

Money back for our empties... the recycling solution for our plastic bottles?

As a nation our dependency on plastic has grown immeasurably. In 2019 the UK Government called for a review into our relationship with this omnipresent material, to examine and find ways to change our daily use.

Every day in the UK 36m plastic bottles are consumed, and the government is proposing to introduce a Deposit Return Scheme (DRS) that could increase the recycling rate of plastic bottles.

But is that right? Are the other ways to achieve the same goal, with greater benefits?

This paper highlights an alternative to DRS which we challenge the Government to consider.

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Executive Summary

On average in the UK, we all use around 150 single use plastic bottles each year, which based on a recycling rate of 57%, means that approximately 3bn plastic bottles are thrown away, littered or never recycled every year. ⁽¹⁾

In 2019 the Department for Environment, Food and Rural Affairs (Defra) launched a consultation to understand how to make it easy for consumers to return drinks containers via a Deposit Return Scheme (DRS) in England, Wales and Northern Ireland.

The aim of the proposed scheme is to increase recycling rates and reduce littering. It is planned to launch in 2023.

With the growing public concern regarding single use plastics, this paper considers the government's approach to the consultation, whilst also presents the findings from a large recycling pilot launched by Greenredeem to understand if there is an effective and economically viable alternative to DRS.

Introduction

Defra's consultation into launching a DRS is part of a wider focus that has been commissioned, looking to overhaul the entire waste and recycling system which includes three parallel consultations:

- Reformed UK packaging producer responsibility system
- Consistency in household and business recycling collections in England
- Plastic packaging tax

Annually approximately 3bn plastic bottles are thrown away, littered or never recycled

With nearly 36m plastic bottles being consumed on a daily basis⁽²⁾, it is not only public concern over single use plastics which have been a catalyst for this vital review, but also the 'Blue Planet effect', beach littering⁽³⁾ and wider macro factors such as the 2018 Chinese ban on importing plastic recycling.



It is therefore alarming to many, that according to the government's published Waste and Resource Strategy, a solution will not be implemented until 2023. Despite this lengthy lead time, it is an important opportunity for the government and industry to work together to create a viable, long-term solution.

There is concern from local authorities who would lose good quality PET collected at the kerbside (circa £240 - £300 / tonne)

Whilst the aim of the consultation is to create a holistic legislative framework for England, Wales and Northern Ireland, it will not be without significant debate. For example, there is considerable concern from local authorities who would lose good quality PET (a highly recyclable plastic resin) collected at the kerbside, which if lost to a DRS system would potentially mean a significant loss of revenue (circa £240 - £300 per tonne)⁽⁷⁾. However, in a closed loop, circular economy model, manufacturers would argue that the material belongs to them and that through a DRS they are merely 'lending it' to consumers, to be responsibly returned.

Will the proposed DRS be fit for purpose in the UK?

Following exploratory meetings held between Greenreedeem and Defra it became evident that Defra's consultation would take the form of gathering secondary evidence from sources within respective countries and industries, including from schemes operated across Europe; specifically Norway and Germany.

Whilst there are many similarities between the recycling outcomes that nations within the EU are attempting to achieve, the method of how those objectives are achieved will differ from country to country. Simply looking at the variety of different European models available and creating an untested strategy for the UK has many risks, as there is no 'one size fits all approach'.

In addition, Defra have no foreseeable plans to

commission an independent pilot study into how a DRS may work in England, Wales or Northern Ireland whilst in the meantime, Scotland are forging ahead with a plan to introduce their own DRS.

Without a pilot or equivalent there would be no empirical, primary evidence of the impact, customer engagement, costs or benefits, we believe this could result in unintended consequences affecting the UK consumer, supply chain and commodity markets.

At Greenreedeem we therefore believe there is a danger that the industry, from manufacturer to retailer, collector to processor, would be sleep-walking into a scenario where a DRS would be introduced into the UK which is not suitable or appropriate.

We believed that by simply looking at a variety of different European models available and creating an untested strategy for the UK, there were many risks. There is no 'one size fits all approach'

Institute of Economic Affairs (IEA) Report

Furthermore, the IEA, an independent think tank, has called for the government's plans for a deposit return scheme in England to be abandoned unless "a more robust economic case" can be made.⁽¹¹⁾

Following the launch of a report into the feasibility of the proposed DRS, they have warned that the system is a "very expensive way of achieving very little" and will lead to local authorities losing out on revenue.



