

ANALYSIS OF NON-RECYCLABLE WASTE PLACED IN LIGHTWEIGHT PACKAGING CONTAINERS

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Summary

This report provides information about waste that cannot be recycled, which ends up in a lightweight packaging container, its composition and the mistakes most often made by the public. Based on the results obtained, the report's authors make recommendations to manufacturers and decision-makers to promote correct sorting of waste, improve communication intended for the public and take other strategic measures to improve the waste management system.

Under the auspices of the study, volunteers from the NGO Zero Waste Latvija analysed 112.5 kg of waste, which came from lightweight packaging containers, but which employees from the SIA "ZAAO" regional waste management centre "Daibe" had deemed to be unsuitable to be dispatched for further recycling.

Although the study methodology and dimensions are limited, the results show that almost 80% of non-recyclable waste is created because the public acts thoughtlessly, that is, by putting items other than lightweight packaging into containers. Almost one fifth is packaging that cannot be dispatched for recycling. A small part of the non-recyclable waste is dirty packaging and the result of a sorting line error.

Almost 30% of waste, which is not packaging, was textile waste. Various construction, home design materials (19.9% of items that do not comply with the definition of lightweight packaging), various car accessories (8.9% of items that do not comply with the definition of lightweight packaging) and toys (8.6% of items that do not comply with the definition of lightweight packaging) were the next biggest waste fractions.

Analysing non-recyclable packaging, the study shows that the biggest category (32% of packaging unsuitable for recycling) in the group was made up of colour and transparent hard plastic packaging. This not altogether precise category included various meat products (smoked meat, sausage, etc.) packaging, dairy products (yoghurt, cream, etc.) packaging, pre-prepared salad packaging, blister forms, household item packaging (curtain rails, hung packaging). The next biggest category was polymer sheets (18% of all non-recyclable packaging). The third biggest category (17% of all non-recyclable packaging) was opaque multi-layered packaging: sweet and savoury snacks (potato chips, chocolate, etc.) packaging, coffee packaging, tea bags, household chemical packaging, and pet food (large, shiny) packaging.

Both the public and private sector must work to create accessible options to deliver textile and other types of waste for management, as well as stimulate the recycled materials market. One of the biggest challenges is substituting non-recyclable packaging with recyclable packaging, which would simplify communication aimed at the public regarding separated collection of lightweight packaging.

Contents

Introduction	4
Waste management goals	4
Study place	7
Re-sorting of separately collected packaging SIA "ZAAO" RAAC "DAIBE"	7
Methodology	9
Study restrictions	10
Study results	11
Waste not conforming to the definition of lightweight packaging	12
Non-recyclable packaging	14
Small-sized waste	17
Conclusions and recommendations	19
Recommendations for manufacturers	19
Recommendations for the public sector	20
Recommendations for the public	20
Annex	21

Introduction

In order for materials thrown into a lightweight packaging container to be able to live a second life, many of institutions involved must collaborate: packaging available in shops must be recyclable, containers for waste to be sorted must be easily accessible, the instructions given to the public must be clear, and the public itself must be motivated and understand why waste needs to be sorted.

Although public education campaigns are run continually, the contents of separately collected waste containers are not always of the required quality. This is because members of the public unthinkingly put various types of household waste into them or conscientiously sort packaging, which is unfortunately unsuitable for recycling.

In order to understand what kinds of waste unsuitable for recycling most commonly end up in containers for waste to be sorted, on 12 August 2020 NGO Zero Waste Latvija and AS "AJ Power Recycling" visited the SIA "ZAAO" (hereinafter referred to in the text as - ZAAO) Regional Waste Management Centre "Daibe" (hereinafter referred to in the text as - RWMC). During this visit, the volunteers invited by the NGO Zero Waste Latvija analysed that section of waste, which members of the public had put into the separately collected waste container, but which was not recognised as being fit for recycling.

Waste management goals

The main document that stipulates Latvia's waste management policy is the "*State Waste Management Plan for 2021–2028*". This plan describes the functioning of Latvia's waste management system, outlines potential future scenarios, sets targets and describes the plan for the attainment of these targets. The State Waste Management Plan's primary strategic targets are as follows:

1. **To prevent the generation of waste** and to ensure a significant reduction in the total volume of waste generated;
2. **To ensure the rational use of waste as a resource**, based on the basic principles of the circular economy;
3. **To ensure that generated waste is not hazardous** or that it poses only a small risk to the environment and human health;
4. **To ensure a reduction in the amount of waste to be landfilled** and the landfilling of waste in a manner that is safe for human health and the environment.

