WASTED PAPER

A PATH TO BETTER RECYCLING

white space STRATEGY

DS Smith

Table of contents

Wasted paper: A path to better recycling

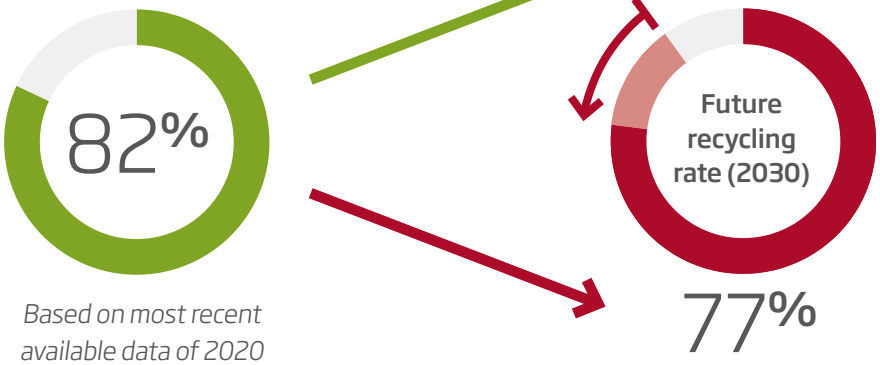
Recycling is a key part of our sustainable future, helping us:

conserve natural resources	lower energy usage	reduce waste to landfill or incineration

25 TIMES the number of times corrugated fibres can be recycled with no significant loss in quality

FEFCO study - The Myth of Limited Fibre Cycles

The current paper & cardboard packaging recycling rate in the EU is



Based on most recent available data of 2020 (Eurostat Recycling Rates)

We believe that by adopting the recommendations in this report, by 2030 we can reach a rate of 90%

Reaching 90% would save 5 million tonnes of paper and cardboard worth almost €1bn from landfill or incineration every year vs the 77% scenario

If the recycling rate continues to fall, as it has done since 2016, the rate will fall to 77% by 2030

Four recommendations to achieve 90%

Source Segregation

A separate bin & collection system for paper & cardboard for all European countries

Consistent Collections

The same collection system across each country, with consistent labelling & advice

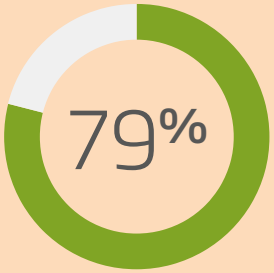
Greater Clarity

Clarity on why, how and what to recycle, building greater trust in the system

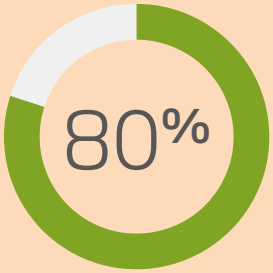
Legislation

Introduction and enforcement of long-lasting, consistent recycling legislation

In our survey of over 8,000 members of the public across Europe...



Over 79% of respondents want to recycle more



Over 80% of respondents believe recycling should be among the top priorities of their government's agenda

Foreword

On current projections for recycling, we risk as much as 55.8 million tonnes of that material, with a value of up to €10.3bn, ending up in landfill or incineration between now and 2030. By the time we get to 2030 almost 9 million tonnes, with a value of €1.6bn, could be wasted every year. Alternatively, achieving a 90% recycling rate from 2030 would see an extra 5 million tonnes recycled annually, worth up to €1bn.

Niels Flierman
Head of Paper and Recycling at DS Smith

The world is transforming at an unprecedented pace. The legacy of the COVID-19 pandemic, global economic fluctuations and technological advancements are shaping our futures. These factors are redefining our lifestyles, how we allocate our resources, and our modes of communication. There has been a marked change in consumer behaviours, driven by new ways and places of purchasing goods. Today's consumers demand increased personalisation and products delivered to us in a way that fits our modern lifestyles.

All this puts increased demand on packaging, with the shift to online shopping accelerated by the pandemic. Packaging is expected to do its primary job of transporting and protecting goods, but increasingly society expects that to happen in a sustainable way. Governments, organisations, and consumers have become increasingly aware of the need to protect our planet's scarce resources and limit the impact of our society on the environment. The climate crisis ranks as one of the defining challenges of our era.

The sustainability of packaging directly impacts us all, serving as a daily reminder of this pressing issue. Better recycling is fundamental to ensuring that we are capturing resources, keeping them in use for longer and enabling the transition to a more circular economy.

Paper is a circular material which can be recycled up to 25 times and already has some of the highest recycling rates of any packaging material. Over the last 30 years, in Europe we have made major strides to achieve our current paper and cardboard packaging recycling rate of 82%. Still, as it stands today, 6 million tonnes of paper and cardboard packaging are sent to landfill or incineration every year. And things are getting worse.

Since an 85% peak in 2017, the recycling rate for paper and cardboard packaging has been falling and if the decline continues, we could end up recycling just 77% by 2030, with increased consumption and waste volume forecast. Although progressive targets have been set for 2030 (the European Commission has set a paper and cardboard packaging recycling rate target of 85%), they are at risk of being missed. According to the recent European Commission Early Warning Report, 18 of 27 EU member states are at risk of not achieving existing recycling targets.

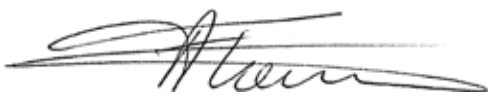
As a business that operates a circular supply cycle for paper-based packaging, DS Smith witnesses first-hand the powerful benefits of keeping resources in use for longer, reducing costs, and limiting the impact on the environment. We see well-functioning recycling systems, but we also see the result of poor recycling systems, where factors such as inconsistent recycling collections, consumer confusion and a lack of coherent recycling legislation ultimately contribute to stagnating recycling rates.

However, at DS Smith we believe we have an opportunity to raise the bar across Europe and achieve higher recycling rates. We support the 4evergreen Alliance target of a 90% recycling rate for fibre-based packaging across the European Union.

To achieve this target and cope with the 39 million tonnes of paper and cardboard packaging material per year that is expected to be generated in 2030, urgent change is needed from a range of stakeholders across the continent. It's worth the effort. On current projections for recycling, we risk as much as 55.8 million tonnes of that material, with a value of up to €10.3bn, ending up in landfill or incineration between now and 2030. By the time we get to 2030 almost 9 million tonnes, with a value of €1.6bn, could be wasted every year. Alternatively, achieving a 90% recycling rate from 2030 would see an extra 5 million tonnes recycled annually, worth up to €1bn.

DS Smith has commissioned this report in collaboration with White Space Strategy to shine a light on the challenges we are facing and offer key recommendations for reaching a 90% recycling rate for paper and cardboard packaging by 2030. We highlight the challenges of stagnating recycling rates, inconsistent recycling systems, increasing waste generation, and consumer confusion around recycling. To overcome these challenges, we make four key recommendations based around the need for source segregation of paper and cardboard packaging, consistency in our collection systems, what and how consumers should recycle and the need for enabling legislative frameworks.

Time is of the essence. We urge stakeholders throughout the packaging and recycling ecosystem to unite and take swift action. By collaboratively addressing this challenge with society at large, we are confident that by enhancing the recycling of paper and cardboard packaging, we can make a profound and enduring difference to our environment.



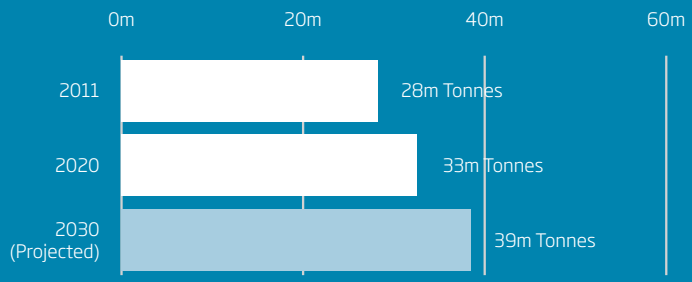
Niels Flierman
Head of Paper and Recycling at DS Smith

Chapter 1: Paper and cardboard packaging recycling at a European level

1.1 The challenge of increased packaging

In 2020, 33 million tonnes of paper and cardboard packaging waste was generated in the EU, an increase of over 4 million tonnes in just 9 years[1]. Continuing this trajectory would result in 39 million tonnes of packaging being generated in 2030.

Figure 1: EU paper & cardboard packaging generated (tonnes)

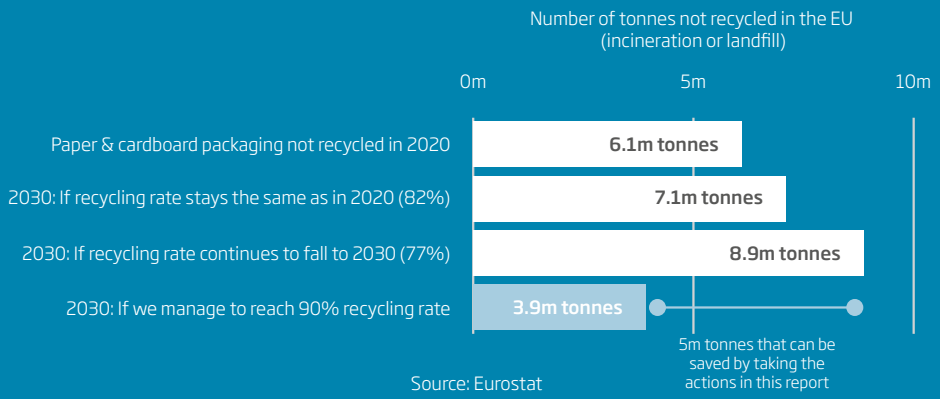


Source: Eurostat

If no action is taken, and the paper and cardboard packaging recycling rate continues to fall as projected (Figure 5), this is likely to result in almost 56 million tonnes of paper and cardboard packaging being incinerated or sent to landfill between 2024 and 2030. By the time we get to 2030 almost 9 million tonnes could be wasted every year (Figure 2).

Based on the most recent Eurostat statistics[2], the 56 million tonnes wasted between 2024 and 2030 could be worth €10.3bn, in addition to the costs saved of not sending this material to landfill (On average, €39 - €46[3] per tonne in the EU). Going forward from 2030 this could equate to 9 million tonnes and €1.6bn annually.