IEA's report into the proposal has suggested that a DRS for drinks cans and bottles is expected to cost almost £1 billion to set up (and £814 million per

annum thereafter) to collect recyclables worth around £37 million, based on the projected value of the material by Defra.

IEA claims that the UK already has a "comparatively high recycling rate" with kerbside recycling compared with the USA, Canada and Australia where deposit systems have been in place for many years.

And the vast majority of containers intended to be collected through the DRS are already being recycled via kerbside collection, the report suggests. Under a DRS "local authorities will lose the revenue they make from selling these materials," IEA says.

DRS is unlikely to recover more than extra 10-15% of beverage containers

IEA also claims that although the DRS is expected to increase recycling rates, it is unlikely to recover more than an extra 10-15% of beverage containers.

Greenredeem plastic bottle pilot

To support and inform Defra's consultation process, Greenredeem launched a large recycling pilot within an education setting. An important goal of this initiative was to adopt an objective approach, highlighting the choice and differences between a managed scheme designed (in part) to increase sales of certain brands of product i.e. the DRS, compared to one that links recycling activity with education, sustained behaviour change

and good causes, in turn maintaining a healthy and competitive commodity market.

In light of this, Greenredeem were keen to understand if there was an alternative or complementary solution to DRS that can support kerbside collections and potentially reduce the capital costs of set up.

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Pilot scope

The overarching aims and objectives were to:

- Explore an alternative approach which would raise awareness of plastic bottle recycling
- Link to education and benefit the local community
- Reduce overall use of SUPs, (where plastic was unavoidable)
- Find an effective and economically viable method of increasing quality and capture ahead of the government's 2023 time frame.

Greenredeem believe that this pilot could be a model to improving recycling quality and capture rates, reduce littering and contribute towards the creation of a circular economy which will support the ambition of the UK to become carbon neutral by 2050 ⁽⁶⁾

The Greenredeem pilot campaign - a closed loop partnership

The pilot took place in the Royal Borough of Windsor & Maidenhead between January - December 2019. At its heart was a desire to understand whether by directly involving schools and raising awareness of plastics through education, we could create a network of school collection points which would significantly increase quality and capture, whilst simultaneously changing the way we think about and engage with single use plastics.

To undertake this, Greenredeem formed a collaboration of partners; Plastic Oceans UK, Primary & Secondary schools in the Royal Borough of Windsor & Maidenhead, Clean Tech, PlastiPak & Grundon Waste Management. (See appendix for more details)



Campaign mechanics

The launch comprised of 25 schools in two phases and sought to understand whether by offering schools education and financial benefits, we could increase the recycling capture rate of plastic bottles.

Each school had an interactive recycling kiosk installed. The kiosk, which was specially branded with video, images and fun relevant environmental facts, created a strong focal point in the school where students could scan and recycle plastic bottles.



Education & engagement

Students were engaged with specially created Crest Award lesson plans, developed by Plastic Oceans UK.

Supported by an eLearning Portal ⁽⁸⁾ the pilot aimed to educate young people about the impact of plastics on the ocean, leading to an increase in recycling and a possible reduction of plastic bottle usage in the future. Plastic as a packaging material is currently ingrained in our everyday lives and whilst we would like to see a reduction in the amount of plastics consumed, at this stage the pilot sought to understand how we engage with and responsibly recycle plastics.

Student activity, tracking & incentive

Student activity, tracking & incentive
Students recycled at the kiosks on a daily basis, with bottles sourced at school, from home, events (and litter picks). The bottles were collected each week and by consolidating plastic bottles a very clean, uncontaminated feedstock of PET was created.

Through the kiosk technology we were able to track both the volume of recycling collected & importantly what was being recycled - giving a brand by brand breakdown of the types of bottles collected.

For each plastic bottle that the pupils recycled, the school gained 5p, to a maximum of 40,000 bottles (£2,000)

As added incentive and to replicate a value being placed upon each bottle (as in the case of EPR or DRS), the school gained 5p for each plastic bottle that the pupils recycled, to a maximum of 40,000 bottles.