The majority of goals related to waste management goals arise from the guidelines of the OECD (Organisation for Economic Cooperation and Development), the requirements of the EU (European Union) directives and the EC Early Warning Report. The most important quantitative waste management goals for the period up to 2035 stipulated in EU directives are summarised in Table 1, but three of these are particularly important in the context of this study:

- *Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste stipulates that Member States shall take the necessary measures to ensure that by 2035 the amount of*

municipal waste landfilled is reduced to 10 % or less of the total amount of municipal waste generated (by weight). In 2018 64% of generated waste was buried in Latvia's landfills giving rise to concerns about the attainment of considerable goal.

- *Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste stipulates that by 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 % by weight. By 2030, 60% of household waste must be recycled, and at least 65% by 2035. Back in 2018 "The EC (European Commission) Early Warning Report" concluded that only 25% of household waste (including composting) was recycled in Latvia, while 64% of household waste was buried at landfills. This "EC Early Warning Report" states that analysis of existing and definitely planned waste management action policies testifies to the fact that there is a risk that Latvia might not attain the target indicator set for 2020, i.e. to prepare 50% of household waste for reuse/recycling.*
- *Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste stipulates recycling targets for various materials. By 2025, 50% of plastic used for packaging must be recycled, while by 2030 this figure rises to 55%. The State Waste Management Plan for 2021–2028 states that in 2018 35% of used plastic packaging in Latvia was recycled.*

Although reducing the amount of generated waste is mentioned as the main priority, specific waste reduction targets do not exist at EU level. This has also been pointed out by Zero Waste Europe, offering an analysis of possible indicators and targets.

Here one can highlight the "Latvian National Development Plan", which sets a goal of reducing the amount of household waste generated per capita by 20 kg – to 450 kg by 2027. In 2018, every member of the Latvian population generated 470 kg of waste.

All these targets are considerable, and to attain them fully, cooperation is required between various sectors, along with thinking about a reduction in waste and recycling during the design phase.

No.	Waste categories	Value (base year)	Waste management goals by year, %				
			2023	2025	2029	2030	2035
Directive 2008/98/EC							
1.	Established separate collection system:						
1.1.	Biological waste		X				
1.2.	Textile waste			X			
1.3.	Hazardous household waste			X			
2.	Amounts of recycled household waste (% of generated amount)	43.8 % (2018)		55	-	60	65
Directive 1994/62/EC							
3.	Total amounts of recycled used packaging (% of generated amount), including:	58.82 % (2018)		65		70	
3.1.	plastic	35.81 % (2018)		50		55	
3.2.	wood	27.31 % (2018)		25		30	
3.3.	metals	71.34 % (2018)		70		80	
3.4.	aluminium			50		60	
3.5.	glass	68.84 % (2018)		70		75	
3.6.	paper and cardboard	82.89 % (2018)		75		85	
Directive (EU) 2019/904							
4.	Collected volume of used disposable plastic drinks packaging (% of the volume of the relevant drinks packaging released onto the market during the relevant year)			77	90		
Directive 1999/31/EC							
5.	Amount of household waste buried at landfills (% of amount of generated household waste)	63.8 % (2019)					10

Table 1. Most important waste management goals stipulated in EU directives for the period up to 2035.

Study place – SIA “ZAAO” Regional Waste Management Centre “Daibe”

The RWMC manages the waste of 166,500 inhabitants of Latvia. The managed territory includes cities like Valmiera, Cēsis, Limbaži, Smiltene and others, but the biggest part of the region is made up of rural territories.

In 2019, ZAAO managed 29,051 tonnes of household waste, while 7 847 tonnes of waste was collected in separately collected waste containers, of which 5,885 tonnes of waste was delivered for recycling. Approximately 75% of separately collected waste was sorted as fit for recycling, while 25% of the waste was deemed to be unsuitable for recycling. This non-recyclable waste is landfilled and reduces the economic viability of the separately collected waste system, because the waste manager does not receive payment from the public for the collection of this waste, nor payment for its further transfer for recycling.



Figure. Waste management service company “ZAAO” operating zones. Source: SIA “ZAAO”

Re-sorting of separately collected packaging SIA “ZAAO” RWMC “DAIBE”

After its delivery to the RWMC, waste from lightweight packaging containers is re-sorted on a sorting line. At the start of the process, magnetic metal is separated with a magnet, then a drum-type sifter separates the finer elements, which are less than 9 cm in size. Thereafter, there is manual separation of materials from the flow, whose further transfer for recycling is economically viable, in conformity with the recycler’s set quality requirements.