Figure 2: How much paper & cardboard packaging is not recycled in different scenarios?



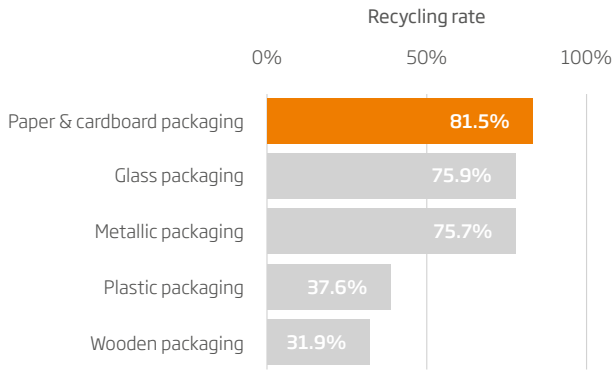
Source: Eurostat

1 Eurostat, Packaging Waste by Waste Management Operations
2 Eurostat, Recycling - Secondary Material Price Indicator
3 European Environment Agency, Key Strategies to Increase Recycling

1.2 Falling recycling rates

Paper is currently the most recycled packaging material, with recycling rates higher than all other common packaging types. At present, around 82% of paper and cardboard packaging is reported to be recycled across Europe – compared to 76% for metallic packaging, 76% for glass packaging, and just 38% for plastic packaging. In addition, the circularity of paper fibres is strong, with research suggesting that they can be recycled up to 25 times[4].

Figure 3: EU packaging recycling rates, 2020



Source: Eurostat

Definitions:

'Recycling rate' means the total quantity of recycled **packaging waste** divided by the total quantity of generated packaging waste (recycling / generation). *(Eurostat)*

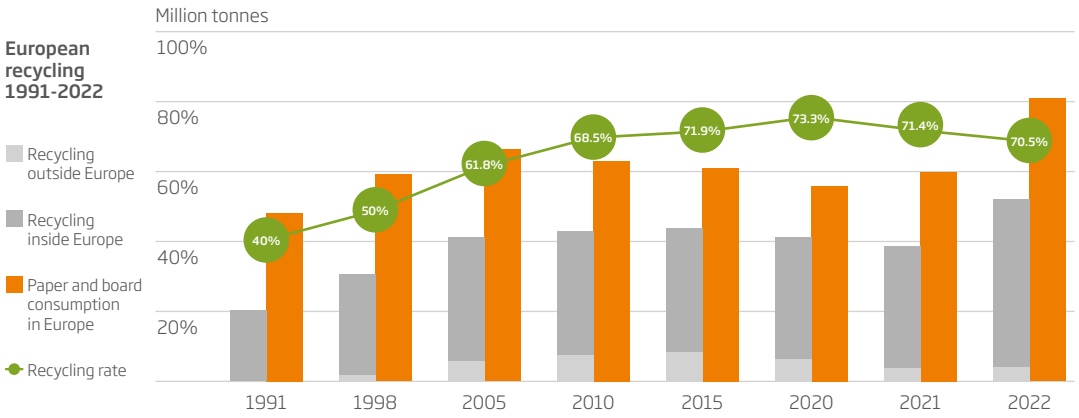
'**Packaging waste**' means any packaging or packaging material covered by the definition of waste in the Waste Framework Directive 2008/98/EC, excluding production residues. *(Eurostat)*

As paper recycling became established and accepted by both businesses and the public, recycling rates undoubtedly improved. A Cepi Monitoring report from 2022 showed that the overall paper recycling rate (not just packaging) in Europe had increased from just 40% in 1991 to over 70% by 2015.

By 2030, Europe could be wasting up to €1.6bn of paper and cardboard packaging annually by sending it to landfill or incineration

4 Cepi, Cepi Position Paper on the Revision of the Packaging and Packaging Waste Directive

Figure 4: European paper and board recycling (1991-2022)



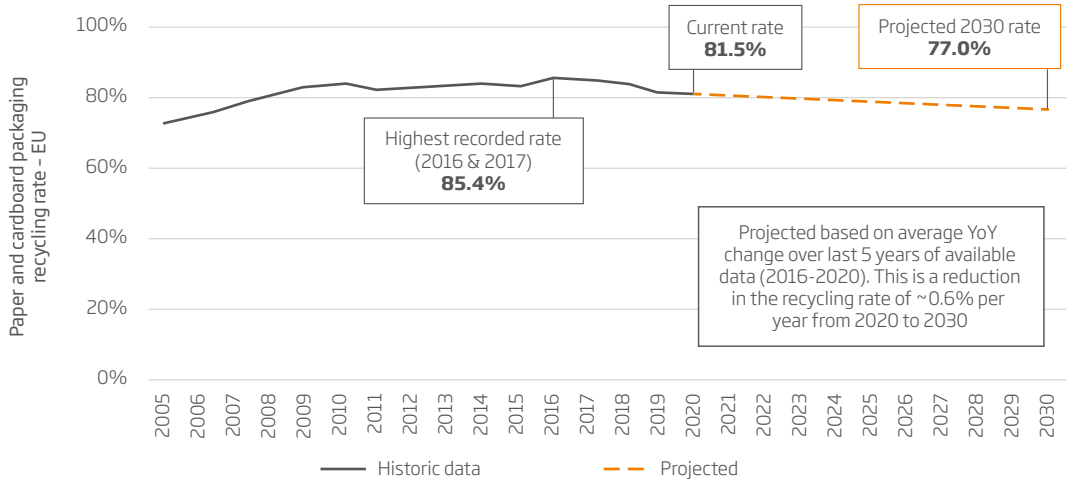
Source: Cepi 2022

However, since 2015, the rate seems to have reached a plateau – with the 2022 recycling rate being lower than in 2015. This trend is also confirmed within paper and cardboard packaging recycling data. Despite showing steady increases from 2005 to 2015, the most recent Eurostat paper packaging data from 2020 shows a decline in the recycling rate from a high point of 85.4% in 2016 & 2017.

If the paper and cardboard packaging recycling rate continues to decline at the same rate it has over the last 5 years, the rate would be just 77% by 2030.

This shows that, despite all the improvements in paper recycling since the 1990s, more dramatic action is required to take the next step in paper and cardboard recycling.

Figure 5: EU paper and cardboard recycling rate (%)



Source: Eurostat

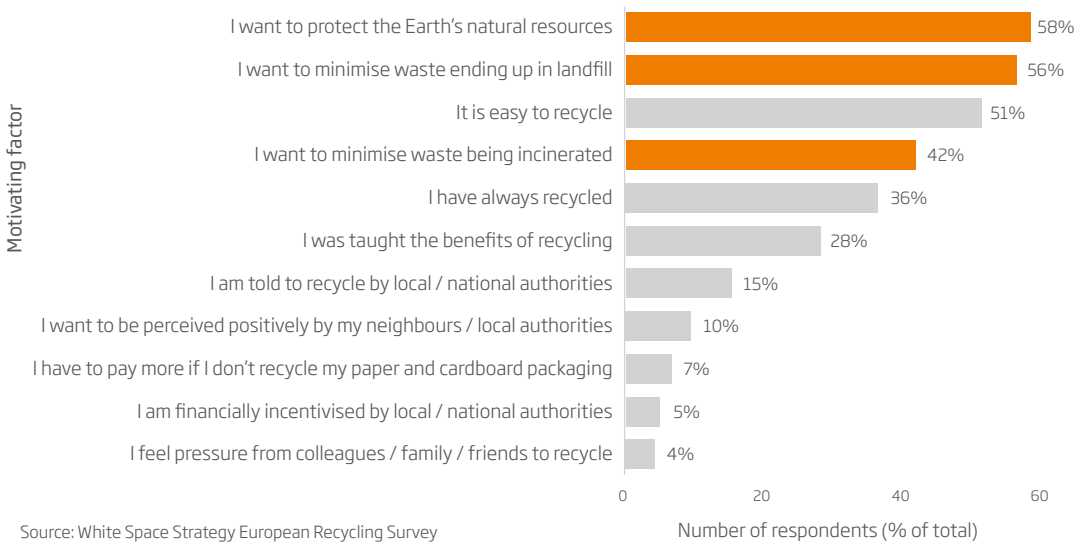
1.3 The importance of recycling

Recycling has a crucial role to play as we strive for a "*modern, resource-efficient and competitive economy*"[5], as outlined by the European Commission. Improving recycling is closely aligned with UN Sustainable Development Goal 12 – ensuring sustainable consumption and production patterns – and the specific target to "*substantially reduce waste generation through prevention, reduction, recycling and reuse [by 2030]*"[6]. The public also agrees with this priority. Our survey shows that over 80% of Europeans believe that recycling should be a top priority on their government's agenda[7].

Recycling is also fundamental to achieving a circular economy. Building a circular economy through greater recycling of paper and cardboard packaging leads to:

- **Conservation of natural resources:** re-using materials reduces the need for new materials to be produced that require extraction from the natural world[8].
- **Lower energy usage:** packaging products made from virgin material typically require more energy to manufacture compared to those made from recycled material[9], which may lead to additional carbon emissions that contribute to global heating.
- **Reduced waste to landfill or incineration:** the more we recycle, the less waste will go to landfill sites, be incinerated, or be littered into our environment.

Figure 6: What motivates you to recycle your household paper and cardboard packaging? (selected European countries)



Source: White Space Strategy European Recycling Survey

5 European Commission, A European Green Deal

6 UN, Goal 12: Ensure Sustainable Consumption and Production Patterns

7 White Space Strategy, European Recycling Survey

8 DS Smith, About us

9 FEFCO, Corrugated Life Cycle Analysis (LCA)

1.4 The benefit of a 90% paper & cardboard packaging recycling rate

A large number of manufacturers, producers, designers, brand owners, researchers and recyclers joined a Cepi launched alliance; the 4evergreen Alliance aims to contribute to "a climate-neutral society by perfecting the circularity and sustainability" of fibre-based packaging[10]. 4evergreen's goal is "to reach a 90% recycling rate" for fibre-based packaging by 2030[10], to improve the quantity and quality of recycled paper products. This is to be achieved through recommendations and guidance on improving the recyclability of paper and cardboard packaging, as well as promoting source segregation of materials for recycling. DS Smith supports this ambition and believes this is a target that we must all strive for across Europe.