Communication

Greenredeem produced information packs for each school which included:

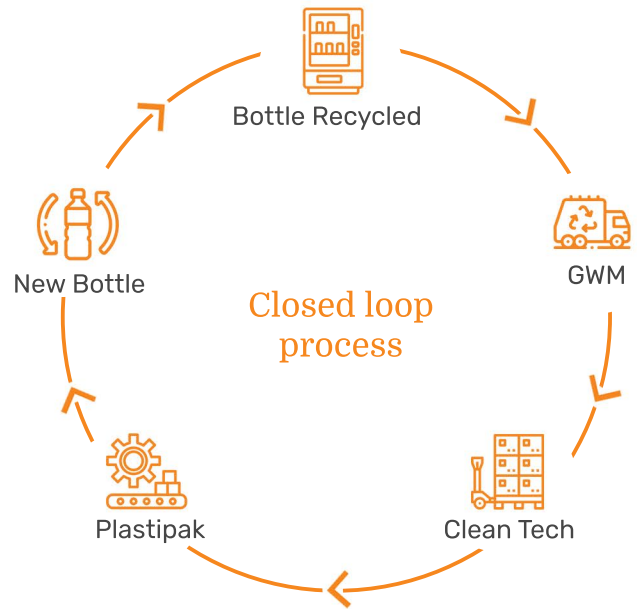
- Promotional Posters
- Leaflets
- Letters to parents with links to pre/post surveys.
- Instructions on how to use recycling kiosks
- Links to the bespoke Plastic Ocean interactive presentation (including video footage, quizzes, facts) and the 16 Crest Award lesson plans



Closed loop recycling solution

Following collection and baling at Grndon Waste Management's nearby Colnbrook facility, the baled PET was bulked and transported to Clean Tech in Lincolnshire. At Clean Tech's plant, the PET was sorted, cleaned and a food grade PET flake was created.

This was finally transported to Plastipak's manufacturing facility in Wrexham, Wales to complete the bottle to bottle closed loop process.



Pilot outcomes - recycling

During the pilot, at the 25 participating primary & secondary schools:

160,000
plastic bottles
recycled

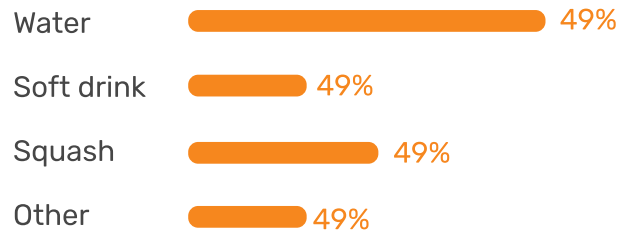
5 tonnes
of plastic
collected

12,000
students
participated

13.3
bottles per
student recycled

£8,000
in grants given
to schools

Bottles were scanned, allowing analysis to be undertaken of the brands, sizes & flavours of products being consumed. From this we've been able to discern what was being recycled, understanding the composition of the bottles that schools collected.

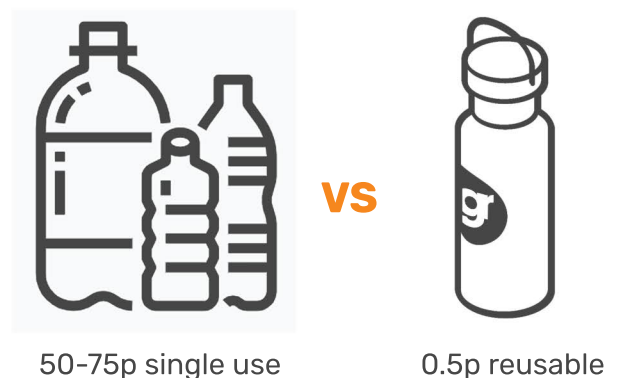


Looking specifically at the recycling composition analysis, it was noted that over 78,000 plastic water bottles (49%) were collected. This is a wholly avoidable use of plastic. It immediately identifies one simple behaviour change action that consumers could take, by switching to using a refillable bottle.

Over 78,000 (49%) of the plastic bottles collected had contained water

According to research undertaken by the Green Alliance, 'a typical container designed for refill only has to be topped up 15 times to have a lower carbon impact than a single use plastic one' ⁽⁹⁾ Even if not for the environmental benefits, the economics rapidly stack up.

