Deposit Return Schemes (DRSs) are currently being put forward as a possible solution to increase recycling and reduce litter.

This paper outlines some of the benefits, disadvantages and potential unintended consequences of introducing a DRS in the UK.

Summary

• A DRS may increase bottle recycling and improve the quality of recyclate but evidence is mixed. It may also have the unintended negative consequence of reducing overall packaging recycling.

• The German DRS is estimated to have cost €726m to set up, and €793m annually for maintenance. The German DRS costs three times as much as a kerbside collection system.

• A DRS may also negatively affect the drinks market causing detrimental inflationary effects for the UK economy.

• The BPF has not been able to find any robust evidence that a DRS will reduce litter or street cleaning costs. Plastic bottles only account for 2.1% of litter in the UK, with all beverage containers e.g. glass, metal and plastic totaling around 10% of litter.

• Other unforeseen consequences are likely to arise as stakeholders attempt to find loopholes in the system. For example, there may be a proliferation of unusual packaging formats which could be problematic for the remaining kerbside system to accommodate.

• Small retailers may suffer as a result of being unable to meet collection requirements.

At this point in time, the BPF's view is that further research is required and alternatives to boosting kerbside recycling and improving litter infrastructure should also be considered. These include:

• Further support for the Plastics Industry Recycling Action Plan (PIRAP), which has formed a bottle recycling working group specifically for this purpose. PIRAP was also formed to complement the Plastics Recycling Group Scotland (PRGS), whose members include those involved in the use and sale of all single-use containers. For more information visit: www.pirap.co.uk

• Continued support for alternatives to a DRS in England and Wales, such as harmonised collection schemes.

• Supporting actions that lead to improved collection for the recycling of containers used 'on the go' and improved participation of consumers in the existing kerbside collection schemes.
Recycling bottles

DRSs in Germany, Norway and Sweden do achieve high rates of bottle recycling: over 90%. However, different methods of measurement make it difficult to compare rates across member states. Some member states measure recycling rates based on what is collected rather than recycled. The latter method is the one favoured in the UK.

Other countries with a DRS achieve rates for PET bottle recycling that are similar to or lower than current levels in the UK. Examples include: South Australia (65%), Hawaii (61%), and Oregon (52%).

England currently collects 57% of bottles from households for recycling, and an estimated 61% of PET. Wales, which is the only part of the UK to have operated a harmonized collection system for some time, currently collects 75% of all bottles from households for recycling.

Recycling other packaging

A DRS may raise the recycling rate for bottles. However, we have concerns that it would be detrimental to recycling other types of plastic packaging. A DRS could undermine the kerbside collection system by taking valuable resources (PET and aluminum) out of this already established system. Germany, for example, did experience a drop in overall packaging recycling (Figure 1) and the overall recycling level for plastic packaging in Germany has remained unchanged for over a decade, whereas in the UK, recycling rates continue to increase each year (source Valpak).

Litter

The BPF has struggled to find any robust evidence that shows a DRS has had a positive impact on litter. In the UK, beverage containers are a small percentage of litter, plastic bottles only account for 2.1% of litter, cans 3.5% (Keep Britain Tidy & INCPEN). One recent German study found that there were “no significant quantitative effects in litter reduction and no economic effect in street cleaning identifiable as a result” of the DRS (Prognos Executive Summary). The same study noted that “from a subjective perception, cities seem to be cleaner but there is now significantly more broken glass in litter”.

Litter surveys from Australia also indicate that Victoria, a state that employed behaviour change methodologies instead of a DRS, has seen the strongest decline in the number of littered items (Keep Australia Beautiful, National Litter Index 2014/2015). Despite having a DRS since 1977, South Australia does not have the lowest amount of litter and since the introduction of a DRS in the Northern Territory in 2012, littered items have actually increased.
Cost

The German system is estimated to have cost €726m as an initial set up, and €793m annually for maintenance (Roland Berger, 2008). That is three times the cost of the kerbside collection system (INCPEN: packaging and deposits). It is estimated that it would cost at least £1bn to set up a DRS in the UK, and similar costs to run each year. There is no strict answer as to who pays this: in Germany, the retailer paid, in other countries, unclaimed deposits fund the system (meaning the consumer pays).