Our modelling shows that by hitting a recycling rate of 90% across Europe by 2030 we can save 5 million tonnes annually, with a value of almost €1bn, from ending up landfilled or incinerated.

Reaching the 90% target is critical. It allows us to conserve natural resources by providing more of the high-quality input material that is needed to make sustainable packaging products. Anticipated increases in consumption and the corresponding demand for packaging will make it crucial to keep fibre within the closed-loop recycling system. This will ensure we have enough fibre to satisfy the escalating packaging needs. In order to achieve high quality paper and cardboard for recycling, it is a shared industry view that source segregation needs to be in place. Paper and cardboard packaging from commingled sources have double the contamination rate compared to source segregated materials[11], and the higher the quality of recycled fibre that is available, the more efficient the recycling process becomes. This means less energy and natural resources are required to manufacture paper packaging and the costs for all, including consumers, are reduced. This conservation of energy and resource will become increasingly important as consumption continues to grow and resources become increasingly scarce.

10 4Evergreen, About 4Evergreen

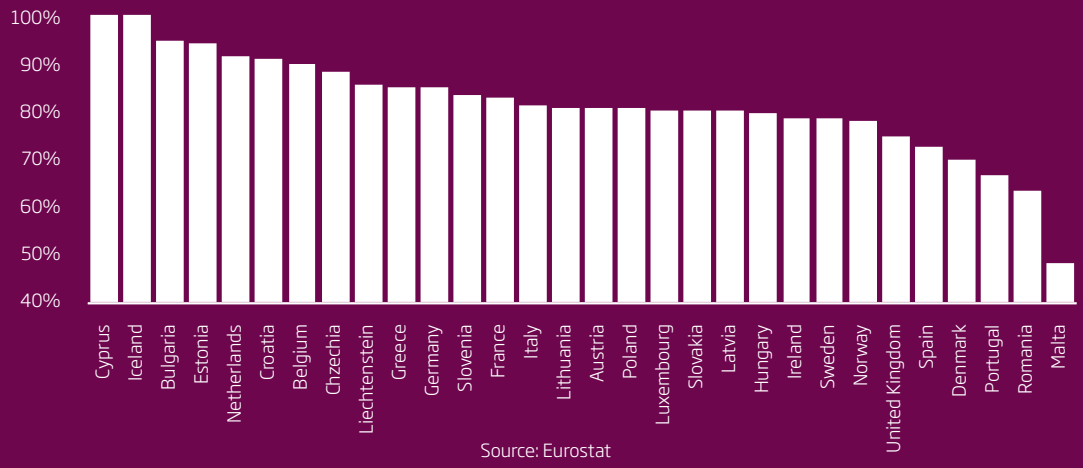
11 DS Smith, DS Smith on Shaping Policy and Source Segregation in Recycling

Chapter 2: Paper and cardboard packaging recycling at national levels

2.1 Recycling rates - A differing national perspective

Despite the historic success of paper and cardboard packaging recycling, there is plenty of room for improvement. Although the average paper and cardboard packaging recycling rate across Europe is 82%, there is significant variation between countries. Some nations have already achieved recycling rates above 90%, while others, such as Romania and Portugal, lag behind with rates below 70%. The lowest recycling rate in Europe is in Malta, where only 48% of paper and cardboard packaging is recycled.

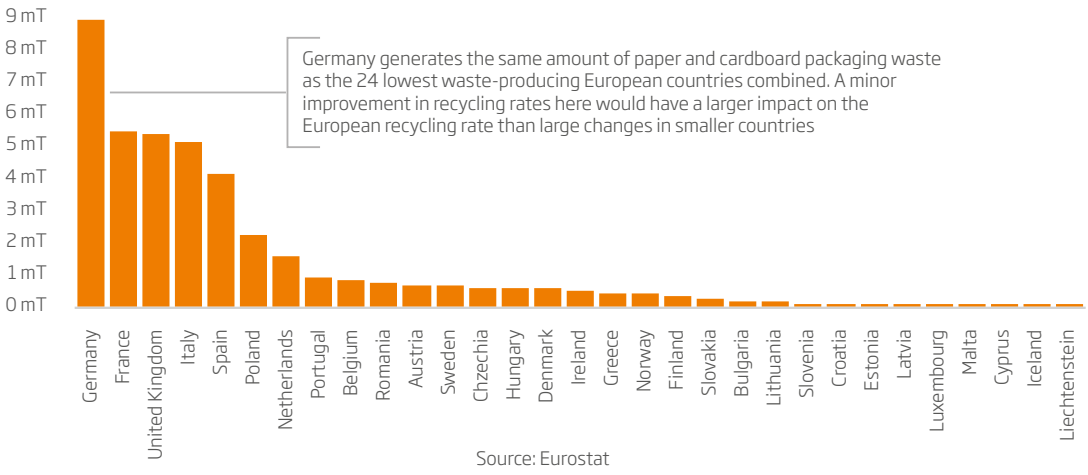
Figure 7: Paper and cardboard packaging recycling rate 2020 (%)



Source: Eurostat

To reach a recycling rate of 90%, we will need to focus on countries with low recycling rates. However, the biggest overall impact will be achieved by making significant improvements in the countries that generate the most packaging material for recycling. The largest generator, Germany, produces more than x10 the amount of material as their neighbours in Denmark or Austria. In fact, Germany produces as much paper and cardboard packaging material as the 24 least waste-producing countries combined.

Figure 8: Paper and cardboard packaging waste generated in Europe, 2020



Source: Eurostat

Where 2020 data is not available, most recent data is used

Although a 1% increase in the German rate has the same impact on the European average as a 12% increase in the Romanian rate, it's important to focus on improvements across Europe. Spain and the UK are both major packaging waste generators yet have significantly lower paper and cardboard packaging recycling rates (lower than 75%) than other large economies such as Germany, France, and Italy.

The top performing European countries have many things in common and while all these countries have not adopted identical structures and systems, they do share a more progressive approach to waste prevention and recycling policy. Typically, when it comes to recycling rates, high performing countries will be characterised by widespread source segregation for households, successful Deposit Return Schemes (DRS) on certain packaging and bans on specific materials ending in landfill or incineration.

2.2 The importance of data quality

While we can look at the overall trend for paper recycling across Europe in the last few decades, more detailed analysis can be challenging as it is hampered by the quality of the data. Different European countries have previously collected the data using a range of methods of varying accuracy, making detailed comparisons between countries difficult. Over the last few years significant efforts have been made to improve the consistency of the data, and it is important that these efforts continue.

Being able to compare the performance of different countries and regions against each other is vital going forwards, as it allows us to understand where to prioritise our efforts and where to look for inspiration on how to improve. This has been noted by the European Commission[12] as an important measure to improve on for their Member States as part of an assessment of progress against recycling targets.

In addition, through roll out of EPR and modulated fee systems for packaging, producers paying into such schemes are likely to demand improved data granularity to demonstrate the recyclability performance of their packaging. This can only be a benefit to the overall system in delivery of greater understanding of packaging end-of-life, allowing for a more targeted approach on improving recyclability.

"Currently, reporting of waste recycling rates from EU member states does not seem to be fully reliable so the reported numbers should be used with adequate caution. Having good data reporting is crucial in understanding where we actually are, and based upon reliable information we can define future undertakings."

Dinko Sincic, Waste Management Expert

2.3 The focus on consumer waste

In many European countries, the recycling system for commercial applications is already well-established and successful. Businesses understand the value of the material and are sufficiently incentivised to sort and recycle their waste through commercial relationships. The European Environment Agency explained how "packaging waste from commercial sources is 'easier' to recycle because it contains larger and cleaner streams than municipal waste"[13]. A 2020 WRAP study suggested that in the UK, 85% of non-consumer paper and cardboard packaging is recycled compared to only 68% of consumer waste.[14]

If we are to prevent 5 million tonnes of paper and cardboard packaging from ending up in landfill or incineration every year by 2030, the big challenge is with consumer waste generated in households and 'on-the-go' in our daily lives.

12 European Commission, Report from the European Commission on Member States Missing Re-use, Recycling and Landfill Targets

13 European Environment Agency, 2019, Waste recycling indicator assessment

14 WRAP, 2020, PackFlow Covi-19 Phase I: Paper & Card

Chapter 3: The role of the consumer

3.1 Consumers are confused when it comes to recycling at home

Some consumers are asked to separate certain materials out for recycling, other consumers aren't. In some places you can recycle beverage cartons, in others you cannot. In Germany, the blue bin is for paper, and the yellow bin is for lightweight packaging – in Belgium it's the opposite. In parts of the UK and France consumers are asked to put all their recyclables in one bin. Labelling is not consistent and clear either, and often doesn't instruct the consumer on how to recycle, particularly for items which are inconsistently recycled at the home. These are just some of the contradictions facing consumers when they recycle. To make matters more confusing, in some countries the rules around recycling can differ by region and city.

Nearly a quarter (24%) of people across Europe are confused about what waste they can and cannot recycle

3.2 It's harder to recycle on-the-go

Whilst on-the-go packaging accounts for only a small proportion of the overall paper and cardboard packaging waste volumes, it is particularly visible to the public. Addressing the challenges associated with on-the-go packaging waste therefore also provides a broader benefit, as it shapes overall public perceptions of recycling.

Whilst there hasn't been a significant amount of research into on-the-go recycling, our survey showed that on-the-go recycling rates are likely to be much lower than household recycling rates. Responses from across 8 European countries suggested that only 32% of people say that they dispose of on-the-go paper and cardboard packaging in a dedicated paper and cardboard recycling bin. The primary frustration amongst the public is the low availability of paper and cardboard recycling bins; over 50% of the time this is cited as a reason for not recycling on-the-go paper and cardboard packaging.

"On-the-go is definitely the lowest quality recycling stream. It is only responsible for a small percentage of all the paper packaging that's collected, but it's too easy in cities for everything to just be put in one bin."

