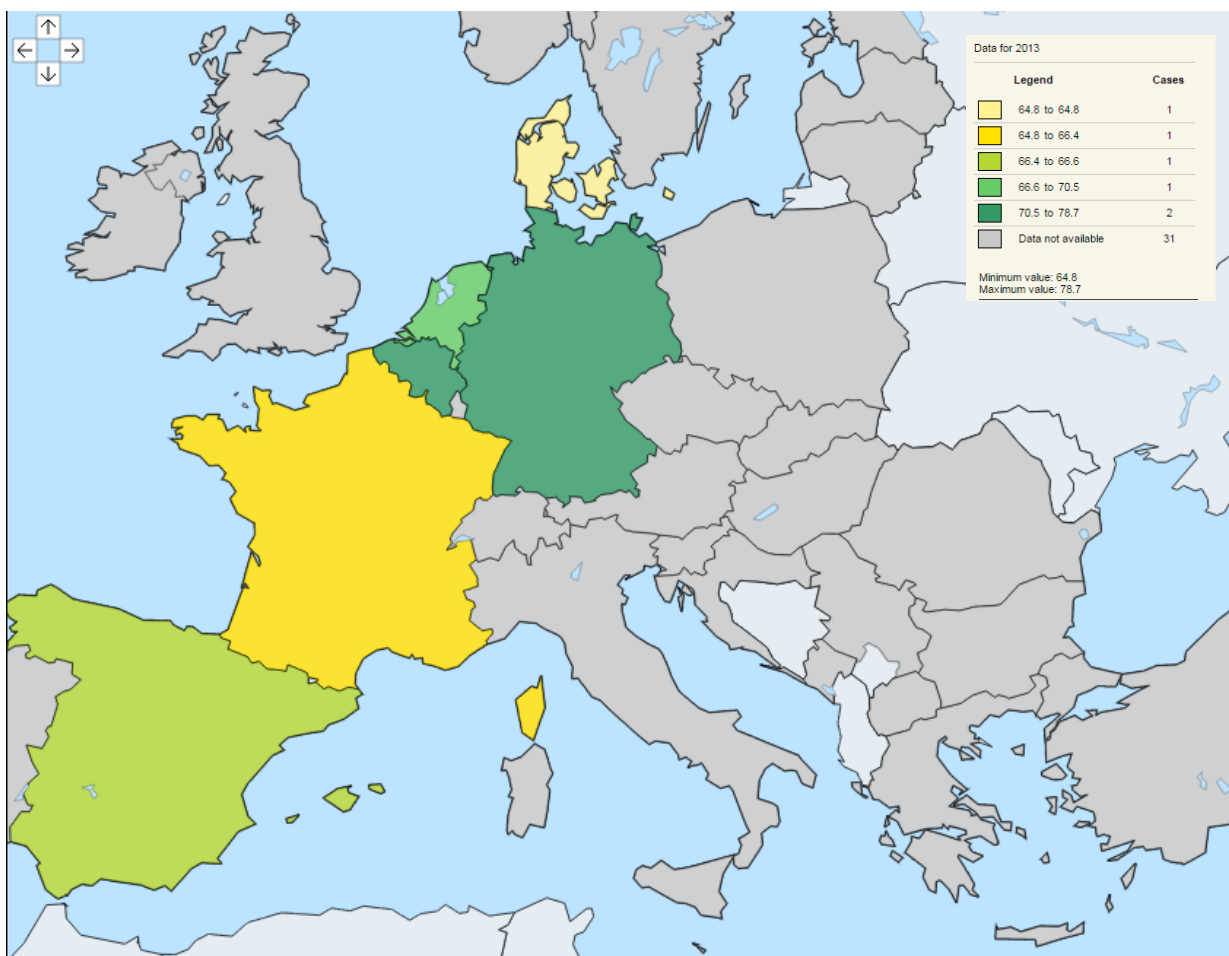


Collection and recycling of packaging waste, an international comparison



The Netherlands Institute for Sustainable Packaging (KIDV)

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Foreword

This factsheet compares the implementation of European Directive 94/62/EC in six EU member states, including the Netherlands. It also compares the performance of the different countries with one another.

