



National Audit Office

Report

by the Comptroller
and Auditor General

**Department for Environment, Food & Rural Affairs and
Environment Agency**

The packaging recycling obligations

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National Audit Office

Department for Environment, Food & Rural Affairs and
Environment Agency

The packaging recycling obligations

Report by the Comptroller and Auditor General

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Commons in accordance with Section 9 of the Act

Sir Amyas Morse KCB
Comptroller and Auditor General
National Audit Office

18 July 2018

This report summarises our review of the packaging recycling obligation system as laid out by the Producer Responsibility (Packaging Waste) Regulations.

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Key facts

64%

reported proportion of UK packaging waste recycled in 2017 against a target of 55%

Unknown **1 of 4**

range of uncertainty in reported packaging recycling rates

High-risk exporters subject to a compliance visit in 2017, a lower proportion than low-risk companies

11 million

government's estimate of tonnes of packaging used by UK households and businesses in 2017

7,002

companies that registered as having packaging obligations across the UK in 2017

£73 million

amount raised by the system UK-wide to help fund recycling of packaging waste in 2017

Sixfold

increase in exports of packaging material for recycling abroad between 2002 and 2017, with exports accounting for half of the packaging reported as recycled in 2017

124

compliance visits to recyclers and exporters carried out by the Environment Agency in 2016-17, against a target of 346

3

unannounced site visits carried out by the Environment Agency in 2017-18, covering 1.4% of accredited English recyclers and exporters

Summary

1 Reducing waste and using resources more efficiently are long-standing policy objectives for government. Tackling packaging waste is essential to achieving these ambitions: government estimates that UK households and businesses use around 11 million tonnes of packaging each year, which would imply packaging constitutes around 17% of total household and commercial waste. There is also growing public and scientific concern about the environmental and health impacts of pollution from plastic packaging, particularly because of plastic litter in the oceans.

2 This report examines the packaging recycling obligations, in response to a request from the Environmental Audit Committee. The government introduced these obligations in 1997, when it chose to establish a market-based system for incentivising recycling of packaging waste as part of implementing an EU Directive on packaging and packaging waste. The packaging regulations require companies that handle packaging (and that meet certain thresholds) to demonstrate that a certain amount of packaging has been recycled.¹ They do this by obtaining recovery evidence notes from UK reprocessing plants or from companies exporting waste for recycling abroad. Obligations apply across the supply chain, covering companies that make or sell packaged goods (such as supermarkets) as well as manufacturers of packaging. In 2017, 7,002 companies registered as having packaging obligations across the UK.

3 The system provides a financial incentive for reprocessors and exporters to increase packaging recycling rates to meet EU targets, and makes obligated companies responsible for contributing to the costs of recycling the packaging they put on the market. The regulations do not place a direct requirement on obligated companies to collect and recycle their own packaging. Instead, they allow for packaging to be collected as part of the normal management of waste in the UK, both by local authorities and commercial collectors, before being sorted and sold for recycling or disposed of through landfill or incineration. The regulations then allow accredited reprocessors and exporters to issue recovery notes for the amount of packaging they have recycled and to sell these notes to obligated companies. Prices vary according to supply and demand. In 2017, reprocessors and exporters received £73 million from obligated companies in exchange for recovery evidence notes.

¹ Companies are obligated if they handle over 50 tonnes of packaging a year and have a turnover of over £2 million.

4 Government has committed to reform the packaging recycling obligation system as part of developing a new strategy for waste and resources, which it expects to publish in 2018. This report identifies lessons from the management and performance of the system so far, and covers:

- the system's **purpose and performance** (Part One);
- government's approach to **tackling fraud and error** in the system (Part Two); and
- **government's wider oversight** of the system (Part Three).

5 Waste is a devolved matter, although the devolved administrations chose to implement the packaging recycling obligations as regulations that cover Great Britain, with equivalent legislation in Northern Ireland. This report examines the UK government's oversight of the system. It therefore covers the Department for Environment, Food & Rural Affairs (the Department), which is responsible for waste and packaging policy in England, and for monitoring of overall progress against the UK-wide packaging recycling targets, and the Environment Agency (the Agency), which is responsible for enforcing the regulations in England.

Key findings

Performance

6 Government figures indicate that the UK has achieved the overall packaging recycling target every year to date. Reported packaging recycling rates have increased from 31% in 1998 to 64% in 2017, exceeding the EU target of 55%. However, the increase is not solely due to the obligations; there are other policy measures that have influenced packaging recycling rates, including landfill tax which represents a more significant financial incentive (paragraphs 1.14 to 1.17).

7 However, the Department's estimates of packaging recycling rates are not sufficiently robust. The Department does not adjust its figures to account for undetected fraud and error. In order to determine the amount of packaging that is recycled each year, the Department uses the data that reprocessors and exporters report when claiming recovery notes. While the Agency does correct this data when it finds problems, we do not consider it is realistic to assume that undetected fraud and error is negligible: there is a financial incentive for companies to over-claim, and a particular risk that some of the material exported overseas is not fully recycled. In addition, its approach to determining the amount of packaging used in the UK involves complex methodology and a number of assumptions. Yet it has not established a regular, planned, and comprehensive programme for reviewing the analysis (paragraphs 1.3 and 1.18 to 1.21).

8 We are concerned that the reported recycling rate for plastic packaging could be overstated, although not by enough to undermine achievement of the overall target. Government figures assume that collections from the commercial sector increased by 150% between 2012 and 2016, but the Department has no reliable data to check whether commercial waste collections have in fact increased so quickly. The financial incentive for companies to fraudulently claim they have recycled plastic packaging is higher than for any other material, with recovery notes representing around 60% of the price of waste plastic bottles over the first six months of 2018. However, the actual plastics recycling rate would have to be zero to undermine achievement of the overall target, and be overstated by 24 percentage points to undermine achievement against the plastic-specific target. In April 2018, the Department asked WRAP to carry out a review of the amount of plastic packaging used in the UK, which has not yet concluded (paragraphs 1.22 to 1.24).

9 A recent ban by the Chinese authorities on certain waste imports could lead to a dip or decline in recycling performance. The increase in overall packaging recycling rates has mostly been due to a growth in exports: since 2002 the total amount of packaging waste exported abroad has increased sixfold while the total amount recycled in the UK has remained steady. Exports accounted for half of all packaging recycling subsidised through the system in 2017. China has been the single largest market for UK exports of packaging material for recycling, but in January 2018 the Chinese authorities banned imports from all countries of a number of waste materials citing concerns about high levels of contamination. This has disrupted global markets for waste. While data from the first quarter of 2018 suggest that the potential shortfall has mostly been made up by increased exports to other countries, it is not yet clear whether this can be sustained (paragraphs 1.14, 2.11 and 3.9 to 3.11).

10 Costs to business are low compared with schemes in other countries because UK taxpayers pay most of the costs of collecting packaging waste. Businesses paid £73 million towards the cost of recycling their packaging through the system in 2017. The Department reports that this is lower than the compliance costs that companies in a number of other European countries pay. It equates to a cost to business of 13 euros per tonne recycled, compared with costs to business of more than 48 euros per tonne in Germany, Belgium and the Netherlands. However, packaging schemes in these countries require companies to fully fund collections of household packaging waste. In the UK system companies only contribute indirectly to collection costs through payments for recovery notes. There are no publicly available data on the cost to local authorities of collecting and treating packaging waste, but the Department estimates that English local authorities spent £700 million (gross) on collecting and sorting packaging waste in 2017 (paragraphs 1.11 and 1.25 to 1.27).

Tackling fraud and error

11 There are risks of fraud and error in the system, and the Agency carries out a range of activities to help prevent and detect companies that break the rules.

The system relies on reprocessors and exporters self-reporting the amount of packaging material they have recycled or exported for recycling abroad. It also relies on obligated companies to identify for themselves whether they need to register. There are therefore risks that reprocessors and exporters over-claim, and that obligated companies do not know about their requirements or deliberately choose to avoid them. The Agency requires reprocessors and exporters that wish to issue recovery notes to apply for accreditation and renew it annually. As part of this process, companies must submit a plan for how they will check that the material they claim recovery notes on meets the rules. The Agency also carries out data analysis to help identify potential non-compliance, as well as compliance visits to reprocessors, exporters and obligated companies (paragraphs 2.2 to 2.4).

12 However, the Agency does not have a good understanding of the extent of fraud and error that remains despite its controls, to determine whether its approach is proportionate.

A robust compliance strategy should be based on a thorough understanding of the scale of potential risks of fraud and error. The Agency believes its approach is proportionate but it has not carried out an assessment of how significant different types of risk might be, and what the root causes of fraud and error are. The Department has not requested this analysis to inform its oversight. As a result, government does not know if it has the right scale, nature and balance of compliance activity (paragraphs 2.1 and 2.4).

13 We are concerned that the Agency does not have strong enough controls to prevent the system subsidising exports of contaminated or poor-quality material.

The Agency has low visibility and control over waste that is sold for recycling abroad and there is therefore a risk that some of it is not recycled under equivalent standards to the UK, and is instead sent to landfill or contributes to pollution. The export of contaminated or poor quality material increases these risks, and it is illegal to ship waste with significant levels of contamination. While the Agency has controls to help ensure the system only subsidises the export of good quality material to reliable operators, it is not clear that it yet does enough to tackle some significant sources of risk:

- municipal sorting facilities are one potential source of material for export, and some produce material with significant levels of contamination: the average contamination of plastic waste after having been through English municipal sorting facilities is 9.5%. Yet the Agency has not checked whether there are exporters in the system that ship this material without further sorting;
- the Agency is working with stakeholders to develop its understanding of the types of plastic waste that can be so poor quality that there is a known risk of a significant proportion of it being disposed of, rather than recycled, which it will use to target compliance checks; and
- in 2017 the Agency only made four queries to overseas agencies to check registration documents, compared with 53 queries in 2014 (paragraphs 2.8 to 2.12).

14 Compliance inspections are a key part of the Agency’s approach to tackling fraud and error, and these have fallen well short of targets, and do not focus on exporters that the Agency knows to be high risk. Compliance visits are an important way for the Agency to check that reprocessors and exporters make accurate claims for the amount recycled. However, in 2016-17 the Agency carried out less than 40% of the number of compliance visits it planned to (124 visits compared with a target of 346). Moreover, it failed to use its own risk analysis work to target visits. Exporters it rated as high risk were less likely to receive a compliance visit than those rated low risk, and only one of four high risk exporters received a compliance visit in 2017. The Agency carried out only three unannounced visits in 2017-18 (representing 1.4% of accredited reprocessors and exporters), despite an internal audit report in 2015 having raised concerns about the number of unannounced visits (paragraphs 2.4 and 2.7).

15 The Agency has identified a large number of companies that may have an obligation to pay into the system but have not registered. It does not have a good understanding of how significant the financial risk could be. ‘Free-riding’ companies are those that have an obligation to pay into the system but do not register, either deliberately or in error. An analysis of the Agency’s records for 2009-2016, triggered by our review, found 1,889 companies flagged as potential free-riders but with no follow-up recorded. If the proportion of actual non-compliance is similar to that in the potential cases that officers have reviewed, it would mean that 331 additional companies should be paying into the system, which would imply at least 4.5% of obligated companies do not register. The Agency considers that it has prioritised the most significant potential cases, but we are not convinced that its analysis is strong enough for it to be confident in this conclusion (paragraphs 2.13 to 2.18).

Government’s wider oversight

16 The Agency recognises that its work on packaging has not been seen as a priority within the organisation, and is considering creating a new national team. In April 2017 the Agency commissioned an internal review to examine the reasons for poor performance across its non-site based waste regulations, including work on packaging. This found that the work was not generally viewed as a priority, that there was a lack of technical resource and resilience, and that activities carried out were significantly less than that funded and planned for. As a result the Agency is now considering moving away from an area-based approach and creating a national team for packaging work, in order to help prevent staff time being spread thinly across a range of different activities, and to help share and build expertise (paragraph 2.5).

17 The Department has not done enough to assess the wider effectiveness of the system.

The Department has carried out a number of reviews and consultations to inform changes to the packaging regulations and targets, which have assessed the potential impact of different proposals. However, although the system has now been operating for 20 years, it has only carried out one ex-post evaluation to assess the system's performance as a whole. Moreover, this evaluation was narrow in scope: it did not consider the total costs of dealing with packaging recycling, nor the extent to which the system brings additional benefits above other waste initiatives such as landfill tax. It also did not consider whether the system is maximising value for the money involved: the government has no evidence on whether the system has encouraged companies to minimise packaging or make packaging easy to recycle. The Department is currently reviewing the system as part of developing a new waste and resources strategy (paragraphs 3.14 to 3.16).

18 The Department has not been sufficiently proactive in managing the risks associated with the growth in exports of packaging waste for recycling overseas.

The Department identified in 2011 that there was a risk of fluctuations in the global market for waste, which could affect its achievement of waste targets, including for packaging recycling. However, it did not consider the specific risk that the long-term demand for waste exports could reduce as countries' domestic recycle increases. In addition, it concluded in 2013 that improving the quality of material was an important way to increase the resilience of waste industry. However, a key measure of success – the contamination levels of material from English municipal sorting facilities – has not improved since data started to be collected in 2014 (paragraphs 2.11 and 3.8 to 3.12).

19 The Department has established a good mechanism for consulting with stakeholders, but it is not clear whether it has used it to its full potential.

The Department established a stakeholder committee to advise on policy development for packaging recycling, bringing together representatives from trade bodies, compliance schemes, reprocessors and local authorities. However, it is hard to judge how effectively the Department has engaged with this committee as it does not consistently track how it has responded to its recommendations. We consider that the committee's influence may have been limited historically by a focus on day-to-day operational matters, though more recently the Department has asked it to engage with more strategic issues such as the future design of the system. Wider engagement with stakeholders has also been limited by poor communication about the system's purpose and a lack of transparent, useful data (paragraphs 3.3 to 3.7).

Conclusion

20 While there are questions about the exact scale of packaging recycling, it is clear that rates have increased over the lifetime of the packaging obligation system, and the system itself is likely to have made a contribution to this change. However, the system appears to have evolved into a comfortable way for government to meet targets without facing up to the underlying recycling issues. The government has no evidence that the system has encouraged companies to minimise packaging or make it easy to recycle. And it relies on exporting materials to other parts of the world without adequate checks to ensure this material is actually recycled, and without consideration of whether other countries will continue to accept it in the long-term. Despite it now being 20 years since the system was established, the Department does not know what value the system has added nor whether the Agency's approach to tackling the risks of fraud and error is proportionate. Our overall sense is that over a long period government has allowed the obligations to keep rolling forward without asking the important questions.

Recommendations

- 21** As government reforms the packaging recycling system it should:
- a** **Improve its approach to estimating packaging recycling rates.** It should allocate a senior responsible owner for the estimates within the Department, with this responsibility for analysis sitting separately from responsibility for performance. It should consult with industry and experts to determine an appropriate frequency for reviews of assumptions and methodology, and a process for ensuring that reviews happen as planned.
 - b** **Evaluate the scale of fraud and error within the system, including the extent of contamination in waste exports.** The Agency should use this evaluation to refine its approach to compliance. It should consider whether there are other actions it could take to prevent non-compliance as well as whether it can improve its approach to identifying and stopping problems once they arise. The Department should monitor estimates of non-compliance as part of its oversight of the system, and should ensure the analysis is reflected in its estimates of packaging recycling rates.
 - c** **Establish clear objectives for the reformed system, covering outputs and outcomes.** The Department should communicate these objectives clearly and consistently to stakeholders, and ensure that the evaluations are a rounded and robust assessment of the system's effectiveness in achieving these objectives.
 - d** **Understand how the system works alongside other interventions as part of a coherent waste strategy.** The Department should consider how the system interacts with other policy initiatives, such as landfill tax, and the extent of additional benefits it can and does bring.

Part One

The purpose and performance of the packaging recycling system

1.1 This section reviews the purpose and performance of the packaging recycling system. It covers:

- the introduction of the system;
- how it works;
- who is responsible; and
- the system's performance against its objectives.

Purpose

1.2 The government introduced the packaging recycling obligations in 1997,² in order to implement an EU Directive on packaging and packaging waste.³ The Directive set minimum targets to recover 50%, and recycle 25%, of packaging waste by 2001.⁴ It required member states to undertake 'the necessary measures' to meet the targets. A subsequent Directive published in 2004 increased the minimum packaging recovery target to 60% and the minimum recycling target to 55% from 2008.⁵ It also added separate targets for each of the main packaging materials (**Figure 1**).