During the re-sorting process, as a result of various technical and manual operations, a small proportion of packaging due to be delivered for recycling can also end up among separated household waste, for example, if, due to its position or small size, packaging or part of it through the drum-type sifter or the personnel has not noticed valid material under another object sliding along the belt. Materials not directed for recycling are stored

in a waste cell.

Materials that are prepared and transferred for further recycling from ZAAO's separately collected lightweight packaging waste management container system are as follows:

Cardboard	PET drinks bottles – brown	LDPE sheets – mixed	HDPE boxes
Waste paper	PET drinks bottles – blue and green	Cardboard drinks packs	PP buckets
Aluminium drinks cans	PET drinks bottles – transparent	HDPE cans	Glass bottles and jars
Tinned metal packaging	LDPE sheet – natural	HDPE bottles	Other fractions according to recyclers' requirements

ZAAO implements communication and environmental education strategies, in order to educate its clients about the correct sorting of waste into the three containers on offer – unsorted household waste, lightweight packaging and glass packaging. ZAAO implements a licenced environmental education programme at URDA Nature and Technology Park, which is next to the RWMC. Although the company implements regular public education campaigns, members of the public still often make mistakes and put waste into the wrong containers.



Figure 2. "ZAAO" educational communication materials for the public. Source: SIA "ZAAO"

Methodology

The waste was re-sorted by 13 volunteers from the NGO Zero Waste Latvija under the supervision of representatives of AS "AJ Power Recycling", ZAAO and the NGO Zero Waste Latvija. Professionals from the NGO Zero Waste Latvija were responsible for coordinating the re-sorting process, while ZAAO representatives answered queries about materials that arose during the process, as well as explaining the reason why a certain type of packaging was not delivered for recycling, and pointed cases when a material was not delivered for recycling due to errors.



Figure 3. Part of the project team



Figure 4. Waste sorting process

ZAAO provided 132.5 kg of waste for re-sorting, which after being reviewed on the sorting belt was not separated to be dispatched for recycling, of which the volunteers analysed 112.5 kg, as well as 47 kg of fine waste, which was mechanically separated from the separately collected lightweight packaging and could not be recycled because it was too small. During the process of analysis, the fine waste was not weighed.

Both waste groups were reviewed separately. The fine waste was analysed, inspecting it visually and separating larger waste. Complete analysis of this fraction was not possible, because most of this waste was made up of sand and pieces of other very fine materials. The first step after removing large waste from the bag was to separate packaging from

other waste such as textiles. Items that were not packaging were divided into several sub-categories: textile, toys, electronics, etc. These categories were formed by the participants in the course of the process.

Lightweight packaging was also divided into subcategories. Bearing in mind that precise methodology is not available for studies in this format, information about the grouping of initial categories of packaging was done in accordance with the reasons proposed in the "*Ellen McArthur Foundation*" "*New Plastic Economy*" report as to why waste is not recycled:

- too small;
- dirty packaging;
- multi-layered materials;
- rare materials.

30% of plastic packaging needs fundamental redesign before it can be reused or recycled



Figure 5. Initial categories for grouping packaging. Source: Ellen McArthur Foundation, "New Plastic Economy"

Before the start of the activity, participants were informed that the categories would be changed and adjusted during the course of reviewing the waste and as a result of this. These adjustments arose because this activity was done for the first time and because the contents of each container are unique.

Participants devoted a total of 3.5 hours to re-sorting waste. In total, 112.5 kg of waste was re-sorted. Categories and the conclusions drawn are reviewed in the following sections.

Study restrictions

This study cannot be considered to be scientific, and in this report its authors also want to point out several restrictions and possible inaccuracies. Although the generalisation of the study results is limited, it provides an insight into sorting errors and points out packaging types that most often deceive consumers.

The study was conducted by volunteers and not trained professionals, who have a more accurate knowledge of types of packaging and are better able to categorise them. The

volume of work was adapted to the degree of people's abilities, and in the process the amount of re-sorted waste was reduced.

The study was only conducted for one day, and therefore it only reflects the waste generated by one group during a limited period of time. Non-recyclable waste could differ depending on the place where it is generated – there would be a difference in waste generated by residents of rural and urban areas.