Mike Harrison,
Recycling South Region Managing Director, DS Smith

Only 32% of Europeans dispose of on-the-go paper and cardboard packaging in a dedicated paper and cardboard recycling bin

Despite its relatively small contribution to the overall waste stream, addressing on-the-go packaging waste can have secondary impacts beyond just increasing recycling rates for this stream:

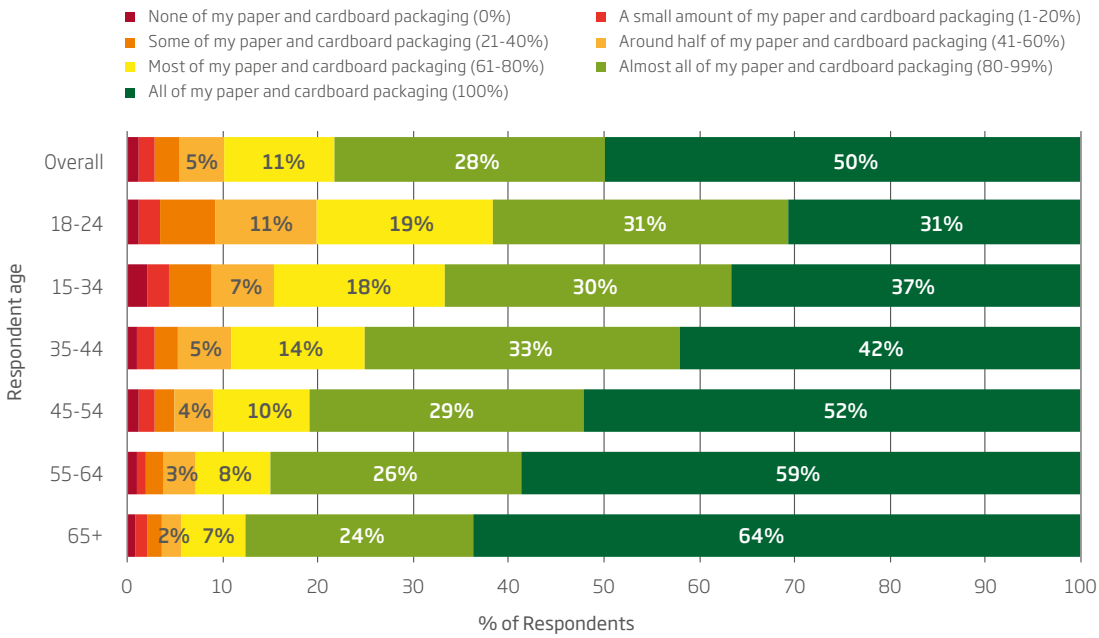
- The presence of a clearly visible on-the-go recycling infrastructure which mirrors how consumers recycle in their home could be significant. If materials were collected in separate recycling bins both at home and on-the-go, especially if consistent colour coding of bins were applied, this would promote public confidence in the recycling system and reinforce the belief that recycling efforts truly make a difference in both scenarios.
- Embedding recycling into people's daily surroundings provides an additional opportunity to increase understanding of how to recycle. Separate bins with clear signs and labelling encourage individuals to recycle correctly while outside of their home, enabling them to get used to recycling in the same way in their homes.

3.3 A generational difference

Our survey indicates that the level of paper and cardboard packaging recycling amongst the younger generations is considerably lower than for older generations.

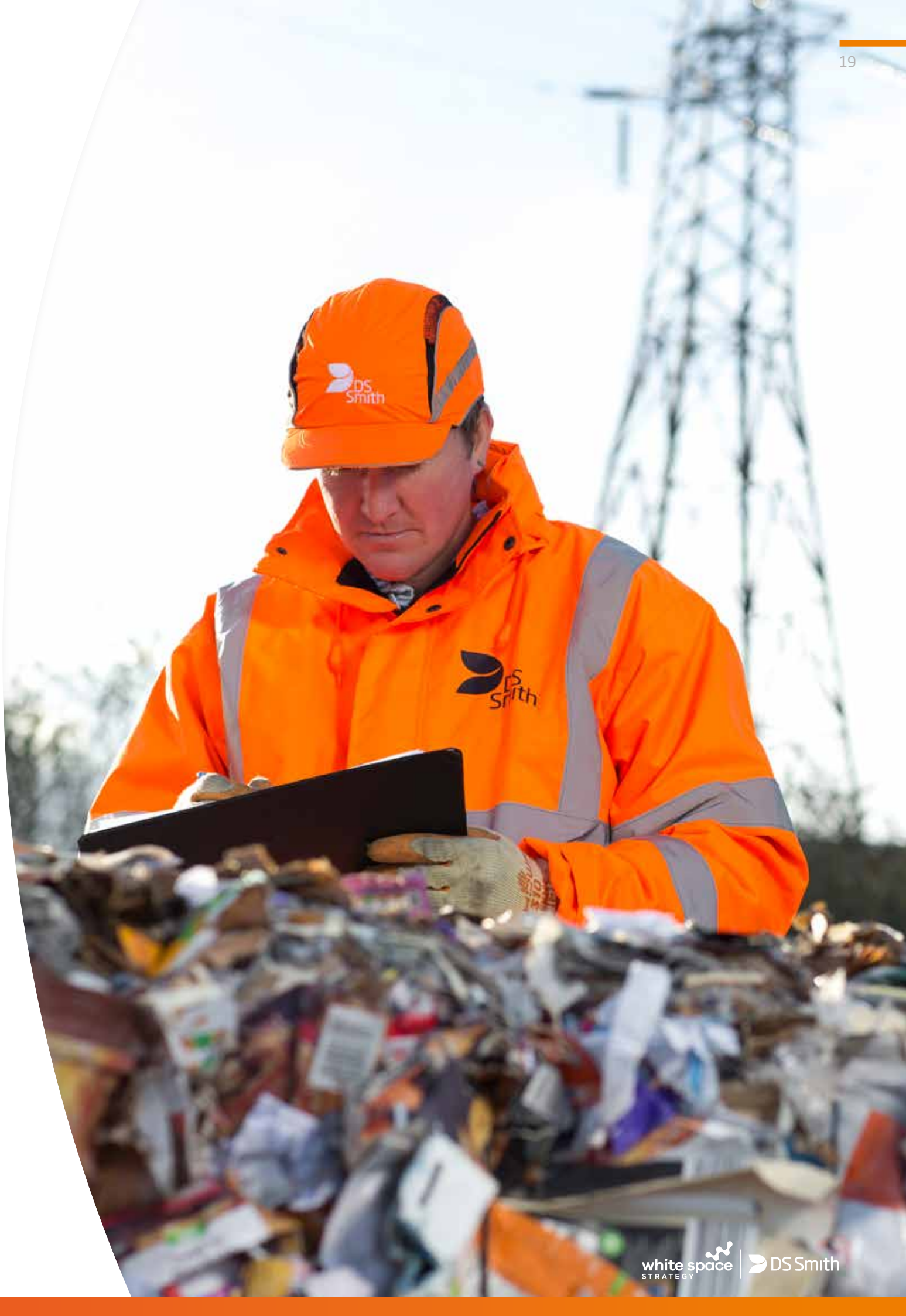
88% of 65+ year olds recycle almost all or all their paper and cardboard packaging, compared to only 62% of 18–24-year-olds.

Figure 9: How much of your household paper and cardboard packaging do you recycle? (selected European countries)



Source: White Space Strategy, European Recycling Survey

This difference in recycling rate is observed despite there being a similar motivation to recycle across all age groups; 84% of 18–24-year-olds believe recycling is important for a sustainable future compared to an average of 91% across all age groups[7]. There are likely to be several factors influencing the recycling rate of younger people, such as where they live and the type of housing. One finding that could explain some of the discrepancy is that younger people are more confused about how to recycle; 18–24-year-olds are twice as likely to be confused about how and where to recycle compared to those 65+ years (31% vs 15%)[7].


DS Smith
DS Smith

Chapter 4: Legislative frameworks

4.1 Policy context – a framework open to fragmentation

Policy has a key role to play, with European recycling and waste management legislation set by a range of EU directives, of which the Waste Framework Directive is the original and overarching legislative act. When it was implemented, this directive set basic waste management principles and recycling targets for member countries, as well as introduced the concept of Extended Producer Responsibility (EPR). Despite this legislation, the European Commission admitted that inefficient waste-collection systems are partly responsible for 'low recycling rates, as well as lower quality recyclates[15]' and the Commission is working on a targeted revision.[16]

Currently, the most applicable directive for paper and cardboard packaging is the Packaging and Packaging Waste Directive (PPWD). This directive states that it is aiming to 'harmonise national measures on packaging and the management of packaging waste', and 'provide a high level of environmental protection'[17]. Following amendments in 2018, the directive encourages greater use of DRS and states that by 2024, all EU countries should have EPR schemes in place. Critically, the directive also sets minimum recycling targets for paper and cardboard packaging of 75% by 2025 and 85% by 2030.[18] In November 2022 a proposal was tabled to update this directive, and this took the form of a regulation (rather than a directive), "aiming to ensure that all Member States fulfil their obligations at the same time and in the same way".[19]

15 European Commission, Waste Framework Directive Revision

16 European Commission, Waste Framework Directive

17 European Commission, Packaging Waste

18 European Commission, Packaging and Packaging Waste Directive

19 European Parliament, Revision of Packaging and Packaging Waste Directive

EU Rules on Packaging and Packaging Waste

Objectives

The PPWD aims to

- harmonise national measures on packaging and the management of packaging waste
- provide a high level of environmental protection
- ensure the good functioning of the internal market

The latest amendment to the Directive contains updated measures to

- prevent the production of packaging waste, and
- promote the reuse, recycling, and other forms of recovering of packaging waste, instead of its final disposal

Among other rules, by end of 2024, EU countries should ensure that producer responsibility schemes are established for all packaging. The Directive also sets the following specific targets for recycling.

	Current targets (%)	By 2025 (%)	By 2030 (%)
All packaging	55	65	70
Paper and cardboard	60	75	85

Source: European Commission website, accessed June 2023

For most countries, their current legislative focus is the establishment of DRS and EPR schemes, with a number currently being discussed. DRS and EPR schemes are perceived as key enablers of change for recycling systems because they allow investment budgets to be built based on long-term income security which is unlikely to be affected by changes in the political leadership of national governments.