1.3 Reducing waste and using resources more efficiently are long-standing policy objectives for government (**Figure 2** on pages 14 and 15). Tackling packaging waste is important to achieving these ambitions: Government estimates that UK households and businesses use around 11 million tonnes of packaging a year, which would imply packaging constitutes around 17% of total household and commercial waste.⁶

² The Producer Responsibility Obligations (Packaging Waste) Regulations 1997.

³ Directive 94/62/EC.

⁴ Recovery includes packaging waste that is incinerated with energy recovery or composted as well as recycled.

⁵ Directive 2004/12/EC.

⁶ Government calculates the amount of packaging 'placed on the market' to give this figure. This includes all packaging manufactured in the UK taking into account extra packaging arriving around imported products and deducting packaging around exported products.

Figure 1

Recycling targets for each type of packaging material

The UK has a target to recycle 55% of all packaging, and separate targets for each of the main packaging materials

Material	Target recycle rate from 2008 (%)	EU target from 2025 (%)	Reported UK recycle rate (2017) (%)
Paper/board	60	75	79
Glass	60	70	68
Plastic	22.5	50	46
Steel	50	70	77
Aluminium	50	50	54
Wood	15	25	31
All packaging	55	65	64

Note

¹ Until 2025 the EU has a single metal target. The UK packaging recycle rate for all metal was 72% in 2017.

Source: United Kingdom and European Union legislation

1.4 The packaging regulations have been a key part of government's approach to improving packaging recycling rates, although not the only relevant policy initiative (Figure 2). Broader waste initiatives have included a tax on any material that goes to landfill and household recycling targets for local authorities. The government also part-funds a waste advisory charity, the Waste and Resources Action Programme (WRAP), which has led dedicated projects on packaging, including a voluntary agreement aimed at reducing packaging waste in the grocery sector (the Courtauld Commitment).

1.5 Government has also made commitments to develop its approach to waste and resources further, following public and scientific concern about the effects of plastic pollution, particularly the amount of plastic litter in the oceans. This includes reforming the packaging recycling system, as well as:

- a commitment to meet the new packaging recycling targets for 2025 and 2030 agreed by the European Union through the 2018 Circular Economy Package;
- plans to implement a deposit return scheme for drinks containers; and
- support of the UK 'Plastics Pact', a collaborative initiative that brings together businesses, government and NGOs to address plastic waste. This has set a target to eliminate unnecessary single-use plastic packaging, for all plastic packaging to be re-usable, recyclable or compostable and for 70% to be recycled or composted by 2025.

Government has committed to bring these and other measures in a new Waste and Resources Strategy, due to be published later in 2018.

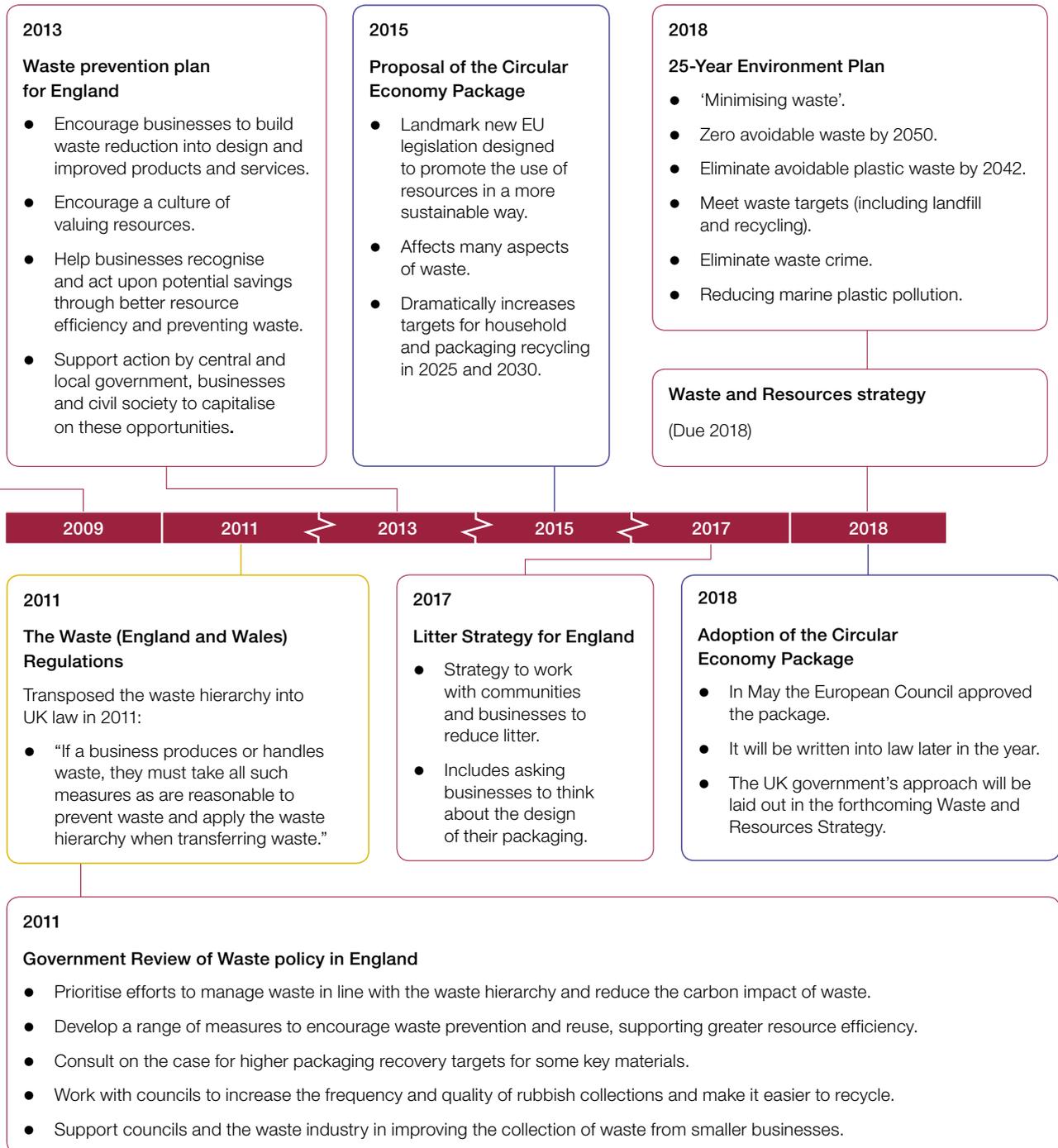
Figure 2

The policy landscape for packaging waste

The government has long-standing objectives to reduce waste and use resources more efficiently. The packaging obligations have been a key part of its approach to packaging recycling, although not the only relevant policy initiative



- Government waste policy objectives
- Waste measures that affect packaging
- European Union measures that affect packaging



How the system works

1.6 The packaging regulations establish a market-based system for incentivising packaging recycling (**Figure 3**). They require companies that handle packaging and that meet certain thresholds (handling more than 50 tonnes of packaging in a year and having turnover higher than £2 million) to demonstrate that a certain amount of packaging has been recycled. The scale of a company's obligation is determined by the amount of packaging they handle, the UK's recycling target for obligated businesses for that material (the 'business target'), and the packaging activity they are responsible for (**Figure 4** on page 18). Obligations apply across the supply chain, covering companies that make and sell packaged goods (such as supermarkets) as well as manufacturers of packaging.

1.7 There were 7,002 companies registered as having obligations under the system in 2017, of which 5,433 (78%) were registered with the Agency in England. The Department for Environment, Food & Rural Affairs (the Department) estimates that registered producers cover approximately 85% of the packaging placed on the UK market. The remaining packaging is handled by companies that are either not obligated or that have failed to register.

1.8 An obligated company can either obtain recovery notes itself or become a member of a compliance scheme that will take on its legal obligation in exchange for membership fees. In 2017, 93% of producers were registered with compliance schemes. In 2017, 26 compliance schemes were approved in England by the Agency, with a further 24 registered in Scotland or Northern Ireland. The largest of these schemes, Valpak, accounted for 38% of registered companies and 48% of obligated tonnages in England in 2017.

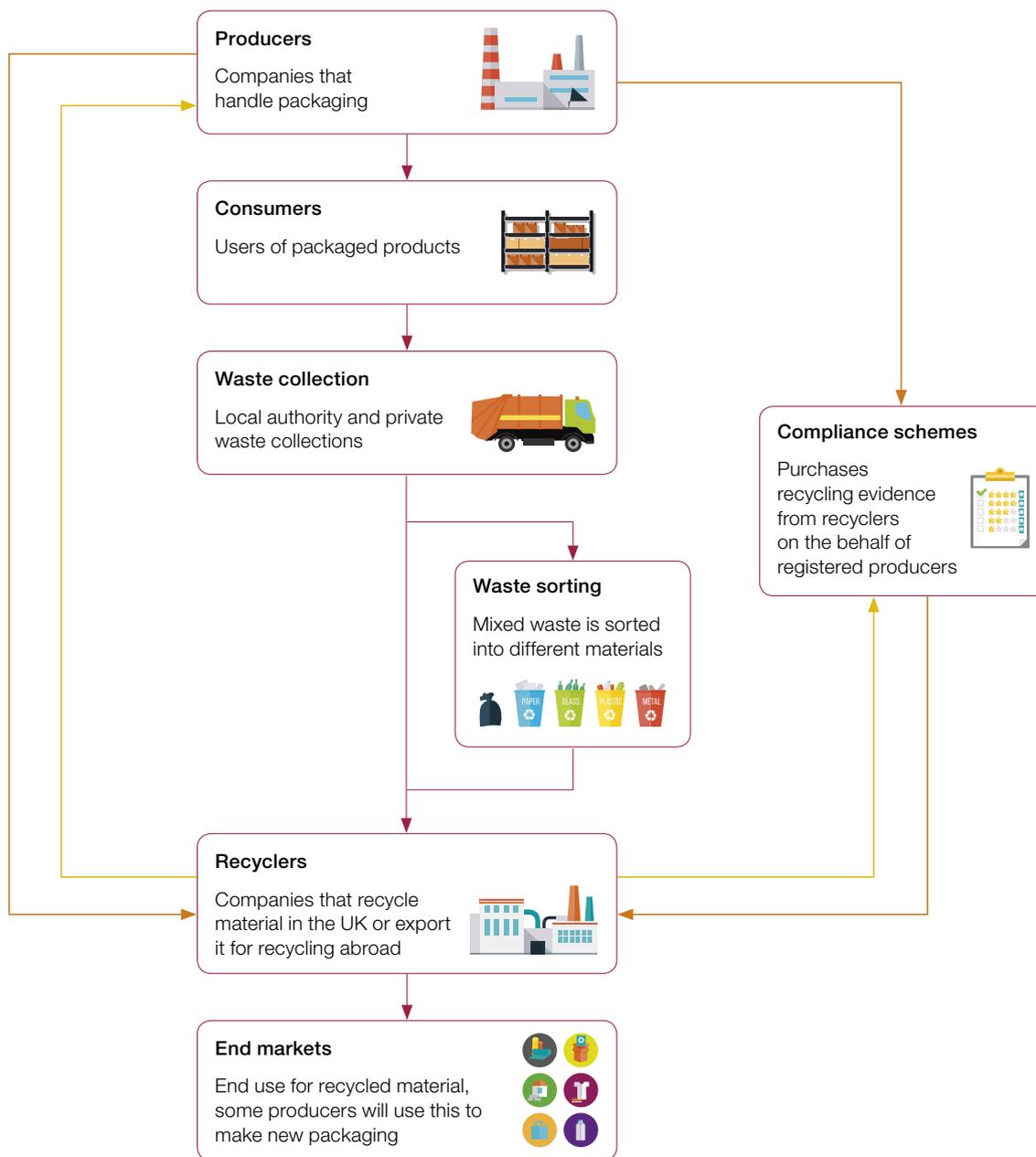
1.9 In order to issue recovery notes, reprocessors or exporters must be accredited by the Agency or a devolved authority. In 2017 there were 276 accredited recycling operators in the UK, of which 148 exported waste abroad to be recycled. Most of the reprocessors and exporters who registered in 2017 (80%) did so with the Agency in England. The Department estimates that accredited operators represent a significant proportion of the recyclers and waste exporters operating in the UK: it estimates that the system subsidises 94% of all packaging recycling, 87% of all plastic waste exports for recycling, and 56% of all paper waste exports for recycling.

1.10 Recovery evidence notes do not have a set price. The system is intended to be market based, so that any shortfall in recovery notes for a particular material leads to an increase in the price and incentivises more recycling activity. Since 2010 the sale of recovery notes has generated an average of £60 million a year across the UK, and £73 million in 2017 (**Figure 5** on page 19). The significance of recovery note prices varies between the different packaging materials; for the first half of 2018 it ranged from 1% of the price for a tonne of aluminium cans to 60% of the price for a tonne of clear plastic bottles.

Figure 3

How the packaging obligation system relates to the flow of packaging waste in the UK

The packaging regulations establish a market-based system for incentivising packaging recycling



→ Packaging waste → Recovery notes → Funds

Notes

- 1 Funds shown are only those directly related to the system.
- 2 93% of producers fulfilled their obligation by becoming a member of a compliance scheme in 2017.

Source: National Audit Office analysis

Figure 4

How a company's recycling obligation is calculated

The system's obligation thresholds mean that only companies with a turnover greater than £2 million and that handled more than 50 tonnes of packaging in the previous year must register for the system.

Companies that exceed the de minimus limits have an obligation that is determined by the amount of packaging they handle; the UK's recycling target for obligated businesses for that material (the 'business target'); and the packaging activity they are responsible for (for example, whether they are a manufacturer or a retailer), according to the following equation:

$$\text{Obligation (tonnes)} = \text{Packaging handled} \times \text{Business target (\%)} \times \text{Producer share (\%)}$$

The 'producer share' is determined by the following proportions:

Activity	Example	Producer share ² (%)
Manufacturer	Manufactures cardboard	6
Converter	Converts cardboard into boxes	9
Packer/filler	Fills boxes with products	37
Seller	Sells boxed products to consumers	48
Importer	Imports boxed products	Rolled-up percentage

For example, a supermarket that sold products with 20,000 tonnes of cardboard packaging in a year would be required to produce evidence of: 20,000 x 0.71 (current UK paper/board target) x 0.48 (seller share) = 6,816 tonnes of cardboard recycling.

Recovery notes are specific to the main categories of packaging material. A company that sells plastic bottles has a plastic recycling obligation and will need to purchase plastic recovery notes in order to fulfil it.

Notes

- 1 The business targets are set higher than the desired target recycling rate because they do not cover all packaging that is produced (only packaging from obligated companies). If all obligated companies meet the business target then the overall UK packaging recycling rate will meet the EU targets.
- 2 A company performing multiple activities has the total share of those activities combined.

Source: The Producer Responsibility Obligations (Packaging Waste) Regulations

Responsibilities

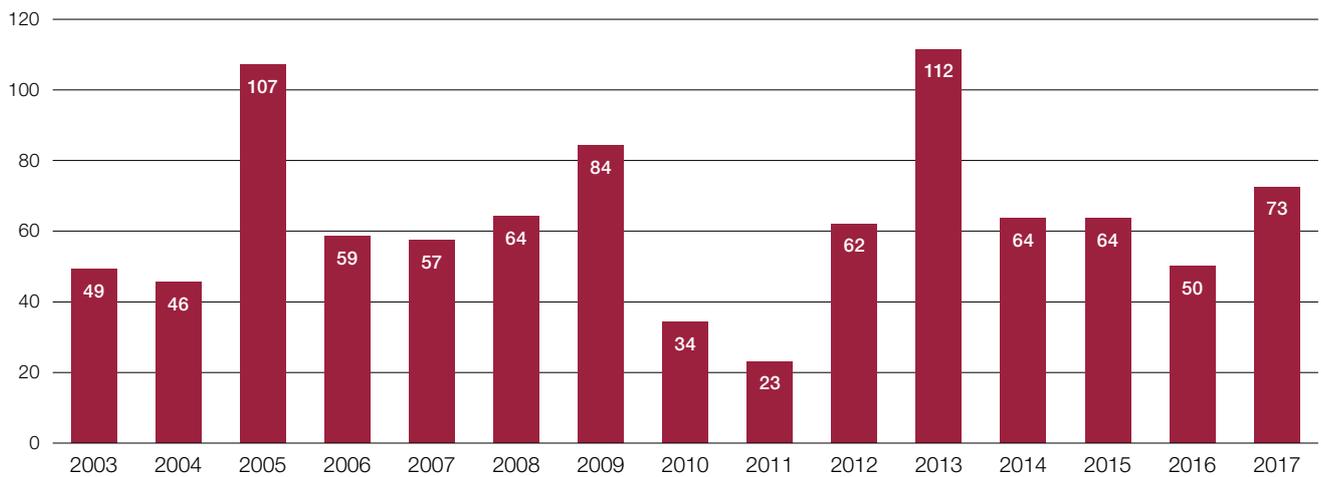
1.11 The Department for Environment, Food & Rural Affairs (the Department) is responsible for overseeing the regulations in England and for monitoring UK-wide progress against overall and material-specific packaging recycling targets. The Environment Agency (the Agency) is the regulator in England. It is responsible for checking that companies comply with the regulations through desk monitoring of activity and by carrying out site visits. It is also responsible for monitoring and managing the National Packaging Waste Database. Registered producers must record packaging that they handle on the database and accredited recyclers must record packaging that they process.