The geographic location of containers affects their contents – publicly accessible containers tend to contain a bigger proportion of non-recyclable waste. Based on ZAAO observations, there are more mixes in separately collected packaging containers located next to apartment buildings – about 30% of the contents of the container. Seasonality should also be taken into account: waste generated during winter and summer months differs. Moreover, the communication campaign chosen by the waste manager and the chosen container layout could influence their contents.

The categories created during the study could be clarified and improved. They were created on the spot and were explained to the volunteers. In some cases, categories were combined, where in others they were separated. One could avoid such situations by repeating this activity several times and categorising waste based on prior experience.

Data was obtained using electronic scales available, suitable for weighing food products and people. It was not specially calibrated for the study. To reduce the risks related to accuracy of weight, samples were weighed with the most precise type of weight suitable for the potential amount, as far as possible using so-called "kitchen" scales, whose accuracy is relatively higher.

We believe that this study provides the first insight into a topical subject that could be further developed as an academic study.

Study results

In conducting this study, the NGO Zero Waste Latvija wanted to understand whether unsuitable waste is placed in lightweight packaging containers because members of the public are careless in relation to sorting, i.e. put waste into containers, which is not lightweight packaging, or else members of the public cannot tell the difference between recyclable and non-recyclable packaging.

The study's authors stress that the amount of polymers available on the market is measurable in thousands. It would not be rational to oblige the public to be knowledgeable about and analyse every type of packaging it buys and to assess its suitability for recycling. Therefore, non-recyclable lightweight packaging, which ends up in a lightweight packaging container, cannot be considered to be a mistake on the part of a specific consumer but rather as a systemic problem.

Waste unsuitable for recycling

**Graph 1. Composition of non-recyclable waste**

The conducted analysis shows that almost 80% of waste unsuitable for recycling arises because members of the public act carelessly and place items other than lightweight packaging into a container. Almost one fifth is packaging, which cannot be dispatched for recycling. A small proportion of waste unsuitable for recycling is comprised of dirty packaging or as a result of sorting line errors. In truth, one should remember that, as indicated by its name, lightweight packaging does not weigh much. If volume were to be used instead of weight, despite the fact that it is an imprecise measurement, or the number of units, the proportions would differ and the proportion of lightweight packaging would be greater.

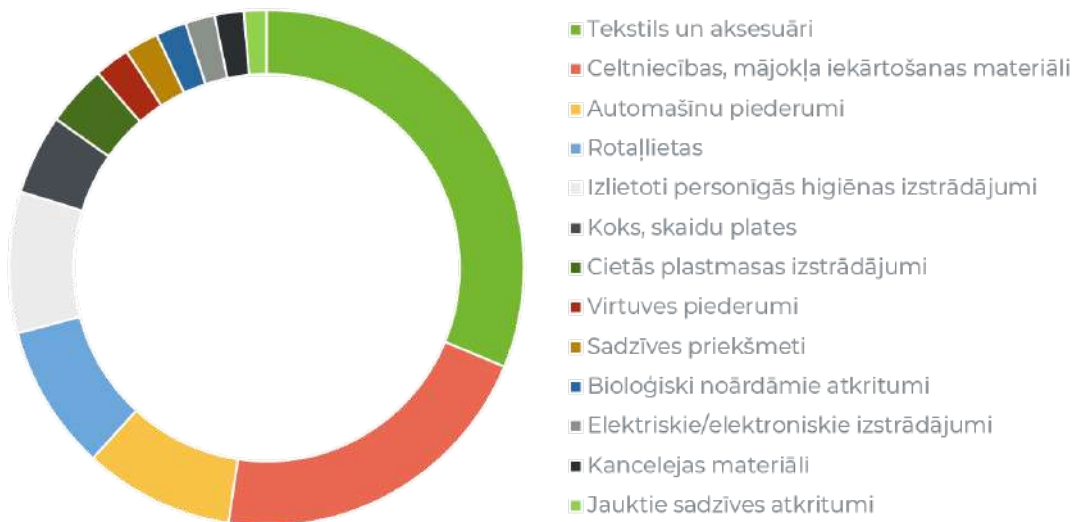
Waste not conforming to the definition of lightweight packaging

As we mentioned earlier, 80% of the analysed waste was not only not suitable for recycling, but was not even packaging. It is understandable that people do not have expert knowledge of packaging materials and recycling details, but ZAAO customers had put other items into containers intended for packaging: clothing, toys and even food products. This conduct not only testifies to people's carelessness – people do not pay attention to the difference between household and packaging containers or else do not understand the basic principles of sorting, but also to malicious conduct and the desire to get rid of

household waste free of charge.