Whilst there are already well-established EPR schemes in countries such as Germany, France, and Spain which have been successful in improving recycling rates in the country, other countries are still grappling with providing the clarity needed for producers, recyclers, and consumers. A report by The Recycling Partnership investigating the impact of EPR on recycling rates around the world found that "across the board – EPR implementation drove the collection and recycling of target materials to over 75% in British Columbia, Belgium, Spain, South Korea, and the Netherlands."[20]

20 The Recycling Partnership, Increasing Recycling Rates with EPR Policy

4.2 Packaging and Packaging Waste Regulation Reforms

Future legislative activity in this area is expected to be based on the Packaging and Packaging Waste Regulation (PPWR) to replace the existing PPWD. As a result of preliminary indications that member states are likely to miss the recycling targets set out in the previous directive, binding regulation with an extended scope has been proposed. This regulation would include measures that must be directly applied across the EU, and could include[21]

- Targets that all packaging must be designed for recycling by 2030
- Mandatory EPR schemes in all member states
- Harmonised labelling across the EU
- Mandatory reuse targets for certain materials[22]

"We support the aims of the Green Deal and the new legislation, but amendments that mandate reuse targets for paper & cardboard would compromise the EU corrugated cardboard industry, embed a plastic economy into the market, and hold us back on climate change."

Alex Manisty,
Group Head of Strategy & Innovation, DS Smith

The mandatory reuse targets risk a flood of new plastic packaging, with an independent peer-reviewed analysis commissioned by FEFCO showing that they would "increase the amount of plastic packaging in circulation and establish a plastic monopoly on some market segments[20]".

The PPWR could be implemented in 2025 at the earliest and the details are likely to set the agenda for the future of European packaging recycling.

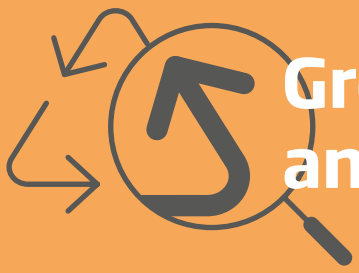
21 European Commission, Revision of Packaging and Packaging Waste

22 DS Smith, New EU Rules - PPWR

Chapter 5:
Four recommendations for improving Europe's lagging paper and cardboard packaging recycling rates

Source segregation

Consistent collections at a national level



Greater clarity on *what* and *how* to recycle

Long-lasting, consistent, and enforced recycling legislation

5.1 Source segregation

There is strong agreement within the industry that the segregation of paper and cardboard waste from other materials at the point of disposal is the single most beneficial action to improve recycling rates, and we have seen examples across Europe where this has been a key driver in improving recycling rates.

"In our mills, we can see that sorted paper and card from commingled sources has double the contamination rate compared to source segregated feedstock. A source segregated system would improve the quality of waste streams and achieve higher recycling rates, therefore preventing a loss of valuable raw material."

Jonathan Edmunds, Head of Recyclability, Sustainability & Government Affairs – Recycling, DS Smith

Germany: Embedding source segregation

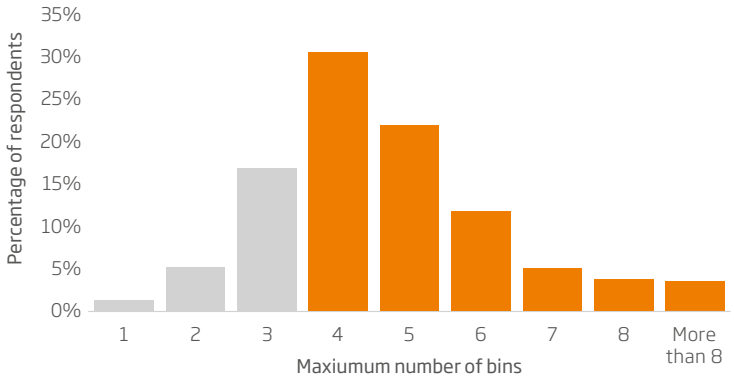
Germany's recycling system is often hailed as a highlight of good recycling practices due to its source segregated approach that has been consistent for over 30 years. A key element of its success is the well-educated public who benefit from the unmistakable 'Green Dot' packaging labels. This clarity, combined with financial incentives and penalties for non-compliance, motivates the public to correctly separate their waste. As a result, Germany boasts impressive paper and cardboard packaging recycling rates.

Implementing source segregation is challenging for many countries due to issues around infrastructure financing and consumer ease-of-use. Waste collection organisations will need support for the transition. This involves investing in new bins, adjusting collection routines, and possibly new vehicles. A barrier in some nations is the long-term contracts local authorities hold with waste companies, sometimes for up to 25 years. Using legislation to modify or end these contracts is a potential solution. It's crucial to allocate budgets for this change, emphasising the economic advantages of higher-quality recyclable paper. Increased enforcement and adoption of EPR schemes can provide the necessary funding for these new systems.

For consumers, the recycling process should be simple. Evidence suggests that the majority seem ready for change: over 75% of survey respondents were willing to sort waste into at least four bins.

In countries where commingled collections are present there is a lower willingness to sort waste into 4 or more bins, as seen in UK and France. By contrast, willingness to sort waste into multiple bins is particularly strong where source segregation is encouraged or mandated across most of the country, showing that – once introduced – consumers accept the new system and are willing to separate their recycling into multiple bins.

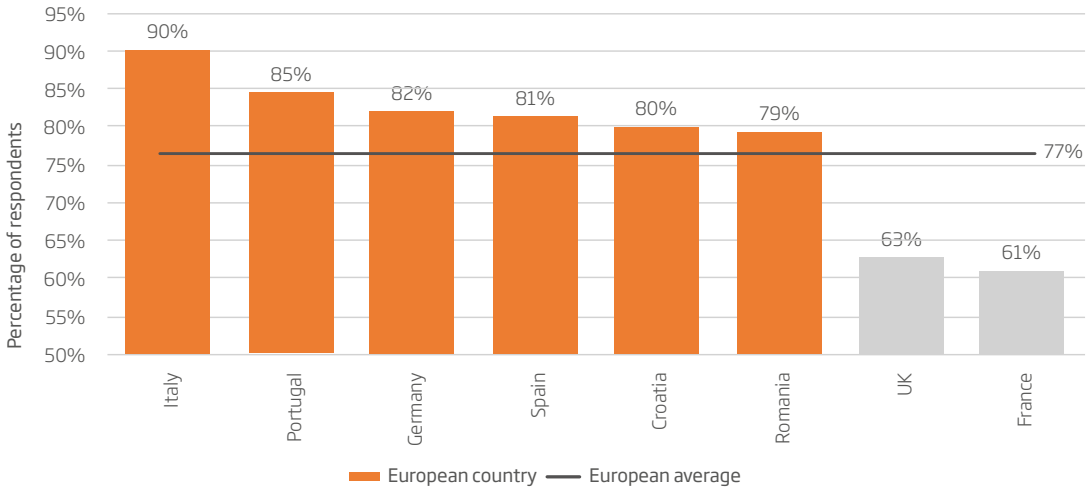
Figure 10: If sorting your household waste into separate bins resulted in more waste being recycled, what is the maximum number of different bins you would be willing to sort your waste into?



Source: White Space Strategy, European Recycling Survey

Over 75% of Europeans would be willing to sort their waste into 4 or more bins

Figure 11: Percentage of survey respondents willing to sort their waste into 4 or more bins (by country)



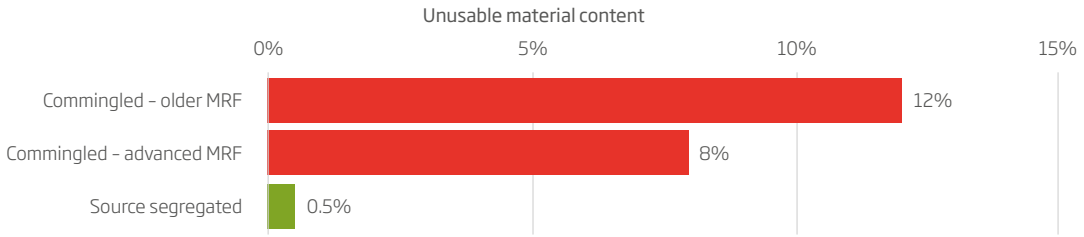
Source: White Space Strategy, European Recycling Survey

The UK and France lag other European countries in their willingness to source segregate, but vast majority still support it

5.1.1 The problem with commingling

Recycling systems which include the collection of different materials together (commingled) negatively impact the quality of paper and cardboard packaging available for recycling, and consequently reduce the amount of material that can practically be made into new paper products. This also creates an additional step in the recycling process – sorting, which increases the costs and energy used in the recycling process. Commingled material needs to be sorted to separate the recyclable materials and direct them towards the correct recycling facilities. The risk of contamination is high, as is the likelihood that recyclable material becomes too contaminated and is rejected either before being sorted, or afterward. Paper and cardboard can be contaminated by metal, plastic, food, and other materials, and it's not always economically viable to install sorting technology that has the capability to consistently remove all contaminants, especially plastics. With policy reforms suggesting collection of plastic film and flexibles from households may come into force in the coming years, this presents a significant contamination risk to paper and cardboard recycling streams, and further strengthens the need for source segregation.

Figure 12: Impact of commingled recycling collection on proportion of unusable material for paper-making



Figures from "Analysis of the quality of the recovered paper from commingled collection systems - Miranda, Monte, Blanco, 2013"

Source: Miranda, Monte, Blanco

Even after sorting, commingled sources commonly have much higher contamination levels, or non-fibre contents, which will be rejected from the pulper at the paper mill. Lower quality input material to paper mills increases the likelihood that recyclable paper and cardboard fibres may end up in landfill or incineration, as good fibres can attach themselves to plastic and other non-fibre items, and subsequently are taken out with other rejects. The result of this is more natural resources and energy being needed to replace this paper, negatively impacting circular economy efforts.

France: The effect of commingled collection on quality recycling

In France, national guidance has introduced a national collection system based on one commingled recycling bin. Whilst this may make it easier for consumers to use the system, significant issues have arisen as a result, outweighing any positive impacts.

Since the introduction of the system, waste management companies are facing major difficulties with contaminated waste and lower-quality materials. Furthermore, there are questions on how this system will comply with EU policy mandating source segregation so there are renewed requests to backtrack on this policy and instead focus on national implementation of a source segregated system.

"The yellow bin was initially promoted as a means of simplifying the recycling process for households. However, following complaints from paper producers about the quality of fibre they were receiving as a result of the new bins, EPR organisations have already started to backtrack on their original advice."