A single 500ml bottle of water costs in the region of 50-75p. A refillable 500ml water bottle costs in the region of £10. If used daily, then in under a month the refillable bottle costs are paid back.



Shifting attitudes to recycling – pre-post surveys

As well as piloting a method to capture plastic bottles for recycling, we were keen to also understand more about customer attitudes to the recycling of plastic bottles, and the role that a school based incentive scheme could have in increasing capture rate. Three surveys were undertaken, where we gathered insight from over 2,100 respondents, which included:

- A survey of parents of pupils at the participating schools before the pilot commenced.
- A survey of parents of pupils at the participating schools after the pilot ended.
- A control group national survey

Attitudinal findings



Awareness of plastic pollution affecting our countryside & marine environment

Awareness of the impact of plastic pollution grew from 88% to 93% during the pilot

Awareness nationally was lower at 78%



The need to change the way people think about plastics

The need to change stayed high at 99% pre vs post

Nationally this was marginally lower at 96%



Recycling plastic bottles when you're not at home

The number of participants claiming to recycle all plastic bottles when not at home grew from 56% to 62%

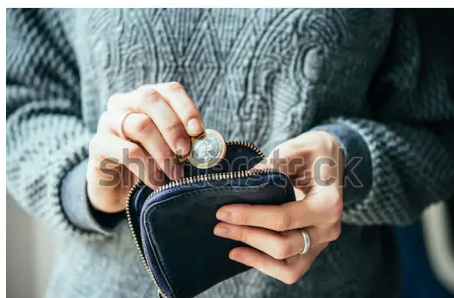
Nationally, this was lower at 50%



About paying a refundable tax (like a deposit) on your plastic bottle

There is strong support for a refundable tax on plastic bottles, which grew from 79% to 86% during the pilot

Nationally, 83% of people support a refundable tax



How much are consumers willing to pay?

There is over 75% support for consumers to pay up to 10p per bottle. However, the amount that people are willing to pay 15p reduced to around 25%. The likelihood to pay more grew during the pilot – suggesting participants can see the benefits



Would you be prepared to pay a lower non-refundable tax on your bottle [like plastic bags] if the money was directly awarded to schools and good causes?

For nearly 3 in 4 consumers, a donation to a school or good cause was seen as a motivating factor

Conclusion

This year long pilot has demonstrated that by working in a closed loop partnership model, educating and motivating pupils to recycle plastic bottles, **the recycling rate of plastic bottles can be increased.**

We are not suggesting that this is a replacement for a DRS, but could sit alongside other strategies (consistency and EPR) to increase the amount of plastic bottles that are recycled, as part of Extended Producer Responsibility.

It is time to accelerate the consultation process. Every day in the UK, nearly 36m plastic bottles are consumed and only 57% are recycled. Without intervention, the UK loses over **15m plastic bottles every day.** But we believe it's not just about increasing recycling rates, we also believe that we must challenge consumer behaviour around (plastic) bottled water. Based on our composition analysis findings, 18m of those plastic bottles consumed daily contain water – a behaviour that consumers could change very quickly.

It's a win-win model that benefits all stakeholders. Schools benefit both educationally with lesson plans that support curriculum delivery, and financially with funding. The recycling supply chain benefits by getting access to a pre-sorted clean stream of recycling, whilst the environment benefits from reduced littering and the impact on our oceans of marine plastics.

Just as consumers reacted positively to the carrier bag tax, which saw a reduction of 86% in sales of 5p carrier bags,⁽¹⁰⁾ there is attitudinal evidence from this pilot that **consumers are now ready to accept the principle of a deposit** in relation to purchases of drinks in plastic bottles

We need to think beyond financial economics and consider environmental economics. The pilot has been funded by the stakeholders, using an arbitrary 5p per bottle deposit. Arguably the financial value of the recycling collected is far less than the value given to schools. However, what this highlights is that it is unlikely that a DRS will be self-financing. At the moment the environment is paying for consumer lifestyle choices, half of which could be changed almost instantly.

The model is scalable. Whilst in this pilot a kiosk was deployed in 25 schools, the kiosk acts as a catalyst for recycling. We believe that the same impact could be delivered **by creating an app** or by deploying other technical solutions. Whilst the kiosk created a strong focal point, it shouldn't become an expensive barrier to the wider adoption of this model.