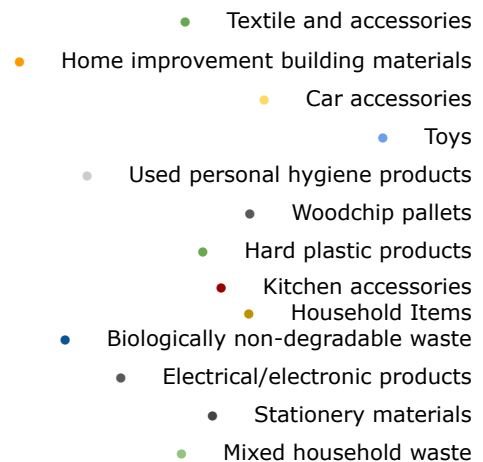
Vieglā iepakojuma definīcijai neatbilstošie atkritumi

% no vieglā iepakojuma definīcijai neatbilstošajiem atkritumiem



Waste not conforming to the definition of lightweight packaging

% of waste not conforming to the definition of lightweight packaging



Graph 2. Breakdown of waste not corresponding to the definition of lightweight packaging

Considering waste, which is not packaging, in more detail, it is worth highlighting textile waste, which makes up almost 30% of this fraction. Once it is placed in a lightweight packaging container, textile products become waste that is no longer suitable for repeated use, and its recycling options are limited. The presence of so many textile products point to the need to improve the textile sorting system, as well as to promote the donation of clothing. However the most important operating direction that should be highlighted is the sustainable textile production and buying.

The next three fractions highlight people's lack of understanding regarding the difference between "lightweight packaging" and "plastic". Many people call lightweight packaging containers "plastic containers" and put plastic products into them. Various construction and home improvement materials (19.9% of items that do not comply with the definition of lightweight packaging), various car accessories (8.9% of items that do not comply with the

definition of lightweight packaging) and toys (8.6% of items that do not comply with the definition of lightweight packaging) are the next biggest fractions. The large weight and size of these items hamper the functioning of the waste operation system.

8.3% of items that do not comply with the definition of lightweight packaging were used hygiene goods – disposable diapers, disposable mats for changing babies, etc. It is possible that the placement of the following and other evident non-recyclable waste (e.g. biological waste) in lightweight packaging containers could be related to the public's desire to avoid formal involvement in the waste management system, lack of contracts for household waste containers and deliberate placement of waste into publicly accessible containers, in order to reduce monthly household waste management costs by means of dishonest conduct.

It was discovered that the waste also contained medical waste (2.7% of waste not corresponding to the definition of lightweight packaging). This waste is not generated by healthcare institutions, but as a result of the home care of people and animals. Such waste should be delivered to healthcare institutions, but not all medical employees want to accept this waste. Members of the public tend to accrue waste for years and then throw it out all at once. During the period in which ZAAO has been in operation, there have been several cases when employees working on the re-sorting band have found needles among the waste.