Nicolas Pont, Former Director of Ecodesign and Recycling, Veolia France

5.1.2 Improving source segregation for on-the-go recycling

Tackling the challenges of source segregation for the on-the-go segment is likely to require similar steps, but the focus needs to be on ensuring there are consistently enough public bins available for paper and cardboard packaging recycling. Over two-thirds of individuals believe that the current availability of recycling bins for paper and cardboard in public spaces is insufficient, which in turn drives down the recycling rate in this segment.

Whilst overall, on-the-go infrastructure is deemed insufficient, there are some examples within the EU where good source segregated recycling systems in public places have been installed. There is evidence (as pictured) of clearly labelled and differentiated segregated bins in Italian, Dutch and Belgian train stations. This is exactly the type of infrastructure that needs to be installed in public spaces across Europe. Matching colour coding of bins to on-pack recycling labels, and household recycling bins, would further maximise the harmonisation of recycling systems and make it easier for consumers to recycle effectively. Whilst investment in public bins may seem to be a lower priority compared to the scale of household collection, providing easily accessible bins for paper and cardboard waste disposal sends a clear message that recycling is an important activity. By doing so, we can instil a sense of confidence in individuals that their efforts in recycling are meaningful and contribute to a sustainable future.

Bins at Milan Central Train Station

69% of survey respondents believe that there are not enough recycling bins in public spaces for paper and cardboard packaging

5.2 Consistent collection at a national level

Where recycling collection methods vary within a country, such as from one local authority to the next, it is impossible to provide consistent national messaging about which materials go in which bin. Alongside existing and well-functioning community recycling services, such as retailer take-back schemes and civic recycling centres, having a consistent number of bins for residents combined with a uniform set of rules on what material should be placed in each bin should be at the crux of national recycling systems. This is a key enabling action that allows communication to the public to be clear and consistent at a national level – particularly important for public information campaigns and product labelling.

The system implemented in Welsh households in the UK is often heralded as a good example of a well-functioning collection system that is consistent across most local authorities and is reflected in their higher household recycling rate compared to the rest of the UK. In 2020, the recycling rate for all waste from Welsh households was over 10 percentage points higher than the English equivalent, sitting at 56.5% compared to 44.0%[23]. The Welsh government is currently looking to extend this even further with a consultation that includes plans to see source segregation mandated to business and public organisations as well.

Additionally, demographic and geographic variation within a country generates further difficulties with national systems. In particular, the economic and environmental case for regular, segregated waste collection within rural areas is much harder to make compared to urban collection. There will inevitably be a trade-off between consistent recycling and cost – areas of higher population density tend to drive more profitable recycling operations compared to sparsely populated rural areas. Consequently, governments need to take a holistic, national view of recycling systems. As part of EPR schemes, producers will also expect their packaging to be recycled wherever it ends

"There is so much confusion on how to separate your waste when there isn't any consistency in how waste is collected across a country. People don't know where they should be disposing of all materials and as a result, more recyclable material ends up in general waste."

Michael Orye, Managing Director – Recycling, DS Smith

23 Welsh Government, Why is Wales an outlier in UK recycling rates?

One of the reasons suggested for the success in Wales is the allocation of a centralised budget which was ring-fenced to implement that system.

up, not just where it makes economic sense for local authorities to implement, so will require sufficient collection and recycling infrastructure throughout the country.

5.2.1 Inconsistency in on-the-go systems

The problems faced because of inconsistent household collection are mirrored in the on-the-go segment and can often be even more acute. The lack of uniformity in the quantity, types, and colours of recycling bins within a specific area, let alone across a country and continent, lead to confusion amongst consumers about how to dispose of paper and cardboard packaging correctly. Complicating matters, on-the-go packaging is typically more complex, used for food or beverage items, and often lacks clear labelling instructions. Consequently, consumers are left uncertain about how to dispose of such packaging, leading to a significant increase in the use of general waste bins for paper and cardboard packaging that could otherwise be recycled.

Whilst we should strive to achieve a segregated recycling system consistent across Europe, there are challenges which still need to be solved and this isn't expected to become a reality by 2030. Therefore, whilst the chosen approach is likely to vary between countries, enforcing a consistent collection approach at a national level by 2030 would provide a huge improvement.

> **"It's common sense, they've got people who are passionate about it, it's got government backing and is consistent. They've ring-fenced money for it and have a clear vision of what they want to achieve. It is much easier to control a consistent system in a smaller country such as Wales compared to other larger European nations."**
>
> David Palmer-Jones OBE, Former Group Vice President Recycling & Recovery Northern Europe, SUEZ

5.3 Greater clarity on what and how to recycle

A consistent collection system that allows for consistent recycling instructions on packaging labels will help overcome a frequent point of confusion and significant barrier to recycling for consumers. To maximise the benefits of a consistent, segregated recycling collection, it's important that the public are well-informed so they can correctly follow recycling guidance. There are three main elements to an effective approach to recycling education:

- An understanding of the principles of how recycling works.
- An understanding of the benefits of recycling.
- What to recycle, and how to recycle properly – labelling and information that helps consumers know what to put in each bin.

5.3.1 An understanding of the principles of how recycling works

To build relevant educational campaigns and guidance, it is important that the public have a base layer of understanding of what 'recycling' means and how the system works. This is likely to be best addressed within schools in the first instance – incorporating sustainability, the environment and recycling into curriculums Europe-wide could help raise a whole generation with a solid grounding on the principles of recycling.

Legislation has a key role to play in raising the education levels and awareness of recycling within a country. Through ring-fencing money for public recycling education campaigns and ensuring rules are accompanied by financial penalties or incentivisation, legislation can help develop a country of well-informed individuals who are motivated to recycle. This is most apparent in Germany, where policy has led to direct investment in education and where rules are enforced through fines. These two factors are cited as the key reasons behind the high recycling rate in Germany.

In 2023, the public generally feel well-educated on the basics of what recycling is and how it works in most of Europe, however in some of the worst-performing countries, there is plenty of room to improve the public's awareness of recycling. Television, newspapers, and online media are the primary channels through which consumers obtain information on recycling, with 70%[7] of survey respondents claiming to have seen information about recycling in one of these places.

Including recycling in the school curriculum is the key action to develop a strong recycling culture within the next generation. In Germany, where recycling topics have been included in the school curriculum since the 1980s,[24] the general population is well-informed and motivated to recycle, translating into high recycling rates in the country. Across Europe the public also believe it is the responsibility of schools to provide recycling education, with 89% of survey respondents believing that recycling should be taught as part of the school curriculum.

89% of survey respondents believe schools should teach children about recycling

24 Lee et al., International Journal of Sustainable Development & World Ecology, Comparison of Waste Education Across Five Europe Cities

5.3.2 An understanding of the benefits of recycling

Building upon the fundamentals of what recycling means, consumers need to be confident in understanding what the benefits of recycling are. Public education focused on the positive benefits of recycling can provide additional motivation for consumers to recycle. In addition, this education can help shift the perception of paper and cardboard packaging amongst consumers from being 'waste' to a 'product of value', which in itself may help encourage further recycling efforts.

The form of this message can vary depending on the level of their current understanding. For countries with a lower level of base understanding, direct engagement 'on the ground' with members of the public is found to have the greatest impact. More informed nations don't require more direct education but recurring, 'low-touch' education (such as yearly leaflets or TV campaigns) is important to retain higher recycling rates. In the UK, when authorities have stripped back their education spend, there has been a noticeable drop in recycling rates.

"Education promotion is massively important, but with austerity one of the first things to get cut is recycling education, on the ground education can be expensive and time-consuming. What I saw was that over time when we didn't do any communication with the public, we saw a gradual decline in the recycling rate. It's a short-term financial gain but long-term we're worse off."

Gareth Rollings, Head of Waste, West Sussex County Council

5.3.3 What to recycle, and how to recycle properly

The public needs to understand how to recycle effectively. In a practical sense, this means understanding how to dispose of different types of packaging appropriately in each country. This is a common stumbling block for several otherwise well-informed countries, where the public feel confused by how to recycle and find recycling advice on packaging labels unclear or absent. Almost ¼ of our survey respondents are confused about what they can and cannot recycle.

> **"In Southern Italy, there are massive improvements to make, but this can't be achieved through a 15-second TV advert. You need people on the ground really educating the public on how they should dispose of their cardboard."**
>
> Edoardo Bodo, Environment Policy Officer, RREUSE

Figure 13: Public confusion with recycling systems

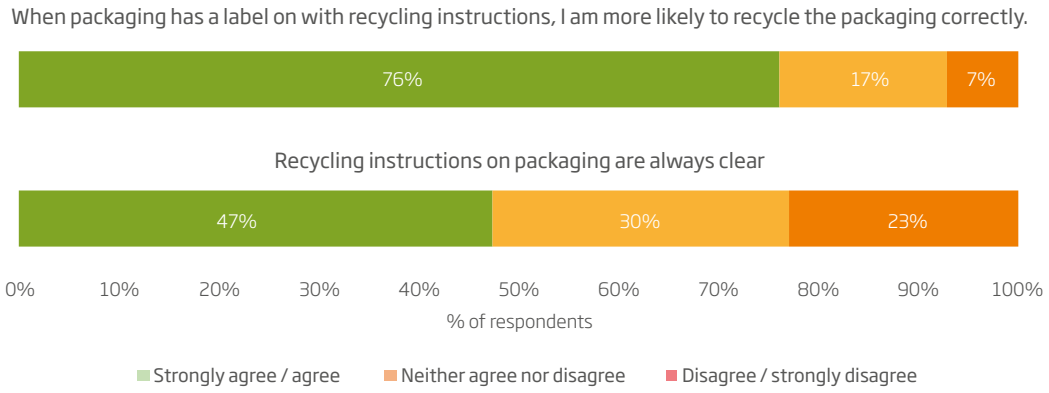
How much do you agree with the following statement: (selected European countries)

Source: White Space Strategy, European Recycling Survey

There are numerous different labelling systems in use across European packaging which often bear no relation to local recycling infrastructure, leaving the public unsure of how they should dispose of the packaging. Our survey confirmed that consumers are much more likely to recycle packaging with clear labelling, but many don't always find the current labelling clear.

Figure 14: Packaging recycling instructions

How much do you agree with the following statement: (selected European countries)



Source: White Space Strategy, European Recycling Survey

Whilst the volume and medium of education varies between countries, all countries (no matter the current education level and recycling rates) will need to protect budget for educational activity to maintain the public's understanding of recycling and improve recycling rates.