The European guidelines are enshrined in Directive 94/62/EC on Packaging and Packing Waste of 1994. This Directive obliges European member states to design packaging in a way that minimizes environmental impact and promotes separate collection/recycling. In addition, minimum requirements apply for recycling, on which member states must report annually within eighteen months of the end of the calendar year. The Directive comprises the following elements:

- **Essential Requirements**
The Essential Requirements are criteria for packaging that stem from the European Directive for Packaging. Each country must implement these in its own way through national legislation.
- **Implementation**
The European Union leaves it up to member states to implement the Directive for packaging and packaging waste, provided it is done in line with the Directive.
- **Recycling Targets**
At least 55% of all packaging materials collectively must be re-used. Some member states, including the Netherlands, have set themselves the objective of a higher rate.

This document contains an introduction with an overview of implementation and performance of the different countries in respect of European Directive 94/62/EC. These summaries are presented in tables. Subsequently, the organization and embedding of extended producer responsibility and the performance of the system in each country is discussed briefly.

1 Introduction

The European Directive on Packaging has been implemented differently by the various EU member states. A comparison has been made between the Netherlands, Belgium, Denmark, Germany, France and Spain in terms of implementation of the Directive and recycling performance to provide an insight into the differences and similarities.

The reason these countries were selected is that extended producer responsibility organizations have been established in Belgium, Germany, Spain and France to bear collective responsibility for the obligations of producers and importers of packed goods. Also, there is sufficient diversity in the methods of implementation to allow a meaningful comparison. Denmark does not apply the concept of extended producer responsibility; the municipalities are responsible there.

This data shows that the Netherlands is amongst the best performing countries in Europe in the field of recycling waste. Increasingly demanding objectives necessitate that countries change the way in which they achieve the targets. In the Netherlands too, the landscape is evolving in terms of collection, recycling and working towards improved sustainability. For example, there has been a shift from collection of plastic in a separate container or bag, to collection with beverage cartons and sometimes with metal (PMD) too. Other countries have been collecting those in a similar combination for nearly 20 years already.

The summaries below provide a comparison between the methods of implementation of European Directive 94/62/EG in each country and the methods of collection for the selected materials from households in each country.

1.1 Organization and embedding of extended producer responsibility

Method of implementation of EU Directive 94/62/EG in each country.

	The Netherlands	Belgium	Denmark	Germany	France	Spain
EU Directive 94/62/EG implemented	Producers are responsible	Producers are responsible	Municipalities are responsible	Producers are responsible	Producers are responsible	Producers are responsible
Financial responsibility	Ps and Is from 50,000 kg	All Ps and Is	Tax on various types of packaging	Ps, Is and packaging producers	Ps, Is and packaging producers	Ps, Is and packaging producers
Essential Requirements	Individual responsibility of all companies + Sector innovation plans	Prevention plans for companies that generate 300 tons of single use packaging on the market	Responsibility of the central government.	Individual responsibility of all companies	Individual responsibility of all companies. The French Packaging Council produces guidelines.	Individual responsibility of all companies.
Compliance/ monitoring of Essential Requirements	Yes, Human Environment and Transport Inspectorate	Yes, monitoring by the Interregional	unknown	unknown	Yes, the State is entitled to check.	Yes, by the regions (17 autonomous regions)

	(ILT) supervises companies' compliance	Packaging Commission				
National organization	Packaging Waste Fund	FostPlus Val-i-Pac	N/A	There are 10 organizations, see chapter 5 for a summary	Eco-Emballages	Ecoembes and Ecoovidrio
Green Dot symbol	No	Yes	No	Yes	Yes	Yes

Method of household collection of different materials for each country.