Figure 6. Textile waste put into a lightweight packaging container



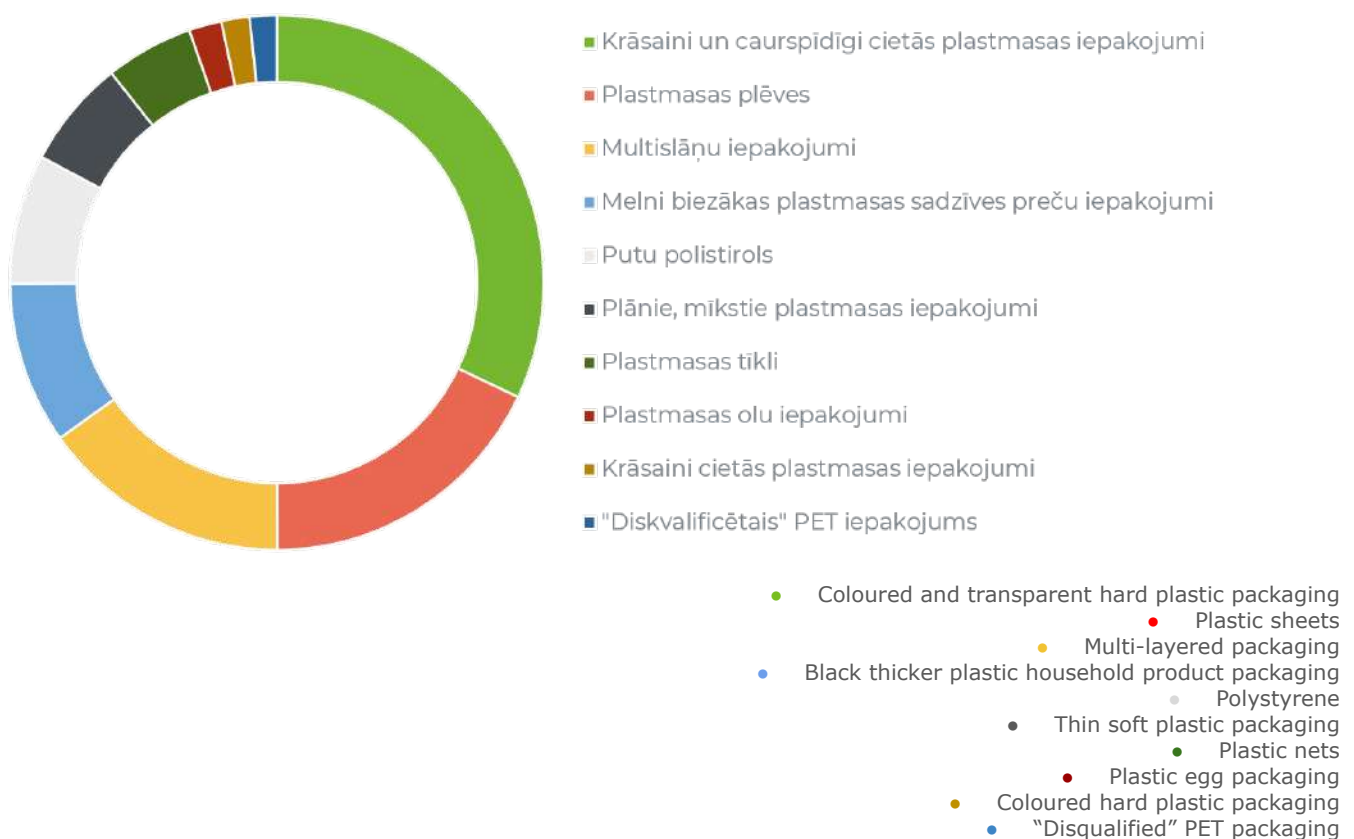
Figure 7. Toys put into a lightweight packaging container

Non-recyclable packaging

Almost 20% of waste not dispatched for recycling was packaging. This packaging was not dispatched for recycling mainly because its recycling is not economically viable: technologies are not sufficiently developed, recycling plants are too far away, the amount of packaging is insufficient for it to be viable to recycle it.

Packaging unsuitable for recycling
% of packaging unsuitable for recycling

Pārstrādei nederīgs iepakojums
% no pārstrādei nederīgā iepakojuma



Graph 3. Packaging unsuitable for recycling

Amongst packaging unsuitable for recycling, the biggest category (32% of all packaging unsuitable for recycling) consisted of colourful and transparent hard plastic packaging. This not very precise category includes various meat product packaging (smoked meat, sausage, etc.), dairy product packaging (yoghurt, cream, etc.), ready salad dishes, blister forms, household item packaging (curtain rails, hung packaging). This packaging is either made from polypropylene (5 PP), or from other materials that are marked on packaging with the number 7. Much of this packaging looks very similar to HDPE packaging and in the eyes of the public visually appears to be suitable for recycling. It is transparent, clean, large and robust. Moreover this type of packaging is very common. It is possible that this category should be improved and divided into subcategories, in order to get a deeper insight.

The next biggest category was polymer film (18% of all packaging unsuitable for recycling). In this category the proportion of mass was made up of bread and dry goods (pasta, breakfast cereals, etc.) packaging, as well as PET drink bottle labels and external flower pot packaging. However it should be noted that it looked as if all the external flower pot packaging (decorative sheeting placed around pots in stores) came from a single household and might not be representative.

Here one should add that bread packaging, which was the most frequently encountered packaging in this category can be made from two materials: 5 (PP), which is not accepted for recycling, and 4 (LDPE), which can be recycled. Once again this is one case, where people should not be asked to study bread packaging, which looks identical to determine whether it is recyclable. This type of packaging also causes problems for recycling line employees, because they too can't look for the designation on each item of packaging, in order to determine which material it is made from. For this reason, ZAAO does not dispatch bread packaging for recycling even if it is made from LDPE.