"Packaging labelling needs to be clearer. If the proposed PPWR was to go through, this could have a big impact on the quality of paper packaging recycled. Having a uniform label on every single item of packaging throughout the EU, saying which bin you should dispose of your waste in, with corresponding labels on bins would represent a great stride towards improved recycling quality."

Susana Braz, Head of Government Affairs, DS Smith

5.4 Long-lasting, consistent, and enforced recycling legislation

Clear legislation which provides rules and guidelines for recycling systems sets a minimum standard for all stakeholders within a country's recycling system. The expectations set by having this minimum standard in place are key to enabling the changes required to increase the European paper and cardboard packaging recycling rate. To realise real-life improvements, this legislation needs to be long-lasting, consistent, and well-enforced. It will impact what recycling looks like in 2030 and beyond.

To encourage investment in the recycling supply chain, legislation needs to include long-term commitments and targets to inspire confidence and encourage investment budgets to be allocated in line with targets. This should help overcome a key barrier for waste management companies. Waste management companies and operators of sorting facilities are wary of investing in new technologies, new sites and collection methods without the security of long-term commitments from legislators. This is particularly important given the volatile nature of the paper market, where cyclical pricing may undermine investment.

"You need clarity of what's going to happen in the future in good time, with the certainty that whatever legislation comes in isn't going to be ripped up by the next government. In the UK, there is such a short political mandate that there isn't long-term visibility over the infrastructure needed, which harms the progress of the system. Some Scandinavian countries depoliticise these decisions and are particularly good at enabling long-term change."

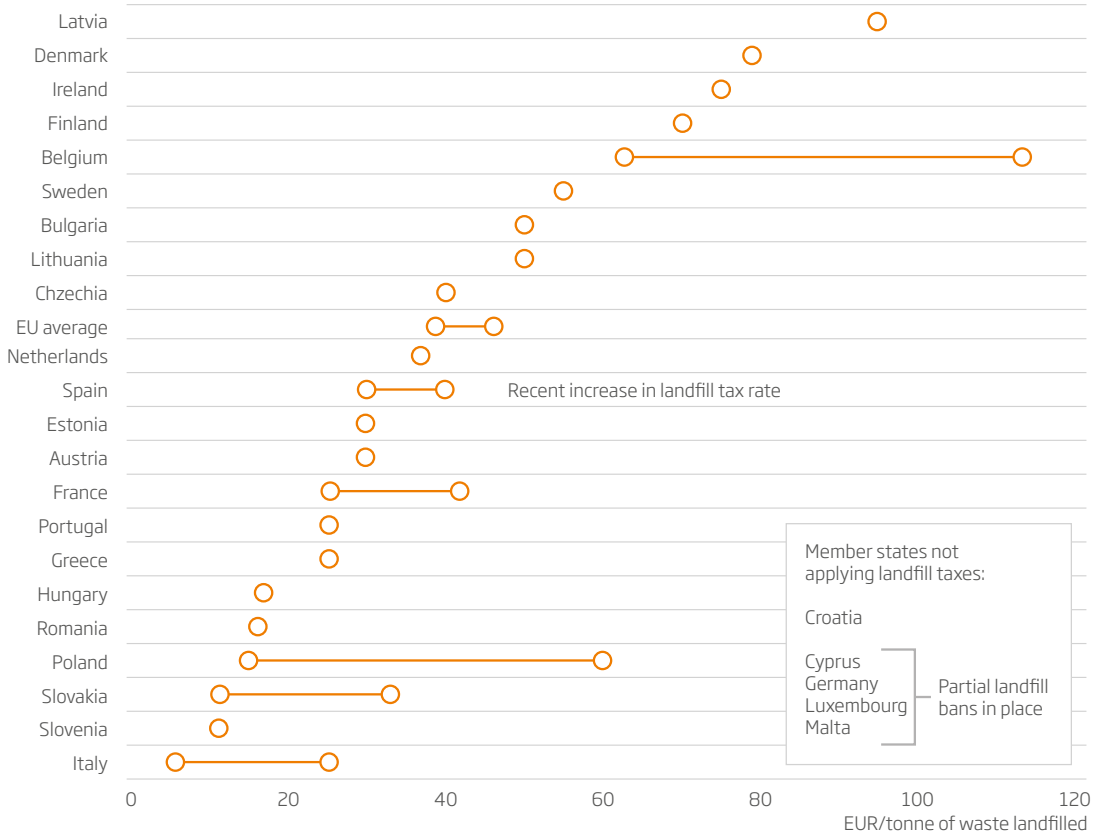
David Palmer-Jones OBE,
Former Group Vice President Recycling & Recovery Northern Europe, SUEZ

5.4.1 Landfill taxation and bans

Legislation needs to encourage waste management companies to prioritise recycling over landfill; landfill taxes and landfill bans are economic instruments which have been successfully used in some regions. The European Environment Agency identifies well-designed landfill taxes and bans as a key part of a good strategy to increase recycling rates. Its research states that the five EU Member States with the highest overall recycling rates – Germany, Austria, Slovenia, the Netherlands, and Luxembourg – all use a well-designed landfill tax or landfill ban, or a combination of these. Our research has also identified that in countries with low landfill tax rates, such as Portugal (€25/T) and Romania (€16/T), the financial disincentive is insufficient to prevent recyclable material from being disposed of in landfill.[25]

25 European Environment Agency, Key Strategies to Increase Recycling

Figure 15: Overview of taxes on the landfilling of municipal waste in EU Member States, 2023



Source: European Environment Agency

A broader uptake of landfill bans and raising the landfill tax rates across Europe would present larger financial barriers to landfilling, increasing the motivation for waste management companies to prioritise recycling. It is imperative that new bans and rates are introduced consistently within each country and that legislation sets out sufficient penalties for any breaches which are enforced.

Chapter 6:
Our vision for the future

DS Smith believes that 90% of paper and cardboard packaging in Europe can and should be recycled, a target that has been called for by the 4evergreen Alliance. This isn't just about achieving a benchmark. With the right approach, by 2030 we can protect an additional 5 million tonnes from landfill or incineration every year. By saving this amount of paper and cardboard packaging from landfill or incineration we could realise almost €1bn of value annually. This is money that could be put back into economies to support the recommendations we have identified in this report.

We recognise that this won't be easy. Since 2016, the recycling rate for paper and cardboard packaging in Europe has seen a decline. The current infrastructure is strained by the increasing consumption of paper and cardboard packaging. Moreover, many consumers feel unsure about the recycling process. Addressing this decline is crucial for resource optimization and waste reduction.

To navigate this challenge, this report has highlighted four key recommendations for enhancing Europe's paper and cardboard packaging recycling rates:

1. Implement source segregation

- Adopt nationwide collection methods focusing on household and on-the-go source segregation. This approach yields a higher calibre of recyclable materials and avoids mixed materials that compromise recycling quality.
- Prioritising segregation ensures maximum recyclability of items and lowers contamination risks.
- Moving to source segregation will require significant investment in collection infrastructure, particularly establishing a clear bin system in households and public spaces. EPR has a part to play in funding these changes to deliver an effective and high performing recycling system.
- A swift transition to this model will enable smoother planning in the waste management sector.
- Policymakers should not assume people won't participate – our research shows a vast majority are willing.

2. Deliver consistent collection at the national level

- A uniform collection system would allow for simplified public guidance, harmonised labelling, and consistent packaging design. This in turn would avoid public confusion and increase the quality and quantity of material being put back into the system.
- Currently, systems rely on a patchwork of local organisations with different assets and varying levels of investment that make it difficult to recycle consistently across areas.
- National agreements on a standard, source segregated recycling framework would allow the industry to adapt their models to work within this system.

3. Provide greater clarity on what and how to recycle

- Equip the public with concise information about the recycling process, including what can and cannot be recycled, reducing confusion and scepticism.
- By establishing a standardised, source segregated national recycling system, easy to understand educational materials can be more readily created for the public.
- Education will require investment, underpinned by consistent labelling of products, which will help the public to understand the benefits and practicalities of recycling, thus improving the quality of recycled materials.

4. Enforce long-lasting, consistent recycling legislation

- The introduction and enforcement of long-lasting, consistent recycling legislation is essential as it gives all stakeholders the confidence to invest for the future, knowing the rules and incentive structures in place.
- Legislation can often be slow-moving and politically influenced, but the introduction of incentives and penalties to drive desired behaviours can quickly affect change. In particular, accelerating landfill taxation, and bans on recyclable packaging entering landfill or incineration.
- Introducing legislation with broad political support that encourages investment for the future will unlock major improvements in paper and cardboard packaging recycling rates.

These recommendations are key if we are to save 5 million tonnes of paper and cardboard packaging, with a value of almost €1bn, from going to landfill or incineration every year by the time we reach 2030. This will require a collective effort from all stakeholders within the recycling ecosystem. This includes local and national governments, recycling organisations, packaging producers, and the public.

DS Smith is committed to being a proactive participant in this journey. We welcome the opportunity for collaboration, discussions, and initiatives that advance our shared objectives.

In committing to these steps, we're looking beyond meeting targets, but creating a more sustainable future for the next generation. Our collective effort will shape this vision.

Thank you to all those who have dedicated their time, knowledge, and resources to shape this white paper.


DS Smith
DS Smith

Bibliography

1 Eurostat, 2023, Packaging Waste by Waste Management Operations, https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_7595710/default/table?lang=en

2 Eurostat, 2021, Recycling - Secondary Material Price Indicator, https://ec.europa.eu/eurostat/statistics-explained/index.php?oldid=545971#:~:text=Secondary%20materials%20are%20waste%20materials%20that%20are%20recycled,million%20tonnes%29%20and%20their%20average%20monthly%20prices%20%28EUR%2Ftonne%29

3 European Environment Agency, 2023, Economic instruments and separate collection systems – Key strategies to increase recycling, https://www.eea.europa.eu/publications/economic-instruments-and-separate-collection/economic-instruments-and-separate-collection

4 Cepi, 2022, Cepi Position Paper on the Revision of the Packaging and Packaging Waste Directive, https://www.cepi.org/summary-cepi-views-on-the-revision-of-the-packaging-and-packaging-waste-directive/

5 European Commission, A European Green Deal, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

6 UN, Goal 12: Ensure Sustainable Consumption and Production Patterns, https://www.un.org/sustainabledevelopment/sustainable-consumption-production/

7 White Space Strategy, 2023, European Recycling Survey

8 DS Smith, About us, https://www.dssmith.com/company/our-company#:~:text=Our%20products%20can%20improve%20transport,year%20from%20being%20cut%20down.