Figure 5
Revenue from recovery notes

Total annual recovery note revenue 2003 to 2017

Total revenue from recovery notes has varied over time, from a low of £23 million in 2011 to a high of £112 million in 2013

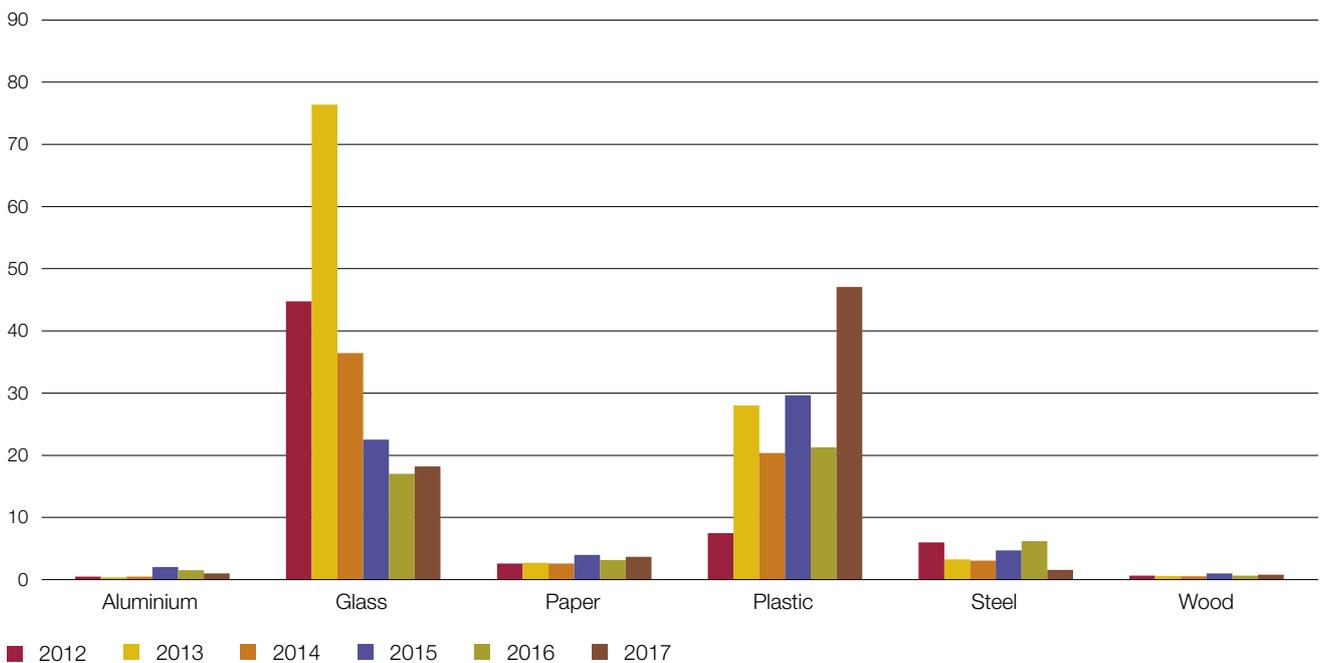
Total revenue (£m)



Annual recovery note revenue split by material 2012 to 2017

Most recovery note revenue comes from recycling of either glass or plastic

Total revenue (£m)



Note

1 Total recovery note revenue includes revenue from notes generated by recovery processes, such as burning waste, as well as recycling. Energy from Waste raised £269,000 in 2017

1.12 Waste is a devolved matter, although the devolved administrations chose to implement the packaging recycling obligations as regulations that cover Great Britain, with equivalent legislation in Northern Ireland. The Department works jointly with the devolved administrations in reviewing and agreeing changes to the packaging targets. Natural Resources Wales, the Scottish Environmental Protection Agency and the Northern Ireland Environment Agency act are responsible for ensuring compliance of companies resident in Wales, Scotland and Northern Ireland respectively.

1.13 The Department, the Agency, and the devolved administrations, are supported in their work by the Advisory Committee on Packaging, an expert industry group established to help government with developing policy relating to packaging. The role of the committee as a part of stakeholder engagement is examined in detail in Part Three.

Performance: recycling rates

Reported performance

1.14 The Department reports that since the packaging obligations were introduced, the UK has:

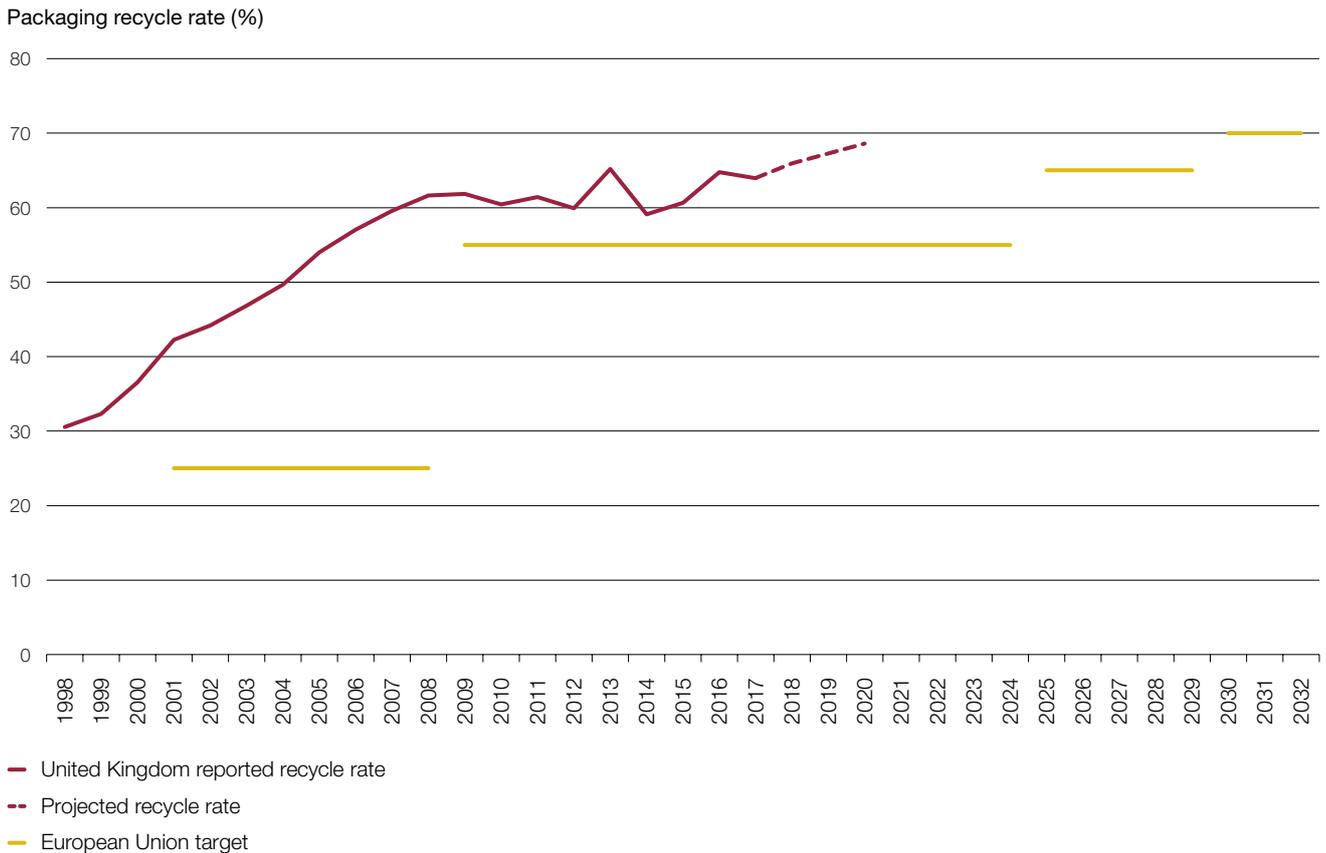
- achieved the EU's overall packaging recycling target every year since the target became binding in 2001 (**Figure 6**), with packaging recycling rates having increased from 31% in 1998 to 64% in 2017, against a target of 55%.
- failed to meet one of the material-specific targets on a single occasion; for glass in 2012; and
- achieved increased overall packaging recycling rates largely through a growth in exports. Since 2002 the quantity of packaging waste exported for recycling abroad has increased sixfold while the quantity recycled in the UK has remained the same. Exports accounted for over half of the tonnage of packaging reported as recycled in 2017 (**Figure 7** on page 22). The trends differ between the different packaging materials. For plastic, glass, steel and aluminium, the amount reprocessed in the UK has increased since 2002, while for paper and card it has decreased and for wood packaging it has increased and then declined (Appendix Three). The UK has seen a greater increase in packaging exports, and exports a greater proportion of packaging waste, than a number of other EU countries.⁷ France, the Netherlands and Belgium exported a third of their packaging waste in 2015, while Germany exported a sixth.⁸

⁷ Exports of packaging waste increased by 32 percentage points for the UK between 2003 and 2015 compared with an increase of an increase of 14 percentage points for France, an increase of 5 percentage points for the Netherlands, and a reduction of 6 percentage points for Germany over the same period.

⁸ Latest data available on Eurostat.

Figure 6
UK reported packaging recycling rates

The Department for Environment, Food & Rural Affairs reports that the UK has consistently met the overall targets for packaging recycling and is likely to meet the 2025 target by 2020



Notes

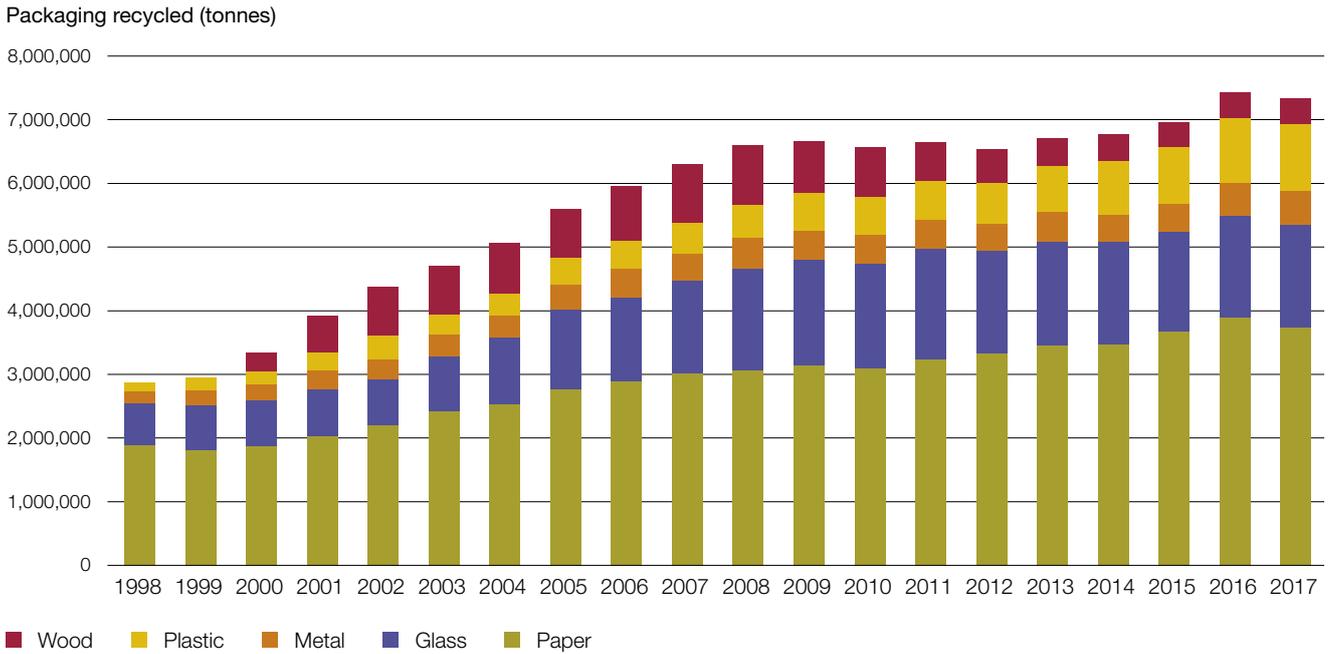
- 1 The drop in the recycling rate in 2014 was a result of significant revision to the amount of paper packaging production in the UK by the paper/card WRAP report, similarly the rise in 2013 was caused by a revision to the amount of plastic packaging by the plastic WRAP report (paragraph 1.18, Figure 8).
- 2 The UK has voted in favour of the proposed EU targets in 2025 and 2030 and has committed to setting out its approach to future targets in its Resources and Waste Strategy.
- 3 The Department calculates the recycling rate by dividing the weight of packaging recorded as recycled on the national packaging waste database by the weight of packaging reported as placed on the market by the WRAP material flow reports (from 2012, paragraph 1.18) and Valpak's Packflow reports (prior to the WRAP reports, paragraph 1.18).
- 4 The projected recycling rate was calculated by the Department in 2016, and assumes a 0% growth in packaging production with an annual growth of 2% in the weight of packaging recycled.

Source: National Audit Office analysis of Environment Agency data

Figure 7
Packaging recycled in the UK, 1998 to 2017

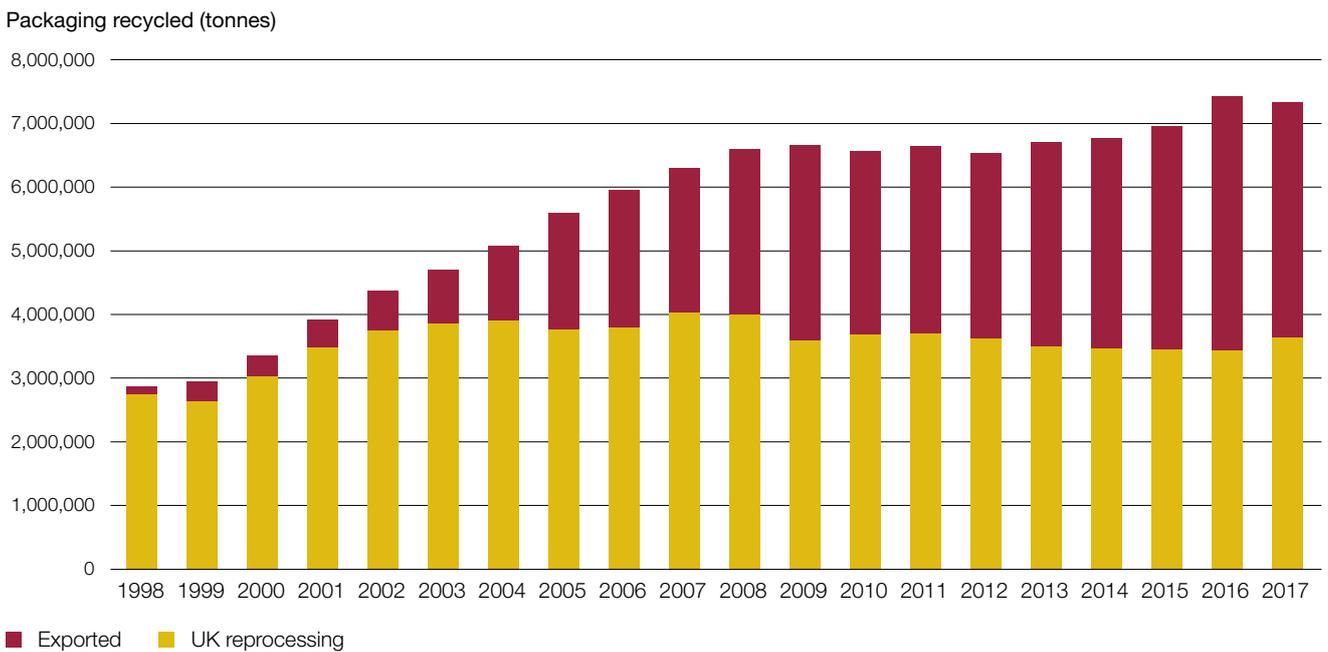
Reported weight of UK packaging recycled, by material, 1998 to 2017

Paper is the most significant proportion of recycled packaging material by weight, followed by glass and plastic



Reported weight of UK packaging recycled, by location of processing (UK or abroad), 1998 to 2017

The increase in the total amount of reported packaging recycled has been mostly due to an increase in exports



Source: National packaging waste database

1.15 The reported data also imply that:

- most of the increase in packaging recycling rates occurred by 2008 and rates have since plateaued;
- in absolute terms, packaging placed on the UK market increased, from 9.14 million tonnes to 11.46 million tonnes between 1998 and 2017;
- the UK is close to achieving the 2025 targets in the EU Circular Economy package which the Government has committed to meet or exceed after EU exit; and
- the UK's packaging recycling rate is below the average reported for European Union member states: 61% in 2015 compared with an EU average of 66%.

