This initiative has been welcomed by some fishermen's guilds and mainly by the plastic recycling sector in Germany, France and Denmark, who see this as a way of obtaining raw material for their activity at an affordable price.

Some of these activities already took place last year in France, paid for by the European Fund at the rate of 375 euros per tonne, and approximately 1,000 tonnes were recovered, according to the EC (source: retorna.org).

- Events involving volunteers who collect waste from beaches and wooded areas could be incentivised through logistical, economic and/or media support. A good example can be found in Luxembourg, where a large number of towns organise "cleaning days" each year, during which they invite citizens to take part of the collection of packaging from the city streets. The participants are given gloves and special pincers and they are assigned specific streets. Their contribution is rewarded with a collective lunch on the day and a group photograph in the local newspapers.

- Agreements could be established with support groups working with people at risk of social exclusion to reward them economically in exchange for recovering packaging and waste from the environment.

10. Each country's specificities. Spain's particular case

Over the coming months, the various representatives of ECA will gather a range of distinctive aspects concerning each country.

Below is an analysis of the situation in Spain, that will be used as a benchmark for drafting the case of other European Union countries.

The case of Spain is the first to be presented given that Directive 2018/852 has not yet been transposed to the Spanish law. This should have taken place before 5 July 2020 and, therefore, it is in an excellent situation for incorporating into the legislation all the aspects that could decisively contribute to reducing the consumption of packaging, increase their rate of reuse and improve their sorting and recycling process.

Spain has a EPR that, in relation to packaging, is managed by Ecoembes and Ecovidrio.

In total, Spain has 383,974 yellow containers, 217,170 blue containers and more than 230,000 green containers for citizens to deposit their packaging items, according to data provided by Ecoembes and Ecovidrio. The city councils are generally responsible for collecting them and transporting them to the sorting plants where the containers are classified to then be recycled.

How is packaging recycled in Spain?

According to Ecologistas en Acción, every citizen generates on average 1 kg of rubbish a day (365 kg per person per year). This domestic rubbish (known as Solid Urban Waste or RSU, being its acronym in Spanish) is disposed of at landfills and incinerators. A large amount of these RSU, 60% of the volume and 33% of the weight of a rubbish bag, are made up by containers and packaging, most of which are single-use items.

In Spain there are still very few homes that buy their products in bulk or that reuse containers to serve other purposes, although this trend is slowly gaining strength. In fact, according to the CIS barometer dated November 2016 (the last one which included recycling), 35% of respondents stated that they normally sought products packaged in containers that could be reused.

In some cases, the design and production of packaging impedes their reuse and sorting. In the latter case, for example, of the products whose packaging is made up of plastic and cardboard glued together.

Sorting packaging in the domestic sphere generates even more reservations and doubts for many people. In fact, the above-mentioned barometer reflected that only 68.4% of respondents answered that they always separate glass containers and 66.5% separate other types of containers.

On the other hand, there are still some citizens who say they don't recycle due to personal issues, such as a lack of space in their kitchens (20%) and certain logistical reasons, such as the absence of containers for certain types of waste (23%) or the distance to reach these (21%), despite these containers being at an average distance of 300 metres from each home.

Despite this occurring in the domestic sphere, outside of it, the behaviour of citizens when it comes to disposing of packaging is much more doubtful. The enormous amount of packaging

abandoned on beaches, in woods and leisure areas only confirms this. In fact, according to data from the Provincial Council of Barcelona, 80% of the volume and 35% of the weight of the rubbish collected from beaches is made up of packaging.

However, it is also true that many municipalities do not have separate rubbish bins for each type of waste, with an appropriate size or that are emptied with sufficient frequency.

Results achieved

As can be seen from the following table, despite some of the materials reaching acceptable recycling percentages, yet improvable, in the case of plastic these figures are clearly insufficient.

GENERATION AND MANAGEMENT OF PACKAGING WASTE IN SPAIN 2017 (tonnes)

MATERIAL	Packaging waste generated	Recovered or incinerated at waste incineration facilities with energy recovery through							% recycled	% recovered
		Material recycling	Other recycling options	Total recycled	Energy recovery	Other recovery options	Incineration[1]	Total recovered		
GLASS	1,482,862	992,297	79,066	1,071,363	0	0	0	1,071,363	72.25	72.25
PLASTICS	1,608,873	771,269	0	771,269	40,500	0	218,277	1,030,046	47.94	64.02
TOTAL PAPER AND CARDBOARD	3,711,999	2,769,419	0	2,769,419	0	0	0	2,769,419	74.61	74.61
METALS	377,201	320,936	0	320,936	0	0	0	320,936	85.08	85.08
WOOD	340,341	229,590	0	229,590	27,227	0	10,082	266,899	67.46	78.42
OTHER	13,068	0	0	0	0	0	602	602	0.00	4.61
TOTAL	**7,534,343**	**5,083,511**	**79,066**	**5,162,577**	**67,727**	**0**	**228,961**	**5,459,265**	**68.52**	**72.46**

Source: Own compilation based on the information provided by the Integrated Packaging and Waste Management Systems and by the Materials' Entities.

Source: Ministry for Ecological Transition

Good practices and recommendations

From among the good practices seen in the packaging sector, we would like to highlight the high degree of reuse that is achieved by the catering and hotel sector, the channel known as HORECA, according to the Spanish Federation of Hospitality and Catering Distribution Companies (FEDIS HORECA), 5,500 million reusable bottles are used each year, which translates into 1,100,000 tonnes of glass per year that does not need to be recycled.

This good practice should inspire the possibility of also increasing the rates of reuse in the scope of domestic consumption.