9 FEFCO, 2021, Corrugated Life Cycle Analysis (LCA) , https://www.fefco.org/sites/default/files/documents/2022-07-07_FEFCO%20LCA%202021.pdf

10 4Evergreen, About 4Evergreen, https://4evergreenforum.eu/about/

11 DS Smith, 2023, DS Smith presents to government officials and industry experts on shaping policy and source segregation in recycling , https://www.dssmith.com/media/our-stories/2023/7/ds-smith-presents-to-government-minsters-and-industry-experts-on-shaping-policy-and-source-segregation-in-recycling

12 European Commission, 2023, Report from the Commission to the European Parliament, the Council, the European Economic and Cocal Committee and the Committee of the Region identifying Member States at risk of not meeting the 2025 preparing for re-use andrecycling target for municipal waste, the 2025 recycling target for packaging waste and the 2035 municipal waste landfilling reduction target, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023DC0304

13 European Environment Agency, 2019, Waste recycling indicator assessment, https://www.eea.europa.eu/data-and-maps/indicators/waste-recycling-1/assessment-1

14 WRAP, 2020, PackFlow Covi-19 Phase I: Paper & Card, https://wrap.org.uk/sites/default/files/2020-12/Packflow%20COVID-19%20Paper%20and%20Card%20Phase%20I%20FINAL%20v1.pdf

15 European Commission, 2022, Call for Evidence: Revision of the Waste Framework Directive, https://environment.ec.europa.eu/news/waste-framework-directive-revision-2022-02-14_en

16 European Commission, 2023, Waste Framework Directive, https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

17 European Commission, Packaging Waste, https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste_en

18 European Commission, 2018, Packaging and Packaging Waste Directive, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l21207

19 European Parliament, 2023, Revision of the Packaging and Packaging Waste Directive, https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/745707/EPRS_BRI(2023)745707_EN.pdf

20 The Recycling Partnership, 2023, Increasing Recycling Rates with EPR Policy, https://recyclingpartnership.org/eprreport/

21 European Commission, 2022, Proposal for a revision of EU legislation on Packaging and Packaging Waste, https://environment.ec.europa.eu/publications/proposal-packaging-and-packaging-waste_en

22 DS Smith, 2023, New EU rules risk flood of new plastic packaging and contradict years of progress to curb plastic, https://www.dssmith.com/media/our-stories/2023/6/new-eu-rules-risk-flood-of-new-plastic-packaging-and-contradict-years-of-progress-to-curb-plastic

23 Welsh Government, 2022, Why is Wales an outlier in UK recycling rates?, https://media.service.gov.wales/news/new-stats-why-is-wales-an-outlier-in-uk-recycling-rates

24 Lee et al., International Journal of Sustainable Development & World Ecology, 2021, A comparison of waste education in schools and colleges across five European cities , https://www.haw-hamburg.de/fileadmin/LS/FTZ-NK/PDF/A_comparison_of_waste_education_in_schools_and_colleges_across_five_European_cities.pdf

25 European Environment Agency , 2023, Economic instruments and separate collection systems – key strategies to increase recycling, https://www.eea.europa.eu/publications/economic-instruments-and-separate-collection/economic-instruments-and-separate-collection

Graphs/Charts

Figure 1: EU Paper & Card Packaging Generated (Tonnes), Eurostat, Packaging Waste by Waste Management Operations, 2023, https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_7595710/default/table?lang=en

Figure 2: How Much Paper & Cardboard Packaging is Not Recycled in Different Scenarios? (Tonnes), Eurostat, Packaging Waste by Waste Management Operations, 2024, https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_7595710/default/table?lang=en

Figure 3: EU Packaging Recycling Rates (2020), Eurostat, Recycling Rates for Packaging Waste, 2023, https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/table?lang=en

Figure 4: European Recycling (1991-2022), European Paper Recycling Council, Monitoring Report, 2022, https://www.cepi.org/wp-content/uploads/2023/09/EPRC-Monitoring-Report-2022_Final.pdf

Figure 5: European Paper and Cardboard Recycling Rate (%), Eurostat, Recycling Rates for Packaging Waste, 2024, https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/table?lang=en

Figure 6: What motivates you to recycle your household paper and cardboard packaging? (Selected European Countries), White Space Strategy, European Recycling Survey, 2023

Figure 7: European Paper and Cardboard Packaging Recycling Rate 2020 (%), Eurostat, Recycling Rates for Packaging Waste, 2023, https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/table?lang=en

Figure 8: Paper and Cardboard Packaging Waste Generated in Europe (2020), Eurostat, Packaging Waste by Waste Management Operations, 2023, https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_7595710/default/table?lang=en

Figure 9: How much of your household paper and cardboard packaging do you recycle? (Selected European Countries), White Space Strategy, European Recycling Survey, 2023

Figure 10: If sorting your household waste into separate bins resulted in more waste being recycled, what is the maximum number of different bins you would be willing to sort your waste into? (Selected European Countries), White Space Strategy, European Recycling Survey, 2023

Figure 11: Percentage of survey respondents willing to sort their waste into 4 or more bins (By Country), White Space Strategy, European Recycling Survey, 2023

Figure 12: Impact of Commingled Recycling Collection on Proportion of Unusable Material for Paper-Making, Ruben Miranda, M. Concepcion Monte, Angeles Blanco, Analysis of the quality of the recovered paper from commingled collection systems, 2013, https://www.sciencedirect.com/science/article/abs/pii/S0921344912002212#:~:text=The%20results%20show%20that%20the,compared%20to%20less%20than%201%25.

Figure 13: Public confusion with recycling systems, White Space Strategy, European Recycling Survey, 2023

Figure 14: Packaging recycling instructions? (Selected European Countries), White Space Strategy, European Recycling Survey, 2023

Figure 15: Overview of taxes on the landfilling of municipal waste in EU Member States, 2023, European Environment Agency, Key Strategies to Increase Recycling, 2023, https://www.eea.europa.eu/publications/economic-instruments-and-separate-collection/economic-instruments-and-separate-collection

About DS Smith

DS Smith is one of the leading global providers of corrugated cardboard packaging, as well as being active in recycling and paper manufacturing. The company plays a significant role in the value chain across various sectors, including e-commerce, FMCG, and industrial. With its mission to "Redefine Packaging for a Changing World" and its sustainability strategy "Now and Next," DS Smith is committed to inspiring the transition to a circular economy. It offers multiple circular solutions to its customers and society at large by replacing problematic plastic materials, eliminating carbon from supply chains, and providing innovative recycling solutions. The ambitious box-to-box model in 14 days, design capabilities, and innovation strategy lie at the heart of this commitment. Headquartered in London and listed on the FTSE 100, DS Smith operates in over 30 countries with approximately 30,000 employees. The company is a strategic partner of the Ellen MacArthur Foundation. The foundations of the company were laid in the 1940s when the Smith family started a business specialised in manufacturing boxes.

Contact

recycling@dssmith.com

About White Space Strategy

White Space Strategy are a global strategy consultancy based in the UK. We support clients by tackling their most strategic issues through primary research and data analysis. This includes everything from market analysis, opportunity identification, through to proposition development, partner identification and go to market strategy. We are recognised by the Financial Times as one of the UK's leading consultancies.

We believe that through understanding the viewpoint of customers, competitors and partners and analysis of market data we can distil the main challenges, answer the toughest questions, and shape the best strategy to tackle them. Our clients include Panasonic, Unilever, Mastercard, SSE, Centrica, Saint-Gobain, and DS Smith.

Whilst we work across many different industry sectors, we have built extensive experience in the recycling, packaging, manufacturing, and energy markets through working with senior leadership teams across the globe.

Contact

Oliver Lobo, Engagement Manager
info@whitespacestrategy.com

Methodology and Resource References

This report is based on evidence from across Europe, gathered through expert interviews and consumer surveys.

50 experts within the European recycling landscape were interviewed as part of this research, including:

- DS Smith stakeholders
- Leading waste management companies
- Policymakers
- NGOs
- Local authorities

Thank you to the following people for their contributions to this report:

Waste and Sustainable Development Goals Expert, **UN Environment Programme**

Senior Advisor, Environmental and Energy Policy, **Ministry of the Environment and Energy Security**

Head of Waste, **West Sussex County Council**

Policy Director, **European Recycling Industries' Confederation (EuRIC)**

Former Group Senior Executive Vice President Recycling and Recovery Northern Europe, **Suez**

Former Director of Ecodesign and Recycling, **Veolia**

Northern Area Manager, **Ecoembalajes Espana**

Environment Policy Officer, **RREUSE**

Managing Director, **PRO Europe**

Project Officer, **ZERO**

International Business Development Manager, **C.I.O.S.**

DS Smith contributors:

Head of Recyclability, Sustainability & Government Affairs

Managing Director - European Recycling

Head of Government Affairs

Government Affairs Specialist

UK Managing Director - Recycling

Southern Europe Managing Director

Central Europe Managing Director - Recycling

Italy Managing Director - Recycling

France General Manager - Recycling

Iberia Cluster Managing Director - Recycling

Croatia General Manager - Recycling

Romania General Manager - Recycling

Some interviewees requested to remain anonymous, but their views contributed to the overall narrative contained within this report and their contribution is much appreciated.

The consumer viewpoint was captured through 8 online surveys with members of the public in the following countries:

- Germany (n= 2,000)
- UK (n= 2,000)
- France (n = 1,000)
- Spain (n = 1,000)
- Italy (n = 1,000)
- Portugal (n = 1,000)
- Croatia (n = 1,000)
- Romania (n = 1,000)


Linde
Linde

DS Smith Plc
Level 3
1 Paddington Square
London
W2 1DL

+44 (0)20 7756 1800
@dssmithgroup
DS Smith
DS Smith
www.dssmith.com

White Space Strategy Ltd
102-104 St Aldates
Oxford
OX1 1BT

+44 (0)1865 793800
www.whitespacestrategy.com