The third biggest category (17% of all packaging unsuitable for recycling) was made up of non-transparent multi-layered packaging: sweet and savoury snack (potato chips, chocolate, etc.) packaging, coffee packaging, tea bag packaging, household chemicals' packaging, pet food (large and shiny) packaging. Although such packaging, which is made from several layers, is not accepted for recycling, it is hard to find alternatives to its use. In many cases, multi-layered packaging is used to preserve the specific properties of especially sensitive products (crunchiness of potato chips, dryness of coffee, etc.).

The study's authors would like to highlight another category which surprised many of the volunteers: egg and household chemicals' packaging made from PET. Although such packaging made up only a small portion of non-recyclable packaging, many "green-thinking" people choose household chemicals, which are packaged in 1 (PET), realising that it is the lightest recyclable plastic, despite the fact that in case 2 (HDPE) packaging is accepted for recycling.



Figure 8. Colourful and transparent hard plastic packaging



Figure 9. Plastic film



Figure 10. Non-recyclable PET



Figure 11. Recyclable and non-recyclable bread packaging



Figure 12. Multi-layered packaging



Figure 13. Net-type packaging – easily recognisable non-recyclable packaging

Small-sized waste

Analysis of the sifted fraction of small-sized waste was not possible in conformity with the initial quantitative method, because the sifted waste was too small for this. Instead this waste redirected from recycling was observed qualitatively, described and registered in photographs.

The consistency and aroma of this fraction testified to mixtures of biodegradable waste. Separately collected packaging containers contained household waste – pieces of wood, banana skins, aubergines, bone fragments, dust and hair clumps.

In other circumstances, some of the materials found in this fraction would have been recyclable. For example, it was found that it contained a lot of cardboard, torn paper, as well as other small pieces of paper, e.g. sock labels. Some of the plastic could also have been recyclable, e.g. HDPE (drinking yoghurt pack caps) LDPE (pieces of plastic film), etc.

However it is true that a lot of similar waste broken into pieces including hard plastic packaging, garbage and other small plastic packaging, mixed composite material packaging, e.g. ice cream or sweet curd cheese packaging or purchase receipts would not have been recyclable regardless of their size.

Shards of glass found indicate that people also put glass bottles and jars into lightweight packaging containers, which should not end up in this container. Glass endangers sorting line workers, because they can get cuts during the sorting process, and this glass does not end up in the glass recycling system.

Less frequently encountered waste includes textile and similar waste, e.g. string, line, ribbons and rubber hair bands. In the course of analysis, very few metal mixtures were found, only individual caps, which testifies to the re-sorting line magnet working effectively. This fraction also included cigarette butts, cables, razors, pens, sponges, cotton buds, moist wipes, polystyrene pieces and other unidentified materials.

Overall, the study's authors conclude that mixed household waste has been thrown into recyclable packaging containers. Additionally, people do not realise that small pieces of materials, which would ordinarily be recyclable, will not end up being recycled because of their size. Materials suitable for recycling that have been thrown into the lightweight packaging waste container in fragments that are too small, e.g. finely shredded paper cause technical problems, i.e. it jams up the drum-type sifter. In such cases, personnel have to crawl inside the drum, clean and unblock it.



Figure 14. Small-sized waste

Conclusions and recommendations

The study's authors would like to remind readers that this is a qualitative study and is based on a range of statistical restrictions. Therefore it cannot be considered to be a quantitative study. At the same time the authors believe that the conclusions drawn in the study are indicative and should be taken into account in the further development of this problematic issue.

Based on the insights obtained during the course of the study, the authors' main conclusions are as follows:

1. Members of the public often sort items without verifying whether they can be placed in the specific sorted waste container.
2. A large proportion of used packaging, which ends up in sorted waste containers, is non-recyclable, because recycling plants are too far away for this to be economically viable or they do not exist at all. It is evident that both members of the public and producers of packaging lack understanding and information about materials suitable for recycling so that they can evaluate the sustainability of product packaging.

In order for the state to be able to meet the targets set in EU norms and in the National Waste Management Plan and to introduce the circular economy, it is necessary to quantitatively study the public's habits, as well as the composition of waste. This will make it possible to find monetary and normative means of reducing the volume of non-recyclable waste among waste, and, most importantly, on store shelves in a more precise and targeted manner.

We advise producers to evaluate and choose types of packaging corresponding to the circular economy pyramid, as well as to educate their clients.