Although volunteering actions have already been described, it is worth noting that the organisation of civic events on beaches and in woods with the aim of cleaning up the environment are gradually becoming more frequent and are welcoming more participants.

Since these good practices already draw the path to be followed, the recommendations we propose move along the path of contributing to minimising the use of packaging, increasing the reuse rates and an improvement in the contribution of all citizens as regards the recycling process.

As described in the preceding paragraphs, age, urban density, physical and sensory abilities, as well as nationality, are factors that condition the possibilities of minimising the use of packaging and its correct sorting.

Taking into account various factors specific to Spain, such as the increasing percentage of elderly people living alone, the low income of a large majority of the population, the so-called "Emptied Spain", that is, the most depopulated areas in the country
with insufficient population density, as well as a structure of micro local shops that maintain the life and activity in neighbourhoods, implementing measures such as applying an additional cost to a packaged product, as seen in countries in which SDDR has been implemented in conjunction with EPR not only would not help to improve the recycling rates but would penalise some of the most fragile segments of the population. Similarly, small commercial premises reject the deposit system due to space reasons for the machines and the significant expense they entail.

Therefore, we believe that the recommendations summarised in the following point are those which, while being useful for all European countries, are particularly suitable for Spain to include them in the transposition of the European Directive.

11. Summary of recommendations

- A commitment should be sought from the industrial and distribution sectors to reduce the amount of packaging and increase the percentage of reusable containers.

- Commercial premises should carry out promotional campaigns regarding the use of reusable packaging. We propose initiatives such as “Viernes sin Envases” (“Fridays without Packaging”, which is linked to “Fridays for Future”), which offered discounts to customers for bringing in their packaging. An initial motivation of the population could be implemented along this line.

- Commercial premises that sell drinks and food ready for consumption, as well as kiosks and vending machines, should place sorting bins or containers alongside them to facilitate the responsible disposal of these packaging containers.

- City councils should detect the areas where packaged products are consumed and place rubbish containers in their proximity.
- The areas of the city with the worst sorting rates should be identified, taking action by means of civic agents to create awareness and educate citizens.
- Event organisers should assume the responsibility for minimising the use of packaging and ensure these are recycled.
- It is advisable that the location of rubbish containers be signposted in parks and open spaces and that rubbish containers and recycling facilities be visible on GoogleMaps© and other map apps.
- It is important to standardise the amount of the penalties imposed for abandoning packaging, as well as the fees for discharging waste into landfills, adapting them to the relevance of the environmental impact caused.
- It is recommended that events involving volunteers who collect waste from beaches and wooded areas could be incentivised through logistical, economic and/or media support.
- Agreements could be established with support groups working with people at risk of social exclusion to reward them economically in exchange for recovering packaging and waste from the environment.

12. Conclusions

Humans are generating a vast amount of waste through the use of non-renewable energies that by far exceed the planet's regeneration capacity and, on the other hand, a large amount of these are gravely affecting our natural environment, seriously compromising the viability of both flora and fauna, as well as our own existence in future. A large part of the resources consumed and the waste generated are linked to the production of packaging and its insufficient recycling. Therefore, attention must be focused on reducing the number of packaging container produced, reusing the highest possible percentage and, when this is not possible, recycling and recovering all of the remaining packaging, which would lead to zero packaging in landfills.

Despite acknowledging its exceptional importance, the European Union has not set any objectives regarding the reuse of packaging, leaving this matter for each Member State to handle, but has however establishing objectives for recycling the materials used in their manufacturing.

To date, the various EU countries have presented mixed results in so far as reusing and recycling and it seem as though the collection system, either EPR or SDDR+EPR has any significant effect on the these results.

In countries in which the reuse, recycle and recover rates are relatively high, there is still a lot of work to be done. One of the most significant challenges will be to define how to increase these return percentages without affecting the economy of the people in general and without the return system penalising the most fragile segments of the population.

Awareness among citizens is essential for achieving high levels of reduction, reuse and recycling, but in order for awareness to become action, the industry must change the current trends in so far as reduction and reuse, while the design of the packaging life cycle management should include the geographic and demographic conditioning factors of the homes, as well as correcting the behaviour of the citizens in general.

The packaging consumed in homes is not responsible for the waste we find in the oceans and forests, but is responsible for an insufficient rate of reuse and recycling of such packaging. Therefore, strategies must be developed to reduce the consumption of packaging and to ensure that the 30% of the population that does not yet sort their waste correctly starts doing so. In addition to a commitment on the part of the industrial and distribution sectors to increase the percentage of reusable packaging.

Given its negative impact on the most fragile segments of the population, the investment cost and its unfavourable impact on small commercial premises, it seems that incorporating an SDDR system to the current EPR system will not contribute to improving the management of domestic packaging in countries where an efficient EPR system is already in place, neither will it increase the percentage of returnable containers, nor will it stop the large variety of types of packaging items that this system does not accept from ending up in the correct container. Furthermore, as explained for Spain's case, the implementation of an SDDR system would be detrimental to the economy and the quality of life of many sectors of the population.

To improve the rates relating to returning and recycling, it is necessary that the waste managers increase their efforts to adapt the management to the demographic, social and functional diversity of the population.

The packaging consumed outside the domestic sphere is the main element responsible for the contamination of our coastal areas, oceans and landscapes, in both natural and urban areas.

This is the type of consumption where we must intensify our efforts in order to drastically reduce the dispersion of packaging in the environment. A distribution of rubbish bins and containers that is better suited to specific needs, the involvement of social and environmental entities, and the complicity of the events organisers, along with establishing incentives and penalties, should help us to slow down the natural disaster to which we are headed if we don't take action.

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