1.16 The Department told us that it may be difficult for the current regime to push packaging recycling rates high enough to meet the anticipated 70% packaging recycling target for 2030, and this is one of the reasons it proposes to reform the system. The system does not provide an incentive for companies to avoid using material that is difficult to recycle, such as black plastics or coffee cups, because it only makes broad distinctions between different packaging materials. Coffee cups fall under 'paper' and there is a single category for all plastics.

1.17 Increases in packaging recycling are not solely due to the packaging obligations (Figure 2). Landfill tax, for example, currently costs companies disposing of waste £90 per tonne of packaging sent to landfill. Companies can avoid this by recycling the material instead. Landfill tax was first introduced in 1996 and started at £7 per tonne, slowly increasing to current levels. This has consistently provided a strong financial incentive for waste to be diverted away from landfill (that is, to be recovered for recycling or incineration).

The robustness of reported data

1.18 Estimating packaging recycling rates is complex, because there are no comprehensive sources of data on the amount of packaging used by businesses and households across the UK. We found that the Department has improved the rigour of its approach to estimating UK packaging recycling rates over the lifetime of the system, but significant weaknesses remain. Before 2012, the Department had no structured process for estimating the amount of packaging placed on the market, and relied on data from industry bodies. In 2012 the UK reported that it failed to meet the glass recycling target, after accounting for a significant case of fraud in glass recovery notes. This prompted the Department to request a more thorough review of its estimate for the amount of glass packaging on the market. The Department part funded the Waste and Resources Action Programme (WRAP), a waste advisory charity, to carry out this work with Valpak (the largest compliance scheme).

1.19 The analysis concluded that the previous approach had overestimated the weight of glass packaging on the UK market by 13%, and thereby underestimated glass packaging recycling rates by 9% (**Figure 8**). The Department then requested that the two organisations carry out detailed reviews of the other packaging materials, with plastic and metal reviewed in 2014 and paper and wood reviewed in 2016. These resulted in revisions of between +/-8 percentage points to the reported recycling rates for the relevant years. The Department did not adjust its figures for historic performance accordingly as it does not consider that there is a mechanism for reporting amendments to previous years' data to the European Commission.

1.20 The reports improve on government's previous approach by drawing on a number of different datasets to help sense-check the estimates, and because WRAP shared the results and methodologies with a steering group of industry bodies, who could comment and make recommendations before the reports are finalised. The approach is transparent in that the reports are publicly available and include an explanation of the

Figure 8

The impact of WRAP and Valpak's analysis on estimates of packaging recycling rates

Each material flow report altered the existing packaging quantity estimates for their respective materials. This also changed the reported recycling rate for each material

Material	Year of publication	Change to waste on the market estimate (%)	Previous recycle rate (%)	Revised recycle rate (%)
Glass	2013	-13	60	68
Metal	2014	-20	57	63
Plastic	2014	-13	28	32
Paper/card	2016	+22	89	73
Wood	2016	+27	40	32

Notes

- 1 Revised figures are only used going forward and previous recycling rates are not revisited.
- 2 WRAP is the Waste and Resources Action Programme.
- 3 The change to the waste on the market estimate shows by how much the estimate from the WRAP reports differed from the previous estimate for the same year used by the Department for Environment, Food & Rural Affairs.

Source: The Waste and Resources Action Programme material flow reports

main assumptions.

1.21 However, significant weaknesses in estimates remain:

- The Department's estimates do not adjust for undetected fraud or error in the volume of recycling reported by UK reprocessors and exporters. In order to determine the amount of packaging that is recycled each year, the Department uses the data that reprocessors and exporters report when claiming recovery notes. While the Agency does correct this data when it finds problems, we do not consider it is realistic to assume that undetected fraud and error is negligible: there is a financial incentive for companies to over-claim, and a particular risk that some of the material exported overseas is not fully recycled (see Part Two).
- The Department has not established a sufficiently regular and comprehensive programme of review of the assumptions and methodology it uses to estimate packaging quantities. It has asked stakeholders periodically for their opinion on its assumptions, but has only requested a full follow up analysis for one material – plastics – which began in April 2018 and has not yet reported.
- While the reports that the estimates are based on describe, and in some cases quantify, the uncertainty around individual components of the methodology, they do not clearly quantify the overall range of possible estimates. As HM Treasury guidance states, this is important as otherwise the extent of uncertainty is not clear and may not be appropriately considered by decision makers.

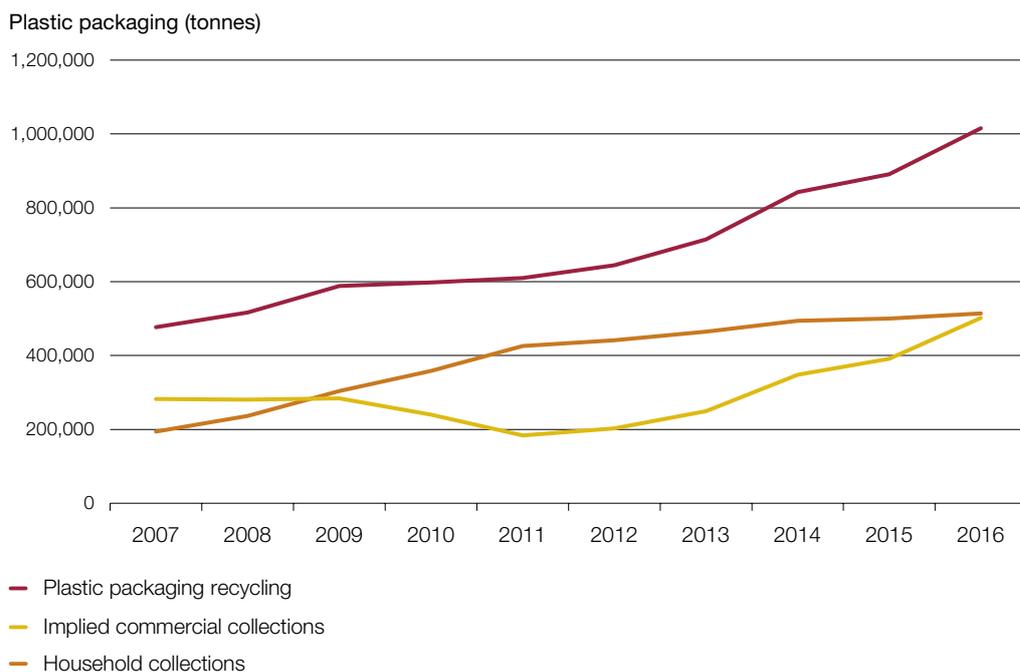
1.22 There is a risk that the estimate of plastic packaging recycling rate could be overstated:

- government figures indicate that the amount of plastic packaging waste from households began to plateau from 2012 (**Figure 9** overleaf). Over the same period the amount of plastic packaging reported as being recycled has increased substantially, which would imply a 150% increase of packaging waste coming from the commercial and industrial sector. This increase is not entirely unlikely: a major waste management company told us that they had greatly increased collections in the sector. However, the Department does not have reliable data to be able to test whether waste collections have in fact increased so quickly: waste collectors in the commercial and industrial sector are not required to submit data on the waste they collect. The Department told us it recognises this as a key area of uncertainty and that it speaks to stakeholders to improve its understanding of this sector;
- the financial incentive for companies to fraudulently claim they have recycled plastic packaging is higher than for any other material, with recovery notes representing around 60% of the price of clear plastic bottles; and
- some of the plastic waste available for export, from English municipal sorting facilities, has an average contamination rate of 9.5%. The Agency has not checked whether there are companies in the system that export this without further sorting (see paragraphs 2.8 to 2.9).

Figure 9

Tonnage of plastic packaging recycled and collected in the UK between 2007 and 2016

Since 2012 the amount of plastic packaging reported as recycled has increased more quickly than the amount of waste collected from households

**Note**

1 Implied commercial collections have been calculated as the total plastic packaging recycling less the plastic packaging collected from households.

Source: National packaging waste database and RECOUP UK household collection survey 2017

1.23 Eunomia, an environmental consultancy, published an independent study into plastic packaging waste in March 2018. This estimated the amount of plastic packaging used in the UK partly by extrapolating from analysis of the proportion of plastic packaging found in household waste. While it uses the best available national compositional analyses, some were from 2010 and did not have a representative sample size. Also, for some sectors a lack of data means that the analysis relies on subjective judgements. However, we consider that the study provides a useful additional perspective on estimates of household plastic packaging and highlights the potential extent of uncertainty around the numbers: the lowest bound of Eunomia's estimate for household plastic packaging in 2014 is 50% higher than the Department's estimate.

1.24 However, the growth in reported plastic packaging recycling since 2012 (Figure 7), means that government's 2017 figures would need to be overstated by 24 percentage points to undermine achievement against the plastic-specific target. The actual plastics recycling rate would have to be zero to undermine achievement of the overall packaging recycling target.

Performance

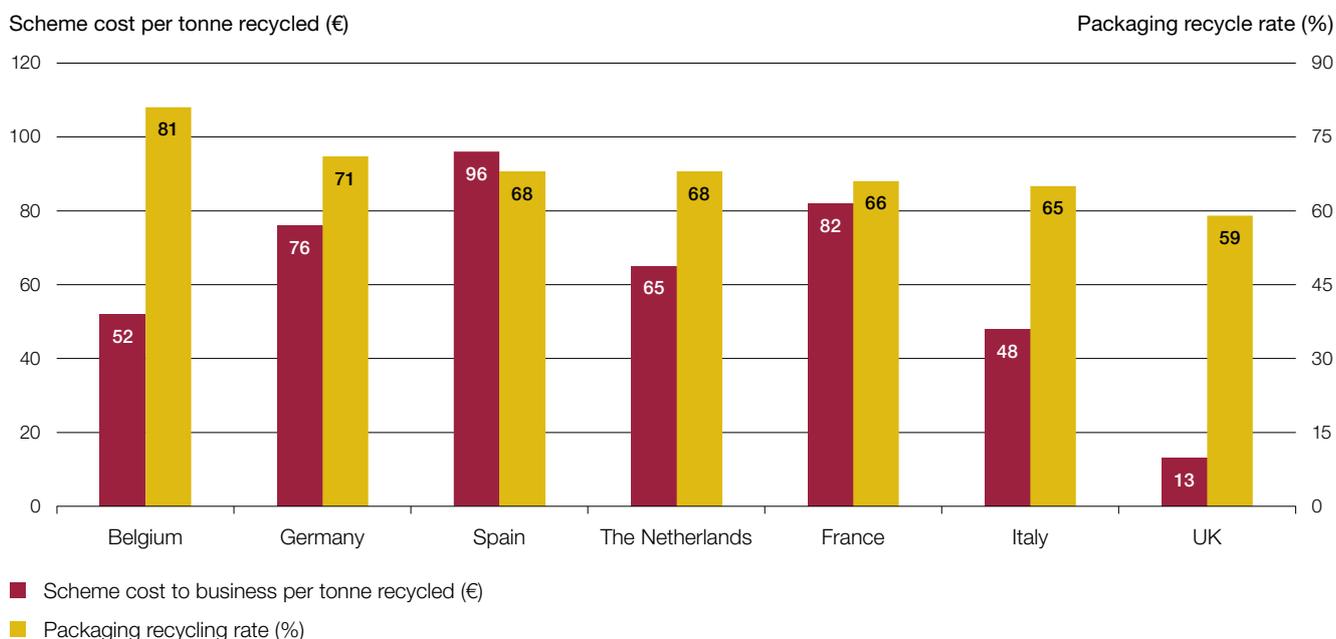
1.25 Drawing on data and estimates collated by Valpak, the largest compliance scheme, the Department has reported that the UK has one of the lowest costs of compliance to businesses of European producer responsibility schemes, with cost to business of 13 euros per tonne recycled, compared with costs to business of more than 48 euros per tonne in six other European countries. (**Figure 10**). The Department used this analysis as a key measure of the system's success.

1.26 However, this does not mean that the total costs associated with recycling are lower in the UK. All of the other countries in Valpak's assessment aim to cover more of the total costs with the compliance fees passed to producers. Some, such as Germany, Belgium and the Netherlands, use it to fully fund the collection of household packaging waste. In the UK collectors only receive indirect funding from the system if reprocessors and exporters use recovery note revenue to support the price they are willing to pay for collected waste.

Figure 10

Costs to obligated companies for each tonne of packaging recycled in the UK and six other EU countries in 2014

The UK has significantly lower costs to business than other EU countries



Notes

- 1 Valpak took the compliance and fee costs from annual reports from other compliance schemes. This information is not available for Germany and so DSD, the main compliance scheme there, provided an estimate to Valpak.
- 2 The scheme cost includes all compliance and administrative costs borne by packaging producers in each country.
- 3 This graph does not represent the total cost of recycling in each country, only the costs that are passed to packaging producers.

1.27 Household packaging waste is collected by local authorities in the UK; this is funded by a combination of public money and revenue made by selling collected packaging waste. There is no publicly available data on the net costs to UK local authorities of collecting and treating packaging waste after accounting for income from the sale of recyclable material. The Department estimates that local authorities spent £700 million on collecting and treating packaging waste in 2017.⁹ This suggests that total costs of dealing with household packaging waste are broadly equivalent in the UK and France.¹⁰

⁹ Gross costs, not accounting for the sale of material for recycling.

¹⁰ Our estimate for the total cost for household packaging waste in France is also £700 million. This is based on compliance fees as the French scheme only covers household waste. The schemes in the other countries in Figure 10 also cover commercial waste, making a direct comparison difficult to perform.