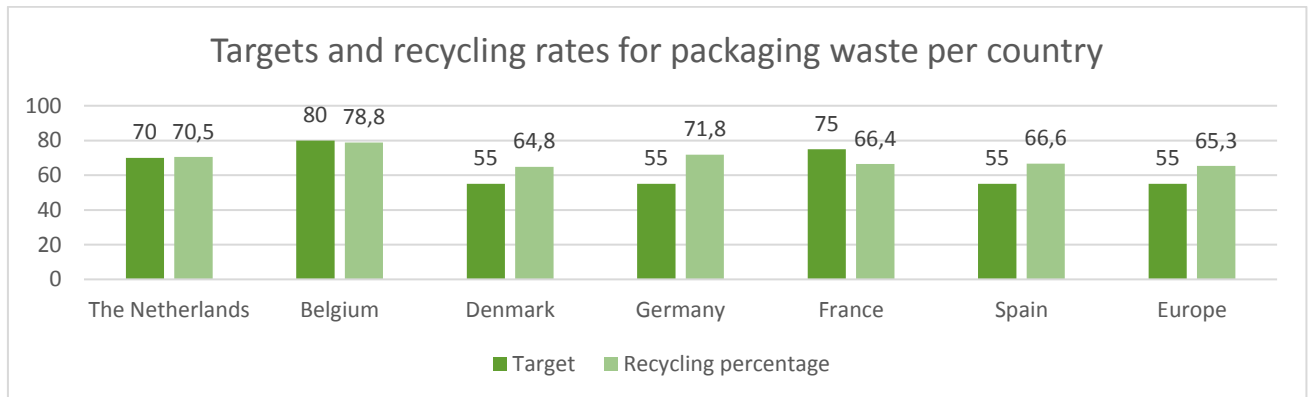
Packaging collected (what, how)	The Netherlands	Belgium	Denmark	Germany	France	Spain
Glass	Separated by colour or mixed. Via bottle banks.	Separated by colour. Via bottle banks.	House to house or householders to deliver.	Container	Container	Container
Paper and cardboard	House to house or via containers.	House to house.	House to house or householders to deliver.	Container	Yellow container	Blue bag (newspapers, magazines, cereal boxes)
Beverage cartons	House to house or via containers. With plastic or PMD.	Blue bag (PMD). House to house.	No (pilot studies are underway (2015))	Yellow bag (milk and juice cartons and vacuum packs)	Yellow container (juice and soup cartons)	Yellow container (milk and juice cartons)
Metals	Via non-recyclable waste or PMD	Blue bag (PMD). House to house.	House to house or householders to deliver. Deposits on metal beverage cartons	Yellow bag (cans, aluminum trays, lids and foils)	Yellow container (tins, cans, aerosol spray cans)	Yellow container (tins, cans, aerosol spray cans)
Plastic	All plastics. House to house or via containers. Separately, with beverage cartons or PMD.	Blue bag (PMD). House to house. Only bottles and phials. Pilot study on broader collection of plastics is underway.	Hard plastic. House to house or householders to deliver. Deposits on beverage cartons.	Yellow bag (bags, cling film, bottles, phials, cups, tubs and meat and fruit trays)	Yellow container (bottles and phials)	Yellow container (water bottles, cleaning agent bottles, shampoo bottles or potato sacks)
Wood	N/A ¹	N/A	N/A	N/A	N/A	N/A

¹ Commercial waste is the largest stream for wood, the other streams are too small for separate collection.
The Netherlands Institute for Sustainable Packaging - 8 december 2016

1.2 How the systems perform

The Netherlands achieves a high average recycling rate of 70.5% in 2013 compared to the average European rate of 65.3%. Belgium and Germany achieve even higher rates of 78.8% and 71.8% respectively. Compared to the other EU member states, the Netherlands achieves a higher average collection rate of 94% in 2013 compared to the average of 79%. (Eurostat - recycling rates packaging 2013, 2016; Eurostat - recovery rates packaging 2013, 2016)

The graph and tables reflect the 2013 figures, because these are the most recent figures published by Eurostat. Once the figures are submitted by the responsible organizations, they are first checked by the national authorities and subsequently by the European Commission.



Material	The Netherlands		Belgium		Denmark		Germany		France		Spain		EU	
	T	C	T	C	T	C	T	C	T	C	T	C	T	C
Packaging total	70	70.5	80	78.7	55	64.8	55	71.8	75	66.4	55	66.6	55	65.3
Glass	90	78.8	60	100	60	77.7	75	88.7	60	73.9	60	67.4	60	72.7
Plastic	44	46.2	30	39	22.5	36	60	49.4	22.5	25.6	22.5	40.7	22.5	37.3
Paper/card-board	75	88.8	60	89.1	60	85.4	70	88.2	60	95.8	60	75	60	84.6
Metal	8	92.7	50	97	50	57	70	93.2	50	75.8	50	80.9	50	74.3
Wood	25	21.9	15	57	15	46.6	--	25.5	15	28.4	15	64.3	15	36

T = Target recycling rate

C = Current recycling rate

Source: (Eurostat - recycling rates packaging 2013, 2016); (EUR-LEX, 2016)

The table below shows the amount of packaging material introduced to the market per capita in the different countries and the total percentage for *collected* packaging waste.