Impact on the drinks market

A 20p deposit on drinks containers would result in a price increase of over 100% on a six pack of Tesco Everyday Value still water — raising the cost from 95p to £2.15. This inflationary effect could have detrimental effects on the UK economy. In Germany, cola and cola-mix market consumption fell by 9.1% after the introduction of the DRS (Figure 2) and the energy drink market, which had been growing steadily, stalled (Figure 3).

Figure 2: Cola & Cola-Mix: consumption off-premise 1998-2004, total packs (retail, discounters, petrol stations). Market decline 2002-2003: minus 9.1%.

Other unintended consequences

DRSs vary in their inclusion and exclusion format (size, beverage content, packaging format, processes etc.) and the way the system is set up may come with unintended consequences.

- If refillables are excluded, we may see an increase in broken glass as part of litter, as witnessed in Germany.
- Unusual packaging formats that are not covered by the DRS may proliferate and could be very difficult for the remaining kerbside system to accommodate. There was a proliferation of numbers and types of containers in use in Germany after the introduction of the DRS.

Small retailers may also be negatively affected if they are required to collect bottles manually and store bags/crates etc. in their store space. Larger retailers are likely to be required to install reverse vending machines.

If the formats of drinks containers used most commonly in the home (multipacks and one litre) are included in a DRS, this will require consumers that are used to placing these containers in the convenient kerbside system to store these items separately from their other recycling and return them to a retailer in order to redeem the deposit and avoid the penalty.

What should be done?

A deposit scheme may help drive the recycling rate of bottles. However, the possible risks to achieving higher overall recycling figures and the high cost of implementing a separate collection infrastructure requires further rigorous investigation by all stakeholders.

For a DRS to offer the most benefit to the UK, it should complement rather than disrupt existing collection methods by focusing on those containers not presently collected for recycling, for example, ‘on the go’ consumption. Further work should be done to understand where the biggest shortfalls exist.

At the same time, other alternatives should be actively pursued such as:

- Implementing consistent kerbside collection schemes, as adopted in Wales.
- Engaging in initiatives aimed at capturing the more difficult waste streams and less recycled items, e.g. ‘on the go’ and bathroom products.
## Appendix A – Further information on existing DRSs

### Table 1 - DRS format and recycling rates

<table>
<thead>
<tr>
<th>Location</th>
<th>DRS</th>
<th>Included</th>
<th>Excluded</th>
<th>Recycling rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>2003</td>
<td>0.1 litres to 3 litres</td>
<td>Fruit juice and nectar, 50% milk, dietetic beverages, wine and spirits, Cartons, polyethylene bags, stand-up bags,</td>
<td>97.9% DRS PET 93.5% All PET (2015)</td>
</tr>
<tr>
<td>Norway</td>
<td>1974</td>
<td>All one way beverage containers, Beer, carbonated beverages, wine, liquor, and non-carbonated beverages.</td>
<td>Milk, milk products, vegetable juices and water</td>
<td>95% PET (2012)</td>
</tr>
<tr>
<td>Sweden</td>
<td>1994: PET</td>
<td>All plastic ready-to-drink beverages</td>
<td>&gt;50% dairy/juice content Squash/cordial</td>
<td>PET &lt;1l: 73% PET &gt;1l: 92% (2012)</td>
</tr>
<tr>
<td>Wales</td>
<td>N/A</td>
<td></td>
<td></td>
<td>75% household bottle recycling (2016)</td>
</tr>
<tr>
<td>England</td>
<td>N/A</td>
<td></td>
<td></td>
<td>61% PET household recycling</td>
</tr>
<tr>
<td>Hawaii</td>
<td>2005</td>
<td>PET and HDPE</td>
<td>Milk/dairy products Alcoholic drinks</td>
<td>60.8% plastic (2015)</td>
</tr>
<tr>
<td>South Australia</td>
<td>1977</td>
<td>Up to and including 3L (carbonated, beers, water, wine, RTDs, cider etc) Less than 1L milk, juice (90%)</td>
<td>Milk/juice greater than 1L</td>
<td>64.8% PET 61.3% HDPE (2015/2016)</td>
</tr>
<tr>
<td>Oregon</td>
<td>1972</td>
<td>Individual, separate, sealed plastic bottle, less than 3L Beer, malt, carbonated soft drinks, &amp; bottled water</td>
<td>Wine, liquor, milk, and milk substitute</td>
<td>PET: 51.90% (2015)</td>
</tr>
</tbody>
</table>