Part Two

Tackling fraud and error in the system

2.1 In our previous studies, we have identified a set of critical factors to help government departments manage fraud and error effectively (**Figure 11** overleaf).¹¹ This Part reviews the Environment Agency’s (the Agency’s) approach to tackling fraud and error in the packaging recycling system in England against these good-practice criteria. It covers:

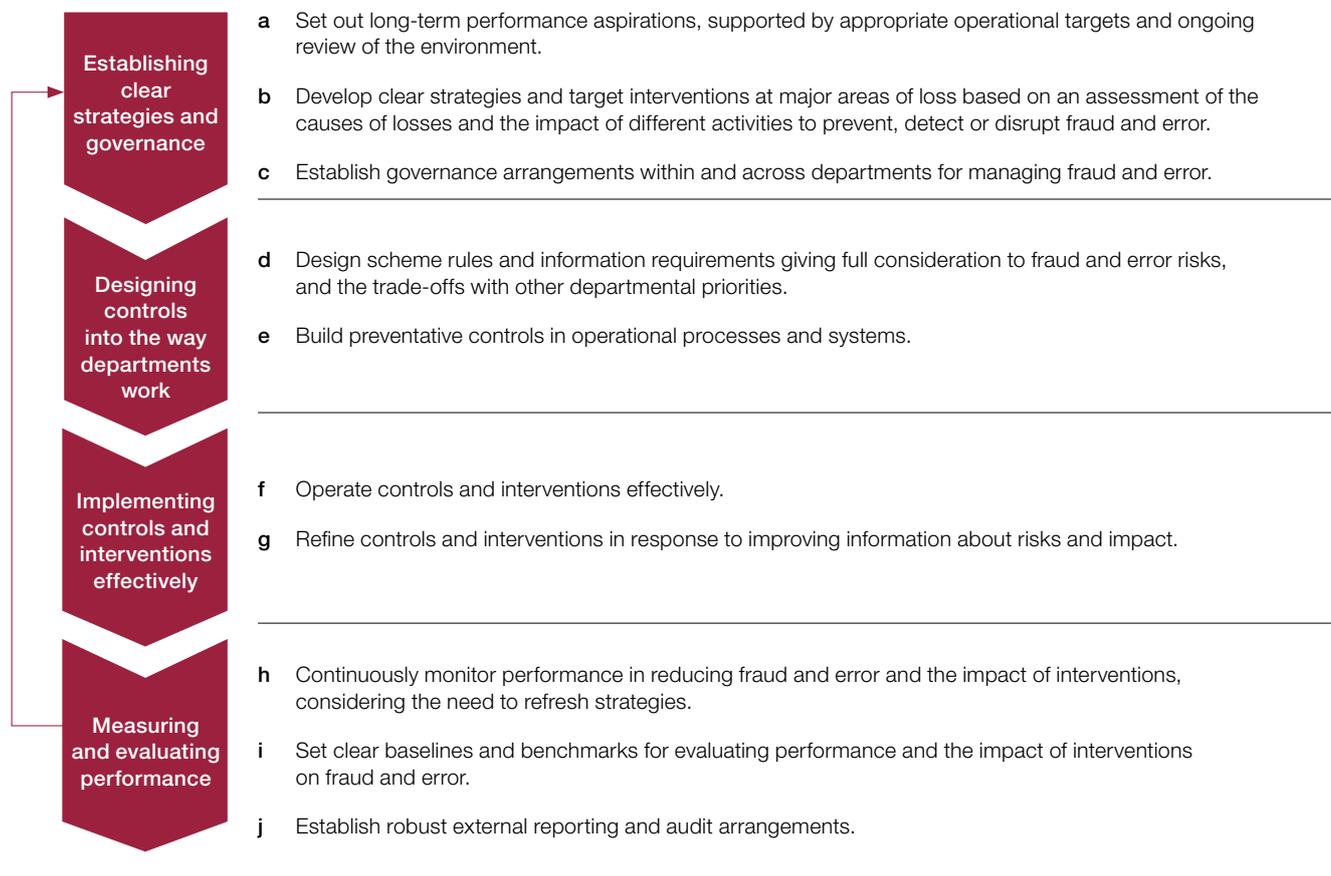
- an overview of the risks of fraud and error in the system and the Agency’s approach to tackling them; and
- an assessment of the Agency’s approach to two sources of risk, ‘free-riding’ and exports.

Overview of the risks of fraud and error in the system and government’s approach to tackling them

2.2 The packaging recycling system’s model of self-registration and self-reporting creates risks of fraud and error that need to be managed effectively to justify the approach chosen (**Figure 12** on page 31). One key source of risk arises from the self-registration for packaging producers: obligated companies may fail to register, either accidentally or deliberately (known as ‘free-riding’). Another key source of risk arises from the use of self-reporting by recyclers, who could over-issue recovery notes by claiming for contaminated material, for non-UK or non-packaging material, or for material that is not recycled under good environmental and health and safety standards. The risks associated with self-reporting are potentially more acute for exporters than for UK-based reprocessors as there is less visibility over what happens to material that is shipped abroad. In 2017 exports accounted for 50% by weight of material recycled through the scheme in the UK.

¹¹ Comptroller and Auditor General, Department for Work & Pensions and H M Revenue & Customs, *Fraud and error stocktake*, Session 2015-16, HC 267, National Audit Office, 21 July 2015. Comptroller and Auditor General, Department for Business, Energy & Industrial Strategy, *Low-carbon heating of homes and businesses and the Renewable Heat Incentive*, Session 2017–2019, HC 779, National Audit Office, 23 Feb 2018.

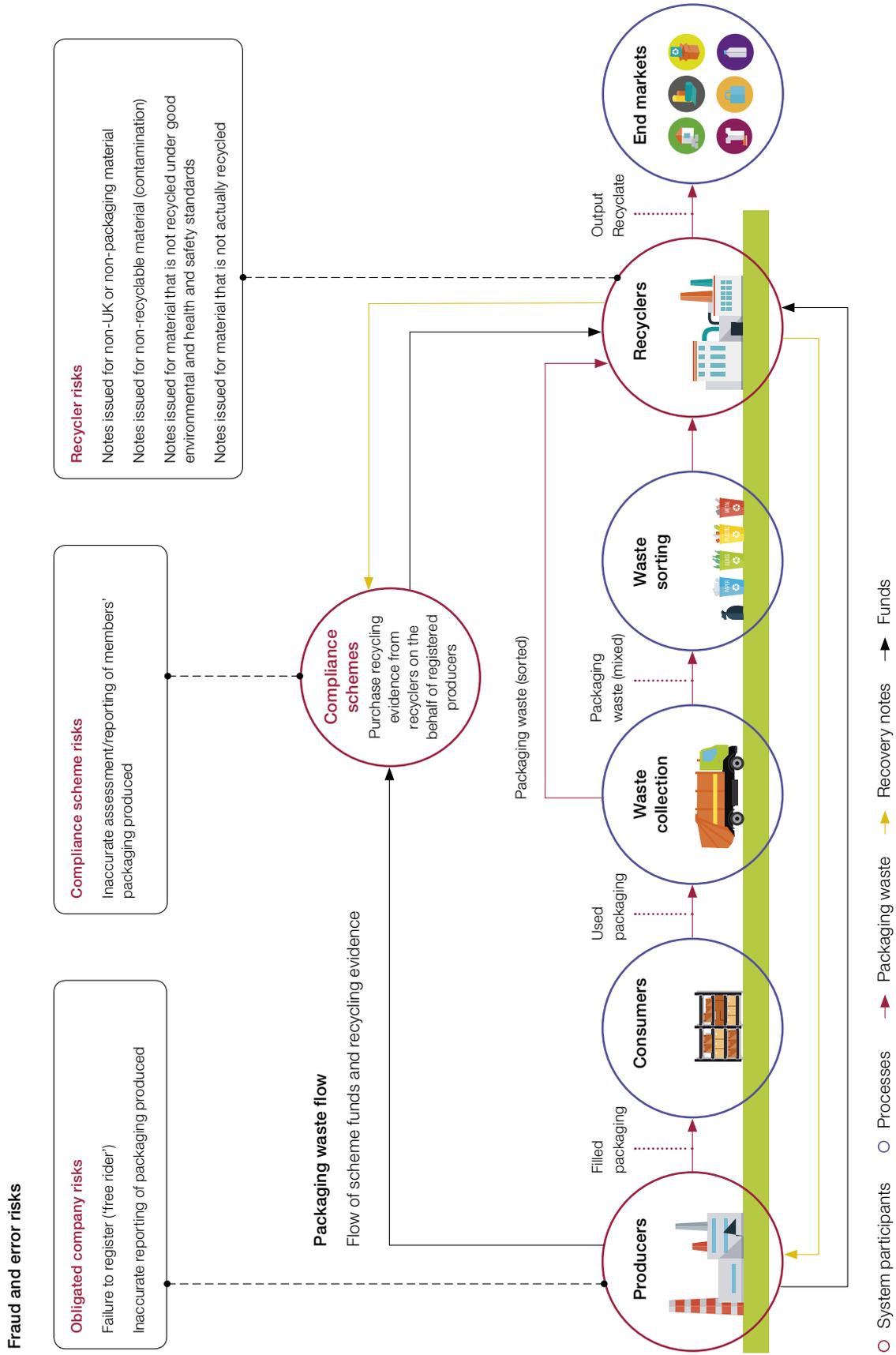
Figure 11
Tackling fraud and error – critical factors



→ Evaluations inform strategy

Source: National Audit Office

Figure 12
Overview of fraud and error risks in the system



2.3 We found that the Agency's compliance activity includes a control for all the main fraud and error risks. Its approach includes a requirement on reprocessors and exporters that wish to issue recovery notes to apply for accreditation and renew it annually. As part of this process, companies must submit a plan for how they will check that the material they claim recovery notes on meets the rules. The Agency carries out data analysis to help identify potential non-compliance, as well as compliance visits to reprocessors, exporters and obligated companies.

2.4 However, a number of weaknesses mean the Agency cannot be confident that its controls represent the right mix of interventions, and are operating effectively:

- **Strategy.** The Agency has not published a compliance monitoring plan for its packaging work since 2009, despite a legislative requirement to publish their enforcement policy for the regulations and the minimum number of persons to be monitored in any one year. In recent years, it has only produced discrete plans for packaging-related activity in 2009 and 2016, although it has higher level compliance strategies that include packaging. The Agency also publishes an enforcement and sanctions policy setting out its high level approach across all its regulatory work.
- **Design.** Compliance schemes are one of the Agency's main preventative controls, and its compliance fees are currently set within the regulations as £210 less for members of a compliance scheme than for direct registrants.¹² This equates to a total discount on fees of around £1 million a year across all compliance schemes. The Agency has not assessed whether it receives sufficient benefit to justify this discount. It does, however, have evidence that compliance scheme are carrying out useful accuracy checks: between 2011 and 2017 there were 740 instances of companies resubmitting their calculations of the amount of packaging they handle following compliance scheme checks.
- **Implementation.** Compliance activities have not met the Agency's ambitions:
 - In 2016-17 the Agency carried out less than 40% of the number of compliance visits it planned to (124 visits compared with a target of 346). The total number of visits performed has fallen significantly in recent years (**Figure 13**).
 - In 2017-18, the Agency sought to reduce the number of accredited reprocessors and exporters rated as a red or amber risk to 16, through compliance visits or other interventions (**Figure 14** on page 34). However, at the year-end there were still five red and 33 amber active sites in England. Of these sites, 19 were flagged as amber or red throughout the entire year.

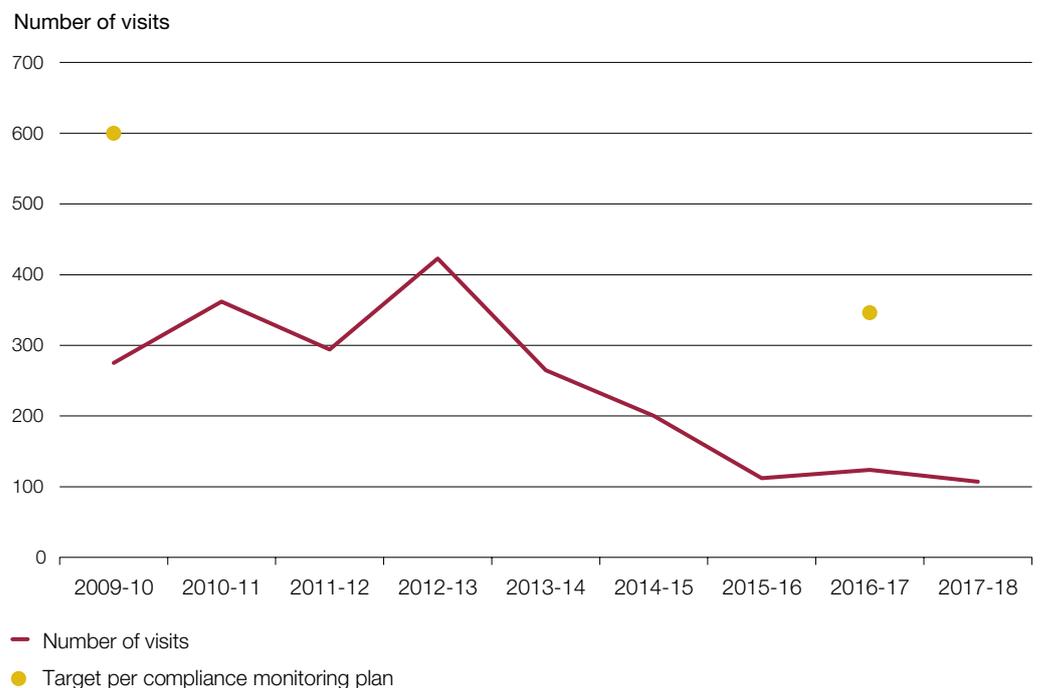
¹² Internal control activities can be classed as either preventative (designed to stop fraud and error before it occurs) or detective (designed to identify fraud and error after it has occurred). Preventative controls are generally considered to be stronger than detective.

- In 2015 an internal audit report raised concerns about the low number of unannounced visits to accredited recyclers. At the time, the Agency's internal plan required that all reprocessors and exporters should receive two visits a year; one announced and one unannounced. Despite the Agency's management accepting this finding, in 2017-18 only three unannounced visits took place, covering 1.4% of registrations, down from 23 in 2016-17 (10.3% of registrations).
- **Measurement.** The Agency believes that its approach is proportionate but it has not quantified the likely extent of fraud and error that remains in the system despite its controls, and the Department for Environment, Food & Rural Affairs (the Department) has not requested this analysis to inform its oversight. Without this, government cannot be confident that it has the right scale, nature and balance of compliance activity.

Figure 13

Packaging compliance visits carried out by the Environment Agency

The number of compliance visits carried out by the Environment Agency has fallen significantly in recent years, and is significantly below planned levels for years when targets were set



Notes

- 1 Data refer to England only: separate compliance monitoring activity takes place within the devolved administrations.
- 2 The average number of accreditations registered with the Environment Agency in the period was 301, with a range from 263 in 2012-13 to 351 in 2010-11. Companies apply for a separate accreditation for each material and for each site they operate.
- 3 Compliance monitoring plans, indicating the number of visits planned to be carried out, were produced for 2009 and 2016 only.

Source: National Audit Office analysis

Figure 14

Environment Agency key performance indicators for compliance activity 2017-18

Objective	Quarterly measures	Target	Year-end total
We reduce the number of high-and medium-risk packaging reprocessors and exporters operating in England	Number of red and amber sites at end of quarter	16 (from 78 at start of year)	Not included in key performance indicator report
	Number of sites downgraded from red as a result of inspection/intervention	Not set	2
	Number of sites downgraded from amber as a result of inspection/intervention	Not set	27
	Total sites downgraded	Not set	29
	Number of announced audits conducted	Not set	117
	Number of unannounced inspections conducted	Not set	3

Notes

- 1 Key performance indicators are reported against by area teams on a quarterly basis, the figures above are the whole-year total across all area teams.
- 2 There were no indicators linked to work with compliance schemes or obligated producers in 2017-18. The most recent year with an indicator assessing an activity linked to these was 2013-14.

Source: National Audit Office analysis

2.5 In April 2017 the Agency commissioned an internal review to examine the reasons for poor performance across its non-site-based waste regulations, including producer responsibility regimes. This found that this work was not generally viewed as a priority, that there was a lack of technical resource and resilience, and that activities carried out were significantly less than that funded and planned for. As a result of this review the Agency's Operations Leadership Team is now considering proposals for a nationally managed approach to its waste regimes instead of the current area-based approach, which it believes has resulted in resource being spread too thinly. The necessary change programme has not yet been approved by Agency management.

Tackling the risks associated with waste exports

2.6 The Agency has two main interventions that aim to ensure that exporters issuing recovery notes accurately report the amount they have recycled:

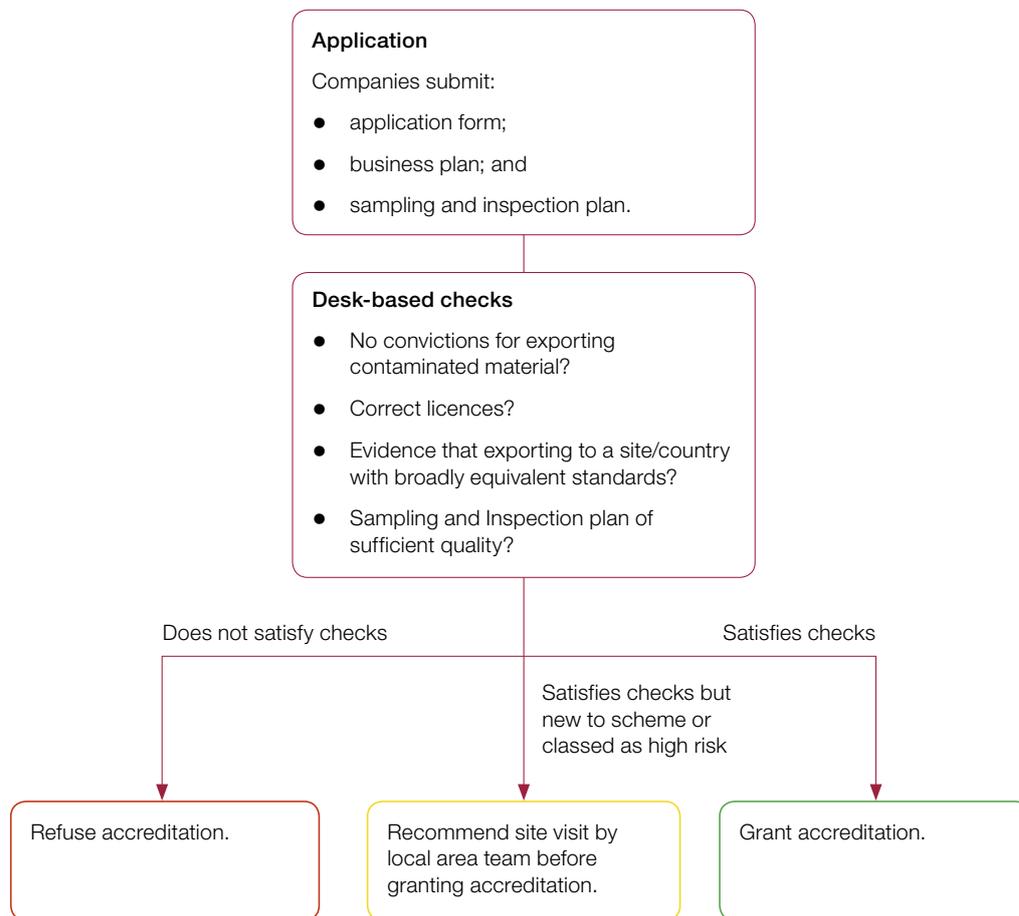
- **Accreditation:** recycling companies that wish to take part in the sale of recovery notes must apply for accreditation and renew it annually. A key component of this process is that the Agency asks companies exporting to non-EU and non-Organisation for Economic Cooperation and Development (OECD) countries to provide evidence that each overseas reprocessor they intend to export to operates under 'broadly equivalent' standards to those in the EU.^{13,14} Companies are required to provide a copy of the receiving company's environmental licence, permit or equivalent. Companies must also submit a sampling and inspection plan to show how they will assure themselves that evidence notes are only issued for material that complies with the rules and is from the UK (**Figure 15** overleaf).
- **Compliance visits** involve visiting a company and checking it has appropriate documentation for a sample of exports to demonstrate compliance with regulations. This includes confirming that the sampling and inspection plan is operating as intended.