Collected (%) in 2013	The Netherlands	Belgium	Denmark	Germany	France	Spain	EU Average (2013 – estimate)
Kg packaging material introduced to the market per capita in 2013	167	155	170	210	185	144	-
% Collection	94%	97%	86%	98%	75%	73%	79%

Source: (Eurostat - recovery rates packaging 2013, 2016)

2 The Netherlands

2.1 Organization and embedding of extended producer responsibility

In the Netherlands, the producer or importer of the packaged product is responsible for the waste phase of the packaging. They pay a Packaging Waste Management Contribution to the Packaging Waste Fund (Afvalfonds Verpakkingen) for this. This obligation is outlined in the 2014 Packaging Decree (Besluit Beheer Verpakkingen) and formalized in a General Binding Agreement. European Directive 94/62/EG is thus implemented via national legislation. The Framework Agreement for Packaging 2013-2022 between the national government, the packaging industry and the Association of Dutch Municipalities (VNG) sets out implementation. It describes each party's responsibilities, both financially and in terms of execution.

Summary of a number of agreements:

- Recycling targets for each of the material streams – see paragraph 1.3 for the results. The Packaging Waste Fund reports on this annually. In the Netherlands, paper and cardboard, glass, plastic and beverage cartons are collected separately or via post-separation. Many municipalities are switching to the collection of PMD (plastic, metal and beverage cartons), which includes the separate collection of metal. Previously, it was extracted from the non-recyclable waste.
- The Packaging Waste Fund compensates municipalities for collecting separated packaging waste from households.
- Producers and importers of packaged products formulate so-called sector innovation plans. In these, they set objectives for improving the sustainability of the packaging chain.

The Human Environment and Transport Inspectorate (ILT), the Ministry of Infrastructure and the Environment, and Rijkswaterstaat Environment (RWS) supervise compliance with the abovementioned agreements. They check the accuracy of statistics in the Packaging Waste Fund reports and they check whether individual companies comply with the essential requirements.

2.2 How the system performs

The Netherlands performs well in respect of recycling compared to other European countries, with a high average recycling rate of 70.5% in 2013. The average European recycling rate is 65.3% (Eurostat - recycling rates packaging 2013, 2016).

NL	2010	2011	2012	2013
Material	Recycling Rate (%)			
Total	73.9	71.9	69.3	70.5
Glass	91.3	82.8	71.3	78.8
Plastic	47.6	50.7	47.7	46.2
Paper and cardboard	89.9	88.6	88.9	88.8
Metal	88.2	91.2	90.7	92.7
Wood	32.5	30.5	29.3	21.9

Recycling results in the Netherlands for 2010-2013. Source (Eurostat - recycling rates packaging 2013, 2016)

3 Belgium

3.1 Organization and embedding of extended producer responsibility

Belgium has also implemented European Directive 94/62/EG via its national legislation by means of extended producer responsibility. The executive organizations are Fost Plus for household waste and Val-i-Pac for commercial waste. The agreements were formalized in the 2008 Cooperation Agreement. Here too, agreements were made in respect of recycling objectives and prevention. Belgium collects packaging from households separately in a blue bag, which contains plastic (bottles and phials), metal and beverage cartons. In addition, paper/cardboard and glass are collected.

Summary of a number of agreements:

- An obligation to take back waste. Businesses must recycle 80% of the household packaging they introduce to the market (90% if incineration with energy recovery is included).
- An obligation to provide information. Businesses must provide a number of details about the packaging they introduce to the market to the Interregional Packaging Commission annually.
- Businesses that generate at least 300 tons of single use packaging on the market annually, and businesses that pack products, or have products packed in Belgium, must submit a general prevention plan every three years.

The Interregional Packaging Commission checks, amongst others, the results produced by Fost Plus and Val-i-pac and ratifies these. The legal operating framework has a term of five years each time.

3.2 How the system performs

In 2013, 79% of packaging was recycled in Belgium (Eurostat - recycling rates packaging 2013, 2016). This makes Belgium one of the best performing countries in Europe, with a higher recycling rate than the Netherlands.