We advise members of the public to seek more information about packaging reduction options, as far as possible to choose products without packaging, to use their own packaging which can be reused several times, through their choices motivating producers to change the packaging they use.

Recommendations for manufacturers

- Find ways of offering products without packaging, in reusable packaging or recyclable packaging.
- For dry product packaging, use recyclable materials, e.g. 2 (HDPE), 4 (LDPE).
- Choose glass for liquid and especially greasy products (mayonnaise, ketchup, etc.).
- Avoid non-recyclable packaging, which is hard to differentiate from recyclable packaging, e.g. 5 (PP) for packaging bread.
- Do not use 1 (PET) for purposes other than packaging drinks.
- Do not use packaging in which several materials are concurrently used, e.g. plastic windows in cardboard packaging.
- Do not choose packaging from which fine components cannot be separated, e.g. adding a cork to a bottle, placing plastic sheets between slices of meat or cheese.
- Support packaging producers' attempts to develop alternatives to multi-layered

packaging.

- Before choosing a new packaging material or form, consult specialists about options to recycle it.

Recommendations for the public sector

- Since it was found that the composition of waste in waste containers sorted during the study contained quite large mixtures of textiles, plastic (which is not used packaging) and furniture waste, we invite the government to encourage separated collection of textile materials, plastic and furniture by stipulating requirements for waste collectors, creating new expanded manufacturers' responsibility systems, and at the same time supporting repeated use and recycling with the help of laws and regulations.
- Assess the opportunity to develop a definition of recyclable packaging and a logotype for packaging used in Latvia, which is placed on packaging and would make it easier for the public to recognise and choose products in recyclable packaging (in cooperation with waste managers, environmental NGOs and manufacturers, and the Packaging Association).
- Differentiate natural resources tax and manufacturers' liability system recycling targets for recyclable and non-recyclable packaging.
- When announcing public procurements, as far as possible include packaging reduction and recycling options among the criteria.
- Reduce the use of packaging, other disposable products and especially non-recyclable packaging at public events.
- Support not only separated collection of waste, but also the recycled materials market. e.g. the orders guaranteed by governmental bodies for products made from recycled materials, and discounts for recycling businesses and enterprises that use recycled materials in manufacturing.
- Continue informing the public about the importance of sorting waste.

Recommendations for the public

- As far as possible, use repeatedly usable packaging (glass jars, bottles, cloth bags, plastic/metal boxes that can be used repeatedly, etc.) and buy products in shops, where they can be bought in repeatedly usable packaging.
- Learn to recognise the most common and easy to differentiate types of non-recyclable packaging and avoid them.
- Pay attention to the instructions on a waste container, and if you have any queries, contact your waste manager.
- Seek other delivery options for waste, which is not packaging (textiles, electronics, etc.), e.g. the closest waste collection point/area.
- Before throwing it into a container, rinse food packaging.
- As far as possible, do not buy products in useless and disproportionately large packaging.

Annex

Data table 1

Non-recyclable waste	
Not packaging	78.7%
Overly dirty packaging	1.1%
Non-recyclable packaging	19.5%
Errors in sorting process	0.6%

Data table 2

Waste not conforming to the definition of lightweight packaging		
	% of total mass	% of waste not conforming to the definition of lightweight packaging
Textile and accessories	23.1%	31.3%
Home improvement building materials	15.6%	21.1%
Car accessories	7.0%	9.4%
Toys	6.8%	9.1%
Used personal hygiene products	6.5%	8.8%
Woodchip pallets	3.7%	5.0%
Hard plastic products	2.9%	3.9%
Kitchen accessories	1.6%	2.2%
Household items	1.6%	2.1%
Biologically non-degradable waste	1.4%	1.9%
Electrical/electronic products	1.4%	1.9%
Stationery materials	1.4%	1.8%
Mixed household waste	1.1%	1.4%

Data table 3

Non-recyclable packaging		
	% of total mass	% of non-recyclable packaging
Colour and transparent hard plastic packaging	6.3%	32.0%
Plastic sheets	3.5%	17.9%
Multi-layered packaging	3.0%	15.2%
Black thicker plastic household product packaging	1.9%	9.8%
Polystyrene	1.5%	7.9%
Thin soft plastic packaging	1.3%	6.5%
Plastic nets	1.0%	5.3%
Plastic egg packaging	0.4%	2.0%
Hard coloured plastic packaging	0.3%	1.7%
"Disqualified" PET packaging	0.3%	1.6%