2.7 A potential strength of the Agency's approach is that it has access to intelligence from a wide range of sources so that it can create a risk profile of companies. However, our analysis of the Agency's data shows that the results of the risk-profiling carried out is not used to inform inspections: high-risk companies receive fewer compliance visits on average than those rated a low risk. Only one of four high-risk exporters received a compliance visit in 2017 (**Figure 16** on page 37). Furthermore, the Agency records sites which have not received a visit in three years as 'unknown', and so requiring a visit as soon as possible: three export companies marked as unknown in 2015 were still marked as unknown in 2017. In January 2018, following a successful trial period, the Agency launched a central investigations team to support work on high-risk sites across the producer responsibility regimes and to bring in specialist investigative skills. It is too early to assess the improvements this brings to the Agency's risk-based approach.

¹³ A list of OECD member countries is available here.

¹⁴ The definition of 'broadly equivalent' requires that the overseas recovery or recycling operation be carried out in a way that achieves the level of environmental protection set out in the Waste Framework Directive.

Figure 15
Accreditation checks for exporters



Notes

- 1 A company's business plan must set out how it plans to use recovery note revenue.
- 2 A sampling and inspection plan is expected to explain the checks carried out on the waste received in order to confirm it meets the requirements for issuing evidence notes.
- 3 Most exporters will need a waste broker's licence unless, for example, they are exporting waste generated by their own company.
- 4 When exporting to countries outside of the OECD (Organisation for Economic Co-operation and Development) exporters are required to provide evidence that the foreign company they export to is appropriately registered in the receiving country.

Source: National Audit Office analysis of Environment Agency guidance

Figure 16
Exporter compliance visits 2015–2017

		2015	2016	2017
High-risk exporters	Number of operators	6	6	4
	Number of visits	4	5	1
	Average visits	0.67	0.83	0.25
Medium-risk exporters	Number of operators	27	31	24
	Number of visits	7	22	15
	Average visits	0.26	0.71	0.63
Low-risk exporters	Number of operators	42	54	75
	Number of visits	49	49	27
	Average visits	1.17	0.91	0.36
Unknown-risk exporters	Number of operators	28	24	20
	Number of visits	1	3	5
	Average visits	0.04	0.13	0.25
New exporters	Number of operators	7	16	4
	Number of visits	0	0	6
	Average visits	0	0	1.5
Total exporters	Number of operators	110	131	127
	Number of visits	61	79	54
	Average visits	0.55	0.6	0.43

Notes

- 1 Figures are for Environment Agency visits in England only; separate compliance work is undertaken by the devolved authorities for exporters registered in Scotland, Wales or Northern Ireland.
- 2 Exporter risk is as assessed at the start of the year.
- 3 An 'Unknown' risk rating is assigned where there is insufficient data to allocate a risk rating, typically due to the site having not been visited in the previous three years. Three exporters had RAG ratings of Unknown in all three years for which data are available.
- 4 Risk profiling uses a red/amber/green approach. Indicators of red risk are confirmed non-compliance with an element of the waste regime or being under investigation by the Agency. Indicators of amber risk include reports of suspicious activity and concerns about technical competence. A green rating is achieved either by there being no intelligence to support a red or amber rating, or by a visit taking place that finds no further follow-up necessary.

Source: National Audit Office analysis of Environment Agency data

2.8 We are also concerned that:

- the Agency can choose to contact overseas environment bodies to confirm details of a registration, but the number of these checks carried out has fallen significantly in recent years, from 53 in 2014 to four in 2017. It is not clear that the risks of fraudulent documentation have decreased accordingly; and
- the Agency does not carry out any central checks on the quality of compliance visits. The Advisory Committee on Packaging has raised concerns that the level of scrutiny involved in site visits is variable. However, the Agency does have mechanisms to encourage knowledge sharing between the officers that carry out site visits. This includes a monthly teleconference to discuss their work, and there is a training programme for new officers.

2.9 One aspect of potential non-compliance that has been the subject of public and parliamentary concern is the issuing of recovery notes for the export of contaminated material. High levels of contamination can prevent overseas reprocessing of exported material, with the risk that it is instead sent to landfill or contributes to pollution. Exporting waste for disposal overseas (rather than for recycling or recovery) is illegal under trans-frontier shipment regulations. However, in 2013, an all-party Parliamentary Group on sustainable resources highlighted “widespread concern over the enforcement of the Waste Shipment Regulations”, including that “some shipments of material are being mis-described as [recyclate], when they are actually illegal shipments of mixed municipal waste disguised with thin layers of light recyclables such as paper or plastic.” The Department recognised this risk in its 2013 Quality Action Plan for dry recyclates, stating that: “we believe that in some instances consignments which are too contaminated to be legitimately listed as ‘green list waste’ are being exported, generally to the Far East where the costs of labour and disposing of non-target and non-recyclable material are lower than the UK.”

2.10 The exporter accreditation process provides a partial control over the risks of contamination, but needs an effective programme of compliance visits to be fully effective. Accreditation applications are required to include a sampling and inspection plan, detailing how the company assures itself that exported material is UK packaging waste. The Agency reviews the sampling and inspection plan as part of the application process, with staff using their knowledge of the industry to challenge the approach, such as the reasonableness of assumptions over the amount of packaging in a load. However, Agency guidance advises against technically assessing the suitability of sampling methods, as these are expected to be assessed during compliance monitoring visits, and without these visits it is difficult to be certain that exporters are following their sampling and inspection plans. The Agency has not analysed the results of site inspections to determine the proportion of exporters who do not fully follow their sampling and inspection plans, although the results of these inspections are used to inform individual RAG ratings.

2.11 Without better data, we cannot come to a definitive conclusion about the scale of contamination in accredited exports that remains despite the Agency's controls. However, there is evidence that gives grounds for concern:

- Between March and November 2017 China carried out a 'National Sword' campaign, which examined all imports of waste material during that time period. In a submission to the World Trade Organization in July 2017 China reported that "large amounts of dirty wastes or even hazardous wastes are mixed in the solid waste that can be used as raw materials. This polluted China's environment seriously. To protect China's environmental interests and people's health, we urgently adjust the imported solid wastes list, and forbid the import of solid wastes that are highly polluted." Chinese policy documents have also expressed a desire to stimulate its domestic recycling market. China's new restrictions on imports apply globally, and it has not indicated whether UK material is more or less contaminated than that of other countries.
- In 2017-18, 51 shipments of green list waste were stopped by UK port inspectors for not complying with trans-frontier shipment regulations, 15% of inspected green list shipments. Of these, 13 (4% of inspected shipments) were exported by companies accredited to issue recovery notes, with five companies affected. It is unclear the extent to which these proportions are indicative of non-compliance across all exported waste: inspections are intelligence-led, and focus on high-risk waste streams, which means that green list waste is a lower priority. The Agency does not receive specific funding to operate a compliance checking programme for green list waste although it has increased resources for its wider work on illegal waste exports in recent years. Data show that three of the five companies accredited to issue export recovery notes who had shipments stopped have had shipments stopped in previous years, with one group of accredited exporters having eight containers stopped in 2017-18, 13 in 2016-17 and 36 in 2015-16.
- Some of the material available for export has high levels of contamination by non-target material, with the output from English municipal sorting facilities having average contamination rates of 9.5% for plastic and 8.2% for glass in 2017. Non-target material includes both material that is otherwise recyclable (for example where a bale of plastic contains paper), and non-recyclable (for example, where a bale contains food remnants). The Agency does not know whether there are accredited operators that ship this material without further sorting. Since 2014 material sorting facilities have been required to sample processed material to identify levels of non-target material, which is reported quarterly by WRAP. This shows that average contamination rates have increased by 1.6 percentage points for plastic and 0.8 percentage points for glass since data was first collected in 2014.¹⁵

¹⁵ Quarter 4 2017 compared to quarter 4 2014.

2.12 Another aspect of potential non-compliance is the risk that exporters over-claim recovery notes, by making claims based on the weight of material before it goes to a recycling facility without adjusting for any sorting that takes place within that facility prior to entry into the final recycling process. The Packaging Directive allows member states to measure the amount of packaging recycled in terms of the input to an ‘effective’ recovery or recycling process, if there is no significant loss. Stakeholders have raised concerns that losses could be significant for some materials, such as mixed plastic bottles. The Agency has committed to remind exporters that it is illegal to export materials where there is a known risk of significant levels of disposal, and has asked the Advisory Committee on Packaging to advise on the materials that present the greatest risk, which it will use to target compliance audits.

Tackling ‘free-riding’

2.13 A ‘free-rider’ is a company that handles sufficient packaging to be obligated to register under the producer regulations but that has not registered with the packaging recovery notes system. The Agency has four main ways of identifying potential free-riders in England:

- identifying ‘drop-offs’: companies that were previously registered but have not re-registered for the year by the deadline of 7 April;
- ‘tip-offs’ from compliance schemes and industry;
- intelligence from local area officers; and
- sectoral analysis by the Agency’s central producer responsibility team.

2.14 Before 2017, the Agency did not have a systematic approach to following up potential free-riders. Local area officers asked for cases to review when they had availability, but competing demands on their time has meant that a large number of potential cases identified through the above approaches has built up. Our analysis of the Agency’s records for 2009 to 2016 found 2,490 companies that had been flagged as potential free-riders but where no follow-up action had been recorded. Following our initial review the Agency carried out a data cleanse exercise that individually checked each company to check whether they still met turnover criteria and were likely to handle packaging: this reduced the number of companies to be investigated to 1,889.

2.15 It is difficult to estimate how many of these potential cases might actually involve non-compliance: the companies could fall below de minimis thresholds for turnover or weight of packaging handled, or have since ceased trading. Our analysis found that of the 1,779 potential cases that we could identify as having been followed up between 2009 and 2016, the Agency identified actual non-compliance in 311 instances (17.5%). If a similar proportion of non-reviewed cases involve actual non-compliance it would mean that there are an additional 331 companies that should be paying into the system. This would imply that at least 4.5% of obligated companies are not registered. In 2016 the Agency reviewed the list of potential free-riders and contacted 171 companies deemed 'highest risk' to alert them to the packaging obligations. However, this exercise had limited impact, with approximately 84% of companies contacted not responding.

2.16 The Agency considers that any obligated companies remaining on the list of potential free-riders are likely to have a low level of obligation, which would limit their impact. However, it has not performed analysis to support this conclusion. It has also not assessed the risk that large obligated producers may not be detected through the existing free-rider approach, as was the case for the supermarket chain Costcutter (**Figure 17** overleaf), or the overall impact of detected free-riders on the accuracy of packaging data.

2.17 The Agency's free-rider process was revised in October 2017, to bring its central activities on free-riders under the direction of a dedicated officer. Previously the free-rider work was picked up across the wider national team. Since the start of 2017, it has sent a regulation awareness letter to all new potential cases of free-riding. It also risk-profiles all new potential cases: currently on the likelihood of non-compliance, but with plans to also consider size of the potential obligation. Our analysis of the 64 potential free-riding cases identified in 2017 found that:

- only nine (14%) of the 64 cases have so far been found to definitely not be obligated;
- 17 (23%) were non-compliant and registered following contact;
- 15 (23%) were referred to area teams for follow-up; and
- 23 (36%) did not have a result recorded by the Agency.

2.18 Funding for compliance work on free-riders comes from the Agency's general budgets, rather than from fee income collected from registrants with the recovery note system, and the budget for this work has been under pressure from the Agency's other priorities. The Agency expects to develop its approach to free-riders further and introduce a new approach in August 2018.

Figure 17
Case study: Costcutter



In February 2016 Costcutter management alerted the Environment Agency (the Agency) to a potential breach of the packaging producer responsibility regulations. Although a Costcutter subsidiary operating stores wholly owned by the company was registered with the scheme, the group’s management had not realised that other companies within the group, such as those providing products to stores, also qualified as handling packaging. Management were also unaware of a 2005 change in the regulations which made the group responsible for packaging handled by franchised stores. Upon identifying the breach, Costcutter registered with the compliance scheme Valpak and contacted the Agency to inform it of non-compliance.

Once the apparent breach was reported to the Agency discussions took place to agree a penalty offer for donation to charity as a civil sanction enforcement undertaking. Enforcement undertakings are a mechanism allowing the Agency to settle cases with companies who admit non-compliance without going through a court process. It was found that Costcutter’s non-compliance dated back to the introduction of the packaging regulations in 1997. During this time Costcutter estimated that it had not paid its recovery obligations for almost 40,000 tonnes of packaging. In 2014 the breach was equivalent to 0.07% of the total recycling obligation reported by UK companies in that year.

Costcutter made a donation of £650,000 to WRAP in respect of this breach, equivalent to the costs it should have incurred plus 10%. The enforcement undertaking paid by Costcutter was the largest undertaking payout ever accepted under these regulations, and is among the top 40 penalties of any kind ever imposed in the UK for an environmental offence.

Our analysis of files relating to the Costcutter case indicates that the focus of the Agency was on agreeing the size of the avoided obligation and the appropriate level of payment to be made. There has been no review of the implications of such a significant free-rider failing to be identified by existing mechanisms, even when associated companies were registered, nor has there been any work undertaken to establish whether other companies may have made similar errors in compliance due to complex group structures or misunderstanding of requirements.

Note

1 WRAP is the Waste & Resources Action Programme, a registered charity.

Source: National Audit Office analysis

Part Three

Government's wider oversight of the system

3.1 This part examines the Department for Environment, Food & Rural Affairs' (the Department's) strategic oversight of the system, covering its approach to:

- strategy (vision and objectives);
- stakeholder engagement;
- identification and management of risks; and
- evaluation and feedback.

3.2 The Department and the Environment Agency (the Agency) have different roles to play in ensuring good oversight. The Department is responsible for policy related to the system and for monitoring progress against the UK-wide targets while the Agency is responsible for ensuring compliance with the system's regulations within England. The two organisations also have joint responsibility for working effectively together to ensure a coherent and coordinated approach that makes the most of each others' expertise.

Strategy: vision and objectives

3.3 As described in Part One, the system was created to comply with EU regulations, which set clear targets for recycling waste packaging. However, the Department has not clearly and consistently articulated a vision for the broader aims of the system. In its 2013 response to a European Commission questionnaire, the Department argued that it functions as a 'direct incentive' for businesses to minimise the use of packaging and to reuse it, as this would lower their compliance costs. However, the Department has not clearly and consistently articulated a vision for the broader aims of the system, nor set specific criteria to assess the scheme's success. For instance, the Department has a stated ambition that the system should "minimise" costs to business, but has not specified how this will be measured.