Belgium	2010	2011	2012	2013
Material	Recycling Rate (%)			
Total	79.8	80.2	80.3	78.7
Glass	100	100	100	100
Plastic	41.5	41.4	41.5	39
Paper and cardboard	89.9	90.4	89.8	89.1
Metal	94.7	97.4	97.3	97
Wood	63.3	63.4	66.1	59
Other	7.5	9	8.4	6.7

According to Fost Plus, Flanders and Wallonia have fairly similar rates of recycling. However, Brussels has a far lower recycling rate, largely due to the lack of a levy on non-recyclable waste bags. ACR+ (the Association of Cities and Regions for Recycling and Sustainable Resource Management) considers the results to be reliable, because the reporting system in Belgium is reasonably well organized. Packaging enters the national market, but collection data is reported per region (Flanders, Wallonia and Brussels). This may lead to minor discrepancies because of sub-division into regions based on the number of residents. (Natuur & Milieu, 2016)

4 Denmark

4.1 Organization and embedding of extended producer responsibility

The Danish legislation dates back to before the European Directive, but aligns with it and is enshrined in Decree N ° 619 (June 2000). Denmark does not apply the concept of extended producer responsibility for packaging. Municipalities are responsible for waste management. The system is financed through a tax on certain types of packaging. In addition, a deposit system applies to various types of packaging; this is more comprehensive than the Dutch deposit system. In Denmark, prevention is a task of the Ministry of Environment and Food.

4.2 How the system performs

In 2013, approximately 65% of packaging waste was recycled in Denmark (Eurostat, 2013). Denmark performs relatively less effectively than the rest of the countries examined, placing it at the European average.

	2010	2011	2012	2013
Material	Recycling Rate (%)			
Total	84	54.3	60.1	64.8
Glass	174.2	85.9	80.6	77.7
Plastic	26.4	22.3	29.4	36
Paper and cardboard	93.5	63.8	76.5	85.4
Metal	76.9	58	51.8	57
Wood	86.1	29.5	40.4	46.6

Source: Eurostat. This table contains aggregated data for household and industrial waste. The reason for the variation in figures from year to year is due to the implementation of a new monitoring system in 2010.

In 2010, a new monitoring system was introduced as part of a complete review of the regulations. The Danish Environmental Protection Agency (EPA) is responsible for this system, which is financed by municipalities. The data for 2010 may not be completely accurate because there were problems with the new system initially in terms of reporting the data (data was submitted in different formats, such as weight and volume).

Because each municipality is permitted to set up its own system, there are many disparities between collection results for municipalities. It is not obliged to collect materials separately. However, if performance results are inadequate, less than 55% of paper and cardboard for example, municipalities must make an extra effort by establishing a system for separate collection.

5 Germany

5.1 Organization and embedding of extended producer responsibility

Germany has translated the EU guidelines into the Verpackungverordnung. Producers and importers of packed goods, as well as producers of packaging, are subject to extended producer responsibility. Companies can join a producer responsibility organization of their choice to fund collection. There are ten such organizations active on the German market (Wikipedia, 2016). These are:

- DSD (Der Grüne Punkt – Duales System Deutschland GmbH (DSD));
- ELS (Europäische Lizenzierungssysteme GmbH);
- Recycling Kontor Dual GmbH & Co. KG;
- BellandVision GmbH;
- Interseroh SE;
- Redual GmbH;
- Veolia Umweltservice Dual GmbH;
- VfW GmbH;
- Zentek GmbH & Co. KG;
- Eko-Punkt GmbH.

A yellow bag (gelbe sack) is used for household collection of plastic, metal, beverage cartons and lightweight packaging. There is a deposit system for non-recyclable beverage packaging.

5.2 How the system performs

Approximately 72% of packaging waste is recycled in Germany (Eurostat 2013). Germany performs well, placing it above the European average.

	2010	2011	2012	2013
Material	Recycling Rate (%)			
Total	72.7	71.8	71.3	71.8
Glass	86.1	88.4	84.7	88.7
Plastic	49.4	48.5	49.5	49.4
Paper and cardboard	90.2	88	87.6	88.2
Metal	92.7	92.8	92.3	93.2
Wood	27.5	30.1	30.3	25.5

Source: (Eurostat - recycling rates packaging 2013, 2016). This table contains aggregated data for household and industrial waste.