There is considerable evidence from those that took part in surveys that their **understanding & desire to change behaviour improves over time.** Furthermore, we can see that over 75% of respondents would be willing to pay a 10p deposit on each plastic bottle, with a similar level of respondents supporting that funding going directly to charities or good causes.



Sources

- (1) <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/339/339.pdf>
- (2) <https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/>
- (3) <https://www.mcsuk.org/media/gbbc-2018-report.pdf>
- (4) <https://www.recyclenow.com/what-to-do-with/plastic-bottles-0>
- (5) <https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/>
- (6) <https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law>
- (7) <https://www.letsrecycle.com/prices/plastics/plastic-bottles/plastic-bottles-2020/>
- (8) <https://elearning.greenredeem.co.uk/#/>
- (9) https://www.green-alliance.org.uk/resources/losing_the_bottle.pdf
- (10) <https://www.gov.uk/government/news/plastic-bag-sales-in-big-seven-supermarkets-down-86-since-5p-charge>
- (11) <https://www.letsrecycle.com/news/latest-news/think-tank-questions-economics-drs/>

Partners



Plastic Oceans Foundation was created in 2009 by marine biologist and conservationist, Jo Ruxton. As the first plastic pollution charity in the UK, and one of the first globally, our vision is to STOP plastic pollution entering the oceans within a generation. Through education, science and policy, we will change attitudes, behaviours and practices on the use and value of plastics.

Plastic Oceans is a not-for-profit Foundation dedicated to working responsibly with all stakeholders. Plastic is an important material in our lives with many benefits, we therefore operate as an evidence-based organisation through education, sustainability and science to support responsible action to achieve our Mission.



Clean Tech, part of Plastipak, is one of Europe's leading rPET pellet and flake manufacturers. We operate the UK's largest and most technically advanced PET bottle reprocessing plant and can handle in excess of 100,000t of PET packaging every year. We produce food grade rPET pellets that are approved by the European Food Safety Authority and our customers manufacture PET packaging and other PET products across Europe.



Plastipak is a global leader in the rigid plastic packaging and recycling industries with more than 50 years of engaged hearts and minds. With innovation as a key driver, Plastipak operates at more than 40 production sites across the globe with operations throughout North America, South America, Europe, Africa and Asia. Our purpose is to create products which inspire choice, provide value and are sustainably balanced for our customers.



Grundon is the UK's largest family-owned supplier of integrated waste management and environmental services. Founded in 1929, we have developed a distinctive approach that has helped us to maintain a leading position within the waste industry. This approach is underpinned by our commitment to quality of service, innovation and technical progress, together with a genuine and demonstrable concern for the environment.

Our total waste management service includes the collection, treatment, recovery, recycling and disposal of non-hazardous waste streams, in addition to dealing with all aspects of hazardous waste, including contaminated waste, clinical and healthcare waste, and waste electrical and electronic equipment (WEEE). We also offer additional services, including special event waste management and industrial cleaning services.

About us



At Greenredeem we are a catalyst for sustained environmental behaviour change. We create relevant and topical campaigns to motivate people and their communities to make informed choices to tackle climate change.

Formed in 2009, we work with local authorities, water companies, brands, manufacturers and retailers to create communities to motivate residents, customers & other stakeholders to help achieve our partner's sustainability objectives.

We connect, engage & listen. By creating a two-way communication to members via our multi-channels, we motivate their participation of the simple actions they can take to tackle climate change, gathering valuable insights along the way.

One size doesn't fit all. Through insights and measured improvements, we determine the most effective way to connect with different audiences to deliver the most impactful and sustained results.

We reward the right behaviours. We contact and prompt people every week to consider their everyday actions, rewarding positive environmental changes and increased levels of engagement.

We review & repeat success. Improvements are measured and monitored by our members' engagement with campaign content and the direct impact on meeting our partners sustainability goals.

Our recycling programmes have seen participation of up to 60% and our members are recycling twice as much and twice as often as non-members in those areas.

Our water schemes help water companies to reduce household water consumption. This has led to a reduction in household water usage of up to -9% with our members using about 1/3 less water than non-members.