Stakeholder engagement

3.4 The Department's main means of engaging with system stakeholders is through the Advisory Committee on Packaging (the Committee). The Committee is intended to "bring together industry expertise with a specific interest in packaging and packaging waste to advise and make recommendations to the Department to assist with its policy development on packaging reuse, recovery and recycling". Members include representatives from trade bodies, reprocessors, local authorities, a compliance scheme from Northern Ireland and Valpak, the largest compliance scheme in England. The Department formally meets with the Committee four times a year and there are several 'task forces' that meet more regularly to assess specific issues.

3.5 The Committee has provided input to a number of changes made to the regulations since 1997. However, we are concerned that its influence has been limited by a focus on operational aspects of the system, such as the setting of targets, with recommendations focusing on small-scale improvements rather than broader strategic issues such as understanding wider system outcomes and overall effectiveness. More recently, the Department has asked the Committee to look at more strategic issues, such as preparing a paper on the future of the regulations and providing input to the EU's Circular Economy package.

3.6 The Committee regularly makes recommendations to the Department and we have seen how these have played a role in setting targets and updating the regulations. However, as the Department does not usually formally respond to the recommendations or track responses, there is a risk that some may be overlooked or not followed up properly. We asked the Department to review what action had been taken in response to a number of the Committee's recommendations from 2015. Several recommendations had been passed on to teams within the Department for consideration and others had been incorporated into the ongoing discussions regarding the Circular Economy, but the Department was unable to demonstrate precisely what actions had been taken in response.

3.7 Businesses that pay into the system have complained about a lack of transparency about how the money is spent. The system's legislation was amended in 2010 to address this concern, requiring that reprocessors and exporters submit a business plan setting out how they plan to spend recovery note income, and report spend of recovery note revenue to government annually against six categories. However, our analysis of a sample of business plans suggested that they have not proved a useful way to improve transparency, because the boundaries between the six categories are not clear, with some companies allocating planned activities to multiple categories.¹⁶

¹⁶ We examined a sample of 23 reprocessors and exporters registered with the Environment Agency.

Management of risks

3.8 A key risk faced by the system is the medium and long term availability of foreign recycling markets. The British Plastics Federation highlighted the sustainability of these markets, particularly China, as a potential threat to UK recycling in 2012. The Department identified in 2011 that there was a risk of fluctuations in the global market for waste, which could affect achievement of all its waste targets including for packaging recycling. However, it did not consider the specific risk that the long-term demand for waste exports could reduce as countries' domestic recycle increases. This is despite the increase in reported recycling rates for packaging waste over the past 10 years being mostly due to a growth in exports, with China as the single largest market. 25% of the UK's plastic waste exported for recycling and 89% of its paper waste exports went to China in 2017 (**Figures 18, 19 and 20** on pages 46 to 48).

3.9 In 2013 the Department published an action plan for improving the quality of material available for recycling, covering paper, metal, glass and plastic (including packaging). The plan argued that improving the quality of waste material available to reprocessors and exporters was one of the 'principal challenges' that needed to be addressed to achieve government's longer-term vision for the sector; that market conditions for export could potentially create a strong bias towards lower quality material; and that improving quality would strengthen the resilience of the industry to changes in global markets. However, a key measure of success – the contamination levels of material from English municipal sorting facilities – has not improved since data started to be collected in 2014 (paragraph 2.11).

3.10 In July 2017 China announced that it would ban the import of certain types of waste for recycling and tighten the regulations covering the import of other kinds. These new restrictions came into force during the first quarter of 2018. They have resulted in a significant reduction in the amount of plastic waste exported to China, by more than 90% compared with the first quarter of 2017. Reductions in the rates of paper exported to China were less severe, falling by 33%.

3.11 Data from the first quarter of 2018 suggest that so far a large part of the potential shortfall has been made up by other recycling routes. However, there is a risk that this may not be maintained, and while some other countries have accepted more material, others have amended their waste controls to introduce further restrictions:

- In January 2018, Vietnam stopped issuing waste import licences.
- In July 2018, Thailand banned all imports of plastic and electronic waste.
- Poland imports waste from a number of countries, including the UK, for recycling. Recently, Polish Ministers have raised concerns that some of this waste is being dumped or illegally burnt due to stockpiles increasing beyond the capacity of its reprocessing sites.

Figure 18

Recycling destinations of plastic packaging waste

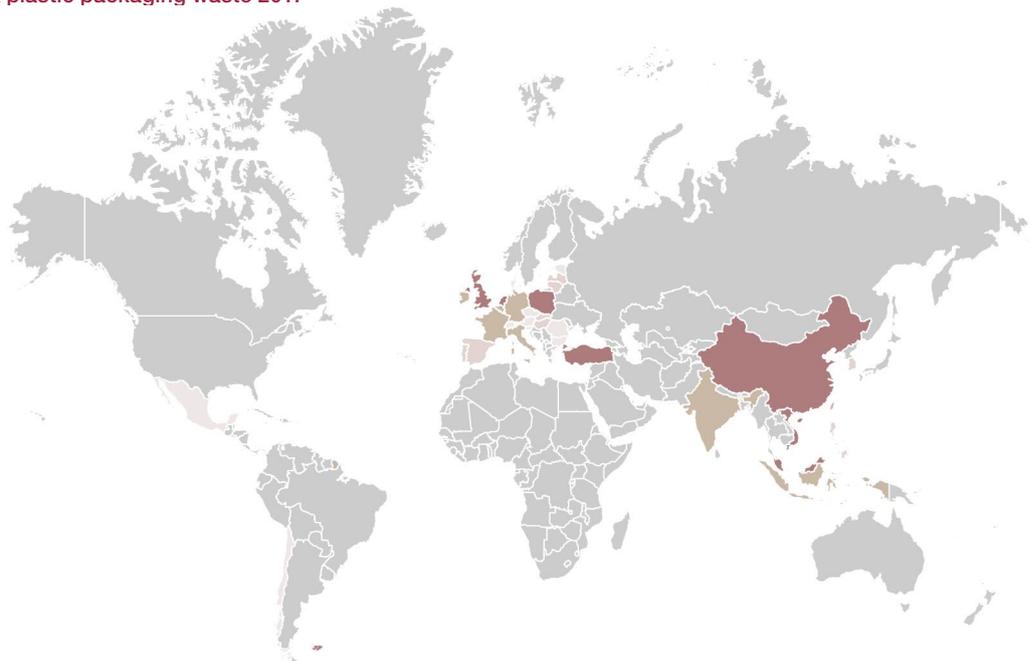
In 2017 China was the most significant foreign customer for the UK’s plastic packaging waste, receiving 25% of exports. The next most significant customers were Malaysia, Poland and Turkey, who each received 11% of exports in 2017

Exports accounted for 66% of plastic recovery notes issued in 2017, with the remaining 34% issued by UK reprocessors.

Recycling destinations of UK plastic packaging waste 2017

UK plastic packaging waste reprocessed (tonnes)

- More than 500,000
- 50,001 to 500,000
- 5,001 to 50,000
- 501 to 5,000
- 0 to 500
- No exports



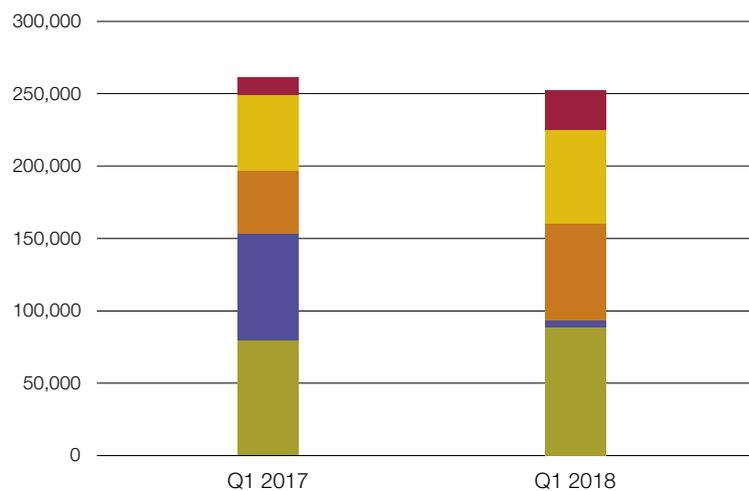
Data for the first quarter of 2018 show that China’s share of the market has reduced significantly as a result of its new restrictions on the quality of waste exported. In the first quarter of 2017 it received 40% of the UK’s plastic exports, whereas in the same time period for 2018 it received only 3%.

The most significant foreign markets for plastic packaging waste in the first quarter of 2018 were:

- Malaysia (17%);
- Turkey (16%);
- Poland (12%);
- Indonesia (11%); and
- The Netherlands (9%).

Destinations of recycled plastic packaging waste

Tonnes



- Other Organisation for Economic Co-operation and Development (OECD) Countries
- European Union
- Other Asia (excluding OECD and China)
- China
- United Kingdom

Notes

- 1 This map assumes that Greenland does not receive any of the exports sent to Denmark.
- 2 Figures for China include Taiwan.

Source: National Audit Office analysis of national packaging waste database data

Figure 19
Recycling destinations of paper packaging waste

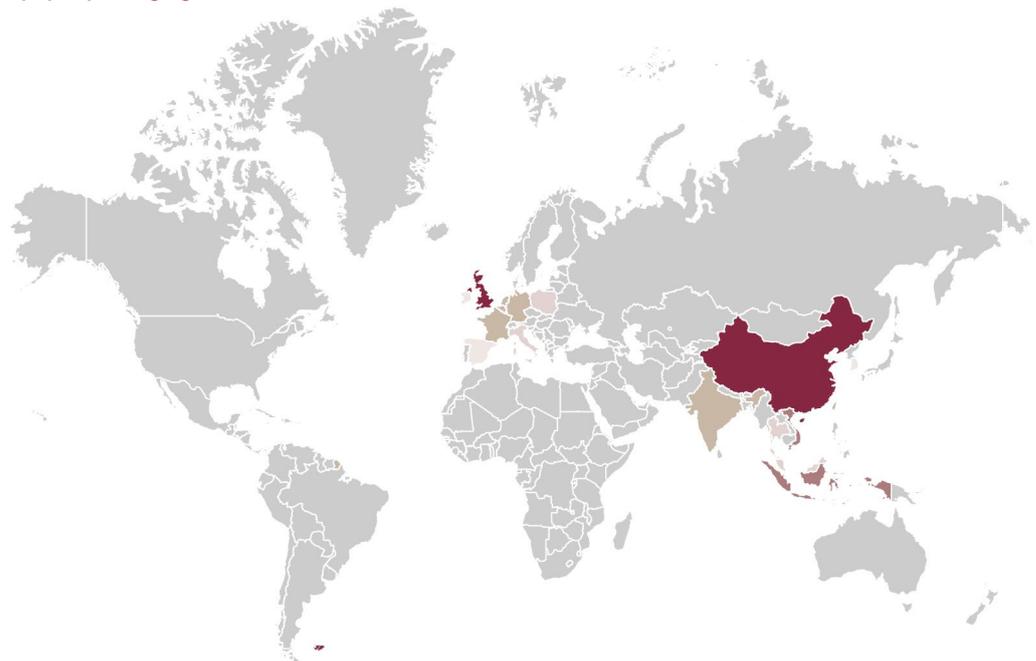
In 2017 China was the most significant foreign customer for the UK's paper packaging waste, receiving 89% of exports. The next most significant customers were Vietnam, receiving 5% of exports in 2017, and Indonesia, receiving 3%

Exports accounted for 66% of paper recovery notes issued in 2017, with the remaining 34% issued by UK reprocessors.

Recycling destinations of UK paper packaging waste 2017

UK paper packaging waste reprocessed (tonnes)

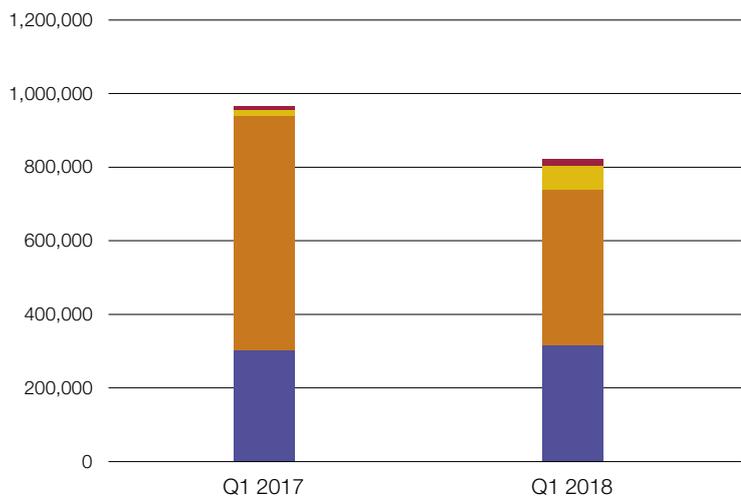
- More than 500,000
- 50,001 to 500,000
- 5,001 to 50,000
- 501 to 5,000
- 0 to 500
- No exports



Data for the first quarter of 2018 shows that China's share of the market has reduced slightly as a result of its new restrictions on the quality of waste exported. In the first quarter of 2017 it received 96% of the UK's paper exports, whereas in the same time period for 2018 it received 84%. The overall tonnage of paper exported has reduced by 23%.

Destinations of recycled paper packaging waste

Tonnes



- European Union
- Other Asia (excluding Organisation for Economic Co-operation and Development Countries and China)
- China
- United Kingdom

Note

1 Figures for China include Taiwan.

Figure 20
Destinations of other packaging waste

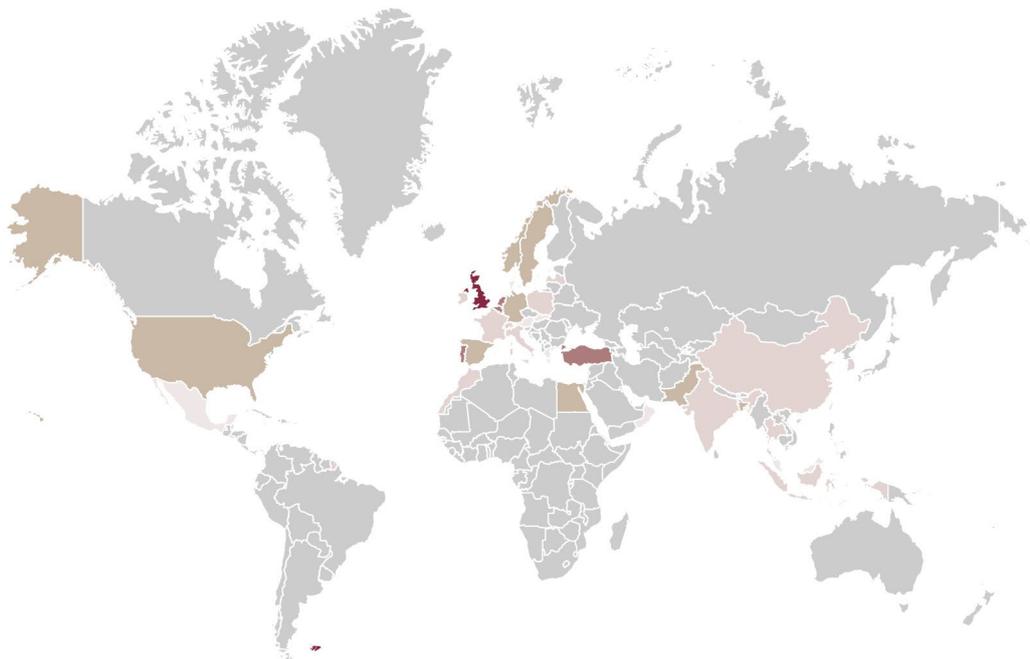
EU countries are the most significant foreign customers for UK packaging waste other than paper and plastic. In 2017 Portugal received 29% of exports, and the Netherlands received 27%. China received only 0.4% of non-plastic and non-paper packaging material

Exports accounted for 22% of recovery notes issued for non-paper and non-plastic packaging waste in 2017, with the remaining 78% reprocessed in the UK.

Destinations of other UK packaging waste 2017

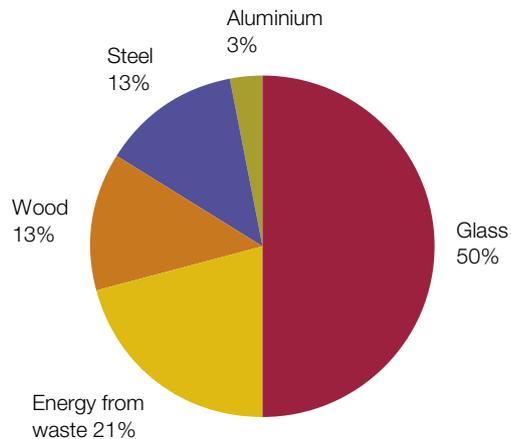
Other UK packaging waste reprocessed (tonnes)

- More than 500,000
- 50,001 to 500,000
- 5,001 to 50,000
- 501 to 5,000
- 0 to 500
- No exports



Other packaging waste recycling by type

Half of non-paper and non-plastic packaging recycled or recovered by weight is glass, with the remainder being recyclable metals, wood, or material burnt for energy. Exports of these materials have not been significantly affected by the restrictions on quality of exported material introduced by China, and have increased by 14% in the first quarter of 2018 compared with the first quarter of 2017.