In Germany, every producer responsibility organization submits data to the central government. Packaging streams are well documented because of political pressure. The Eurostat figures are considered accurate by NABU (the Nature and Biodiversity Conservation Union), yet somewhat high (Natuur & Milieu, 2016).

6 France

6.1 Organization and embedding of extended producer responsibility

France has translated the European Directive into a number of decrees: Decree no. 92-377 for household packaging waste (1992), Decree no. 94-609 for commercial and industrial waste (1994), Decree no. 96-1008 (1996) and Decree no. 98-638 (1998). France thus applies the concept of extended producer responsibility for packaging. This applies to producers and importers of packed goods and producers of packaging. Eco-Emballages is responsible for all packaging waste. ADEME records the statistics and the French Packaging Council (*Conseil national de l'emballage*) supports companies in terms of prevention, amongst other things.

The Essential Requirements apply to all new packaging, the French Packaging Council has established guidelines for this.

Producers and retailers pay a levy according to weight to display the Green Dot on packaging. In addition, there is a charge for every packaging component. The objective of this charge is to simplify packaging and make it lighter. A bonus is awarded for efforts to eliminate packaging, or if there are recycling instructions on the packaging.

A penalty is imposed for packaging that disrupts the recycling process, in the form of a 50% higher levy. Packaging that is completely non-recyclable is subject to a penalty of an extra 100%.

6.2 How the system performs

Approximately 67% of packaging waste is recycled in France (Eurostat 2013). This puts France at just above the European average.

	2010	2011	2012	2013
Material	Recycling rate (%)			
Total	61.1	61.3	64.9	66.4
Glass	69.8	70.7	73.5	73.9
Plastic	23.7	23.3	25.1	25.6
Paper and cardboard	91.9	88	91.8	95.8
Metal	74.8	73.6	73.9	75.8
Wood	19.1	25.2	28.6	28.4

Source: Eurostat. This table contains aggregated data for household and industrial waste.

France has set itself a target of 75% for recycling. In addition, France set itself the objective of reducing the total amount of packaging material by 100,000 tons between 2007 and 2012. It achieved this objective: 106,905 tons less packaging material was produced during that period. In the preceding period (1997 to 2007), the amount of packaging material introduced to the market fell by 8%.

7 Spain

7.1 Organization and embedding of extended producer responsibility

Spain has implemented European Directive 94/62/EG via its packaging and packaging waste Act (11/97). Ecoembes and Ecovidrio are responsible for implementation. Ecoembes organizes the collection, sorting and recycling of household waste, except glass, for which Ecovidrio is responsible.

In Spain, the approach to prevention differs from the approach in most EU countries. Companies that generate at least 350 tons² of packaging on the market must produce a prevention plan every three years. This concerns prevention in terms of quantity (the amount of material used) and quality (for example, toxicity of materials). Companies can opt for an individual or sectoral prevention plan. The plans must be approved by the regional authorities (the 17 autonomous regions in Spain), to which the results must also be reported. Ecoembes supports companies in this.

7.2 How the system performs

In 2013, 66.5% of household packaging waste was recycled in Spain (Eurostat 2013). That puts Spain at just above the European average.

	2010	2011	2012	2013
Material	Recycling rate (%)			
Total	61.9	6.9	65.5	66.6
Glass	59.8	64.4	64.2	67.4
Plastic	29.2	32.4	35.1	40.7
Paper and cardboard	76.1	76.6	77.8	75
Metal	70.7	75.2	78	80.9
Wood	55.7	53.2	57.9	64.3

Source: Eurostat. This table contains aggregated data for household and industrial waste.

Three streams are measured in Spain:

- Industrial waste. Only aggregated data is available for these streams.
 - Commercial waste. An element of these streams is managed privately and another by the municipalities.
 - Household waste. This is collected by municipalities and managed by Ecoembes and Ecovidrio.
- Because the abovementioned streams can become mixed, the figures may be inflated.

The outcome of the prevention plans is that 60,000 tons of primary raw materials were conserved in Spain during the period 2012-2014 (Ecoembes, 2016)

² Numerous minimum limits were listed: 250 tons glass, 50 tons steel, 30 tons aluminum, 21 tons plastic, 16 tons wood, 14 tons paper/cardboard or composite packaging material or 350 tons total packaging material, even though the aforementioned minimum limits were not achieved.

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