Notes

- 1 This map assumes that Greenland does not receive any of the exports sent to Denmark, and that Svalbard does not receive any of the exports sent to Norway.
- 2 Energy from Waste is waste material burnt for energy in a municipal waste incinerator.
- 3 Figures for China include Taiwan.

Source: National Audit Office analysis of national packaging waste database data

3.12 Once the ban was announced, the Agency established an internal project team in September 2017 to focus on how its regulatory role and risks to the waste management sector might be impacted by the China waste import restrictions. It also began producing a regular internal briefing, shared with the Department, on its impacts and the actions taken to manage the situation, which has included 154 site visits to assess whether the ban is leading to the stockpiling of waste in the UK. The Department and the Agency have established a joint project team to coordinate the government's response. However, the Department decided not to analyse the potential effect on the price of packaging recycling notes and the financial impact that this will have on the system; nor has it assessed how likely it is that packaging recycling targets will be missed.

3.13 The lack of active monitoring of risks means that the scheme has not been updated to reflect changing circumstances in the market. Neither the Department nor the Agency has carried out any analysis of whether the increasing prominence of online marketplaces has altered the make-up of the packaging market. Companies that operate online marketplaces are only obligated for packaging material they handle themselves, and not for the packaging on orders sold through their marketplace but fulfilled by third parties. The Department has no estimate of the amount of packaging that may not be covered by the system as a result, either because it is handled by small companies who fall under the de minimus thresholds or who are not aware of their obligations. The Agency highlighted the issue of companies acting as agents to the Department as an area where change may be required in 2013. No amendments in respect of this have been made to date.

Evaluation and feedback

3.14 Regular, good-quality, ex-post evaluation of government policies is essential to ensuring that money is spent in a cost-effective way.¹⁷ A key feature of a good evaluation is that it considers whether the initiative delivered the intended outcomes or impacts, and to what extent those were due to the policy.

3.15 The Department has updated the regulations on numerous occasions, having identified operational areas that could be improved, and has assessed the potential impact of changes. However, it has only conducted one evaluation of what the system as a whole has delivered so far, in 2017. This concluded that the regulations met its main objective, to 'ensure that the UK meets packaging recycling and recovery targets as set by the Packaging Directive'. However, it was not a comprehensive review of the policy, and did not assess:

- whether the system provides additional benefits beyond what would be achieved by measures such as Landfill Tax, which provides local authorities with a strong financial incentive to recycle household waste;
- whether the governance processes in place over the system were working effectively and whether the working relationship between the Department and the Agency was optimal;
- the costs to taxpayers of collecting packaging waste; nor
- whether the system has encouraged companies to minimise packaging, or make their packaging easy to recycle.

3.16 In addition to the evaluation conducted in 2017, the Department has periodically undertaken reviews of particular aspects of the system. However, it is not clear how they have been used to drive improvements. For example, in 2015 the Department commissioned environmental consultants Enomia to conduct a series of five reviews into the system. These reviews looked at a range of significant issues, such as a potential lack of competition in the market for packaging recycling notes, constraints on achieving higher recycling rates and ways to reduce fraud in the system. Despite generating a number of recommendations which could have had a major impact on the effectiveness of the system, the Department has been unable to demonstrate that these were fully captured and acted upon.

Appendix One

Our audit approach

1 This report examines the UK government's oversight of the packaging recycling obligation system in response to a request from the Environmental Audit Committee of the House of Commons. We assessed:

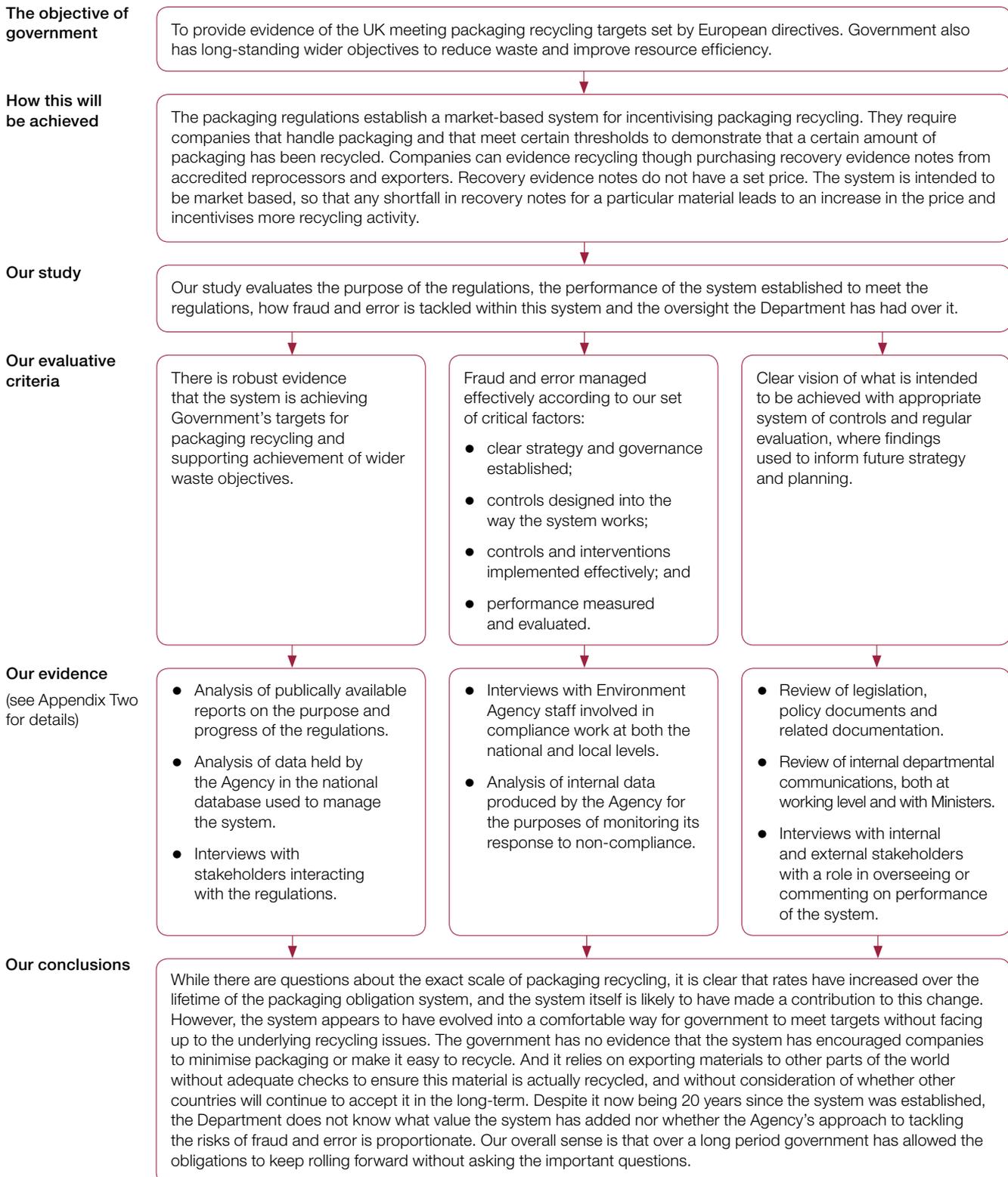
- a** the purpose and performance of the system;
- b** how the Environment Agency tackles fraud and error in the system; and
- c** government's wider oversight of the system.

2 We evaluated the government's approach against good practice criteria for managing fraud and error, and for exercising oversight. Our good practice criteria were developed during previous National Audit Office studies covering a range of Government departments and regulatory regimes. This included the critical factors for tackling fraud and error identified in the Department for Work & Pensions and HM Revenue & Customs Fraud and error stocktake,¹⁸ and the core management cycle presented in our Short Guide to Structured Cost reduction.¹⁹

3 Our audit approach is summarised in **Figure 21** overleaf. Our evidence base is described in Appendix Two.

¹⁸ Comptroller and Auditor General, Department for Work & Pensions and HM Revenue & Customs, *Fraud and error stocktake*, Session 2015-16, HC 267, National Audit Office, 21 July 2015.

¹⁹ Comptroller and Auditor General, *A short guide to structured cost reduction*, National Audit Office, 18 June 2010.

Figure 21**Our audit approach**

Appendix Two

Our evidence base

1 Our review of the packaging recycling obligation system was based on evidence gathered between March and July 2018. Our audit approach is outlined in Appendix One.

Interviews and visits

2 We conducted semi-structured interviews with stakeholders to understand their view of the purpose of the scheme, its performance, the level of fraud and error present and the oversight government has had over it. We also used these interviews to identify relevant documentary evidence. We spoke to representatives of compliance schemes, obligated companies, recycling companies, industry bodies, waste industry consultants and members of the Advisory Committee on Packaging.

3 We visited the Environment Agency's (the Agency's) central packaging compliance team in Sheffield to develop our understanding of how the scheme operates and is monitored, and to interview key staff. We also conducted interviews with other staff across government, including the Department for Environment, Food & Rural Affairs' (the Department's) exports team, and the Agency's area teams.

Document review

4 We reviewed documentation from the Department and stakeholders and documentation in the public domain. This included legislation, government policy papers, internal department briefing notes, internal audit reports, staff guidance, meeting minutes of the Advisory Committee on Packaging, academic and industry reports covering packaging waste, and relevant published National Audit Office reports. We used this documentary evidence to understand how the scheme was implemented and how it had been operated and overseen since its inception.

5 We also reviewed published reports on the Department's methodology and assumptions for estimating packaging recycling rates. We assessed the robustness of these reviews and estimates against our understanding of the system and good practice.

Data analysis

6 We were provided with access to the National Packaging Waste Database for the purposes of our audit work. This database is used by companies participating in the packaging recovery notes system, either as an obligated producer, a compliance scheme, or as a recycler, to submit data to regulatory bodies, including on the buying and selling of packaging recovery notes. The database is also used by the Agency and devolved regulators to process accreditation applications.

7 We used access to the database to:

- determine the number of companies registered and accredited with the scheme, and the amount of revenue reported as generated through the system;
- analyse trends in the reported weight of UK packaging recycled; and
- analyse a sample of applications for accreditation made by recycling companies, examining their submitted business cases and whether the data held could be used to improve transparency.

8 We also reviewed the Agency's data on potentially obligated companies who are not registered with to the system (free-riders), compliance visits, and risk-assessments. We used this data to:

- evaluate the success of the agency's compliance activity as measured by its own performance management activities; and
- identify inconsistencies or gaps in the data that could prevent effective management of the risks of fraud and error.

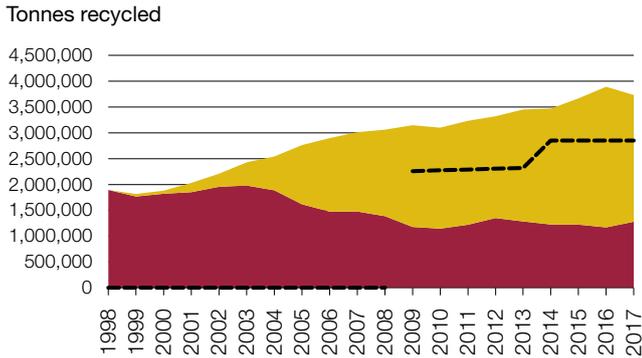
Appendix Three

Recycling trends in different packaging materials

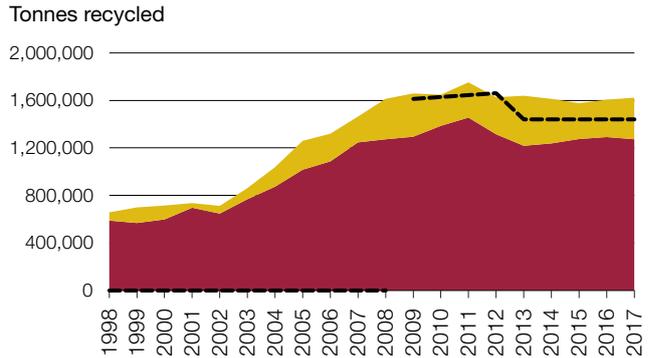
Figure 22
Packaging recycled 1998 to 2017 for each packaging material

Recycling of all materials has increased, except for wood, which has seen a strong decline since 2008 due to its use as biomass fuel. Graphs are shown in order of recycling quantity and are plotted on different scales (same scale comparison available in Figure 7)

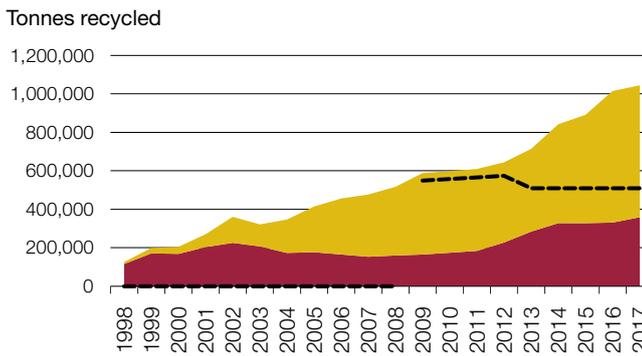
Paper/board packaging recycling



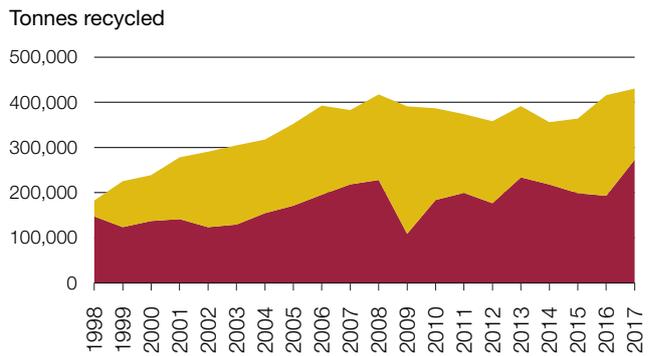
Glass packaging recycling



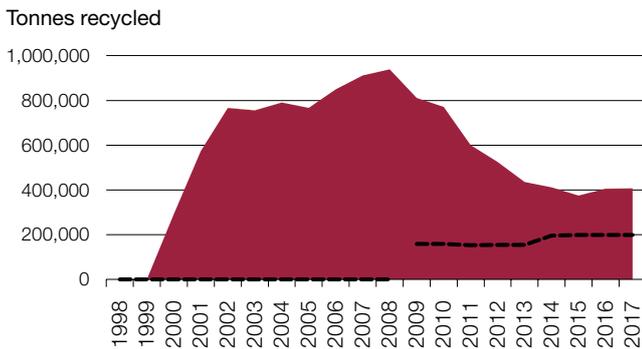
Plastic packaging recycling



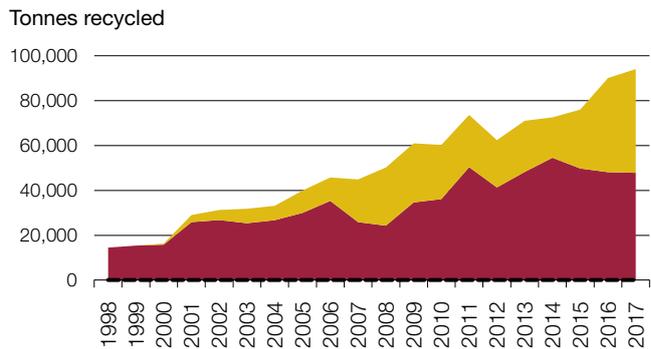
Steel packaging recycling



Wood packaging recycling



Aluminium packaging recycling



■ United Kingdom reprocessing ■ Exported - - European Union target

Notes

- 1 Material-specific targets came into force at the end of 2008.
- 2 The targets shown are the EU packaging recycling rate multiplied by the Department for Environment, Food & Rural Affairs' estimate for packaging on the market for each material to give a minimum tonnage that would need to be met to achieve the target.
- 3 The EU has a single target for metals that includes aluminium and steel so individual targets for these cannot be expressed in the same way as for the other materials.

Source: National packaging waste database

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