

Response to Zero Waste Scotland - Deposit Return System – Call for Evidence

A call for evidence from industry and other stakeholders on the implications of a national deposit return system in Scotland.

About TOMRA¹:

TOMRA is a leading global provider of advanced sensor based solutions for optimal resource productivity, enabling the recovery and recycling of used materials. At TOMRA, we focus on those areas in the recycling value chain where we can improve efficiency through technology-based solutions. Our main business segments are reverse vending systems, waste and food recognition and sorting, as well as processing technology.

For more than 40 years TOMRA has been designing and operating cost-effective systems for the collection of beverage packaging, known as reverse vending machines that make it attractive for people to return used beverage containers for reuse or recycling. TOMRA currently has over 75,000 reverse vending machines installed in more than 40 countries on four continents, which are collecting, recognizing, sorting and processing more than 35 billion used beverage containers every year.

TOMRA maintains a strong commitment throughout the organization to ensure that its activities contribute positively to society and the environment.

Over time TOMRA has enlarged its scope of activities. TOMRA for instance acquired TiTech, pioneer and world leader in the automation of waste sorting –serving municipalities, waste disposal companies and thereby nationwide collection systems like “The Green Dot” schemes all over Europe.

TOMRA has been following the deposit return discussion in Scotland closely, participated in various Recycle and Reward pilot projects in Scotland, and welcomes the opportunity to present its thoughts on the deposit and return call for evidence.

As a company dedicated to providing technologies to facilitate recovery of waste for reuse and recycling purposes, TOMRA is very supportive of legislation to improve the quality of the recycling service and of the recycled material, as well as measures that lead to the reduction of beverage container littering.

It is therefore that we applaud the Scottish Government’s current endeavors of investigating the feasibility of the introduction of a deposit return system for one-way beverage containers in Scotland.

¹ www.tomra.com / <https://www.youtube.com/watch?v=9dAiloRvINQ>

1. Are you aware of additional evidence that is relevant to any consideration of the suitability of a deposit return system in Scotland?

(e.g. the impact of the targeted items when littered; improvements in recycling rates or reductions in litter achieved by deposit schemes or pilots elsewhere; wider social, environmental, or economic impacts; the extent to which performance estimates match experience elsewhere; the extent to which comparable performance could be delivered at lower cost)

Increasing recycling quality and creating green growth

TOMRA believes that high quality recycling can best be achieved if waste streams are kept pure, i.e. through pre-sorting or by sorting technologies. In TOMRA's experience, return rates for beverage packaging subject to deposit schemes are between 70 and 95%² on average - depending on the level of financial incentive -, and therefore ensure the best possible feedstock for recycling. High quality and purity of material sorted in a deposit system ensures the highest prices when the material is sold to the commodities market.

PET separately collected in a deposit system can be used much easier in high recycling applications, like bottle-to-bottle recycling as successfully demonstrated by the biggest discount retailer in Europe, LIDL³⁴. The use of recycled instead of virgin material in many applications, helps to protect limited natural resources. The recycling industry requires stable supplies of high-quality and homogenous material in order to develop markets for secondary (recycled) material.

In addition, compared to other collection schemes the high return rate of deposit bearing containers almost equals the recycling rate due to the minimal occurrence or lack of contamination.

Keeping valuable materials in a separate scheme keeps them clean and the high quality allows for high end recycling applications. By having packaging waste commingled, like in the Green Dot systems, cumbersome and costly sorting and extra washing steps are needed. Those steps are not able to eliminate contamination⁵ from all the packaging waste.

A study conducted by PWC in 2011 came to the following conclusion regarding the German deposit system: *"deposit schemes particularly regarding collection rates, recycling rates and recycling quality stand head and shoulders above curbside collection schemes (Green Dot systems) for the collection of beverage packaging waste. Whereas in curbside collection systems only about half of the beverage PET bottles are collected, deposit systems for beverage containers reach as much as 99% collection – i.e. twice as much! In deposit systems 85-99% of the beverage containers are recycled. The recycling rates in curbside collection schemes are considerable lower. They typically correspond to less than a third of the beverage PET bottles and to around 40% of the beverage cartons put on the market."*⁶

² Compilation of return rates as separate document: RETURN RATES 2012 - FINAL (TOMRA 2013)

³ LIDL – The Innovative Recycling Loop <https://www.youtube.com/watch?v=yjMGI9IplsM> / translation of webpage as separate document: DE - LIDL - The_Innovative_Recycling_Loop (Webpage 1402)

⁴ Bottle-to-bottle: The Recycling Future (video: <http://www.emmys.com/video/la-2015-2994>)

⁵ Contamination can be caused either by dirty and / or organic adherences not properly cleaned away or by mixture with unwanted material (E.g. PVC in PET stream)

⁶ Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective

The US based Container Recycling Institute (CRI) observed that the sheer volume of material entering into any collection and recycling system is the primary driver for green growth and jobs. Deposit return systems thereby create up to 11-38 times more jobs than curbside systems. The secondary driver is the number of full-time-equivalent (FTE) workers needed to collect, sort and transport the materials⁷.

The Spanish Union Institute of Work, Environment and Health (ISTAS-CCOO) found that with the implementation of a deposit return system in Spain jobs would be created within the collection, transport, treatment, management, design and training, manufacture, maintenance and construction sector. The potential lays at around 14,000 new jobs⁸.

Modelled on the basis of a UK wide deposit system, the Campaign to Protect Rural England (CPRE) concludes that 3,000-4,300 new green economy-based full time jobs are created with the introduction of the system⁹.

Littering

Beverage container litter is an important proportion of total litter.

Deposit return systems serve as an effective tool in preventing and reducing the amount of beverage container litter. Deposit systems reduce litter by providing a real value to the waste streams that have a heavy negative impact on our environment, such as plastics.

The deposit system helps to raise awareness and helps change people's behavior by giving a value to what would otherwise become waste. Only those citizens who decide to forfeit the deposit by not returning the bottle/can are financing the system. It thereby executes the polluter pays principle at its best. Additionally experiences from around the world have shown that when a deposit bearing container is thrown away someone else will see the value and pick the container up¹⁰.

When participating in a deposit system, consumers receive both the deposit due and the satisfaction of contributing to an improved environment. The combination of financial and emotional satisfaction ensures broad participation.

In 2001 beverage container littering in Germany before the introduction of the deposit system was 22% respectively 20,7% of total litter. In addition up to 50% of beverage containers under the Green Dot System in

An analysis of the ecological, economic and social impacts of reuse and recycling systems and approaches to solutions for further development (PWC, 2011 http://www.duh.de/pwc_study_eng.html) – see extract document: DE - PwC-Study_Extract (2011) Return_Recovery_and_Disposal_Rates_as_well_as_the_Secondary_Material_Input_Ratio

⁷ USA - CRI_Returning_to_Work (CRI 2011)

⁸ ESP - Deposit_Return_System_Spain_Potential_Jobs (Executive Summary - ENG - Istas_CCOO)

⁹ CPRE_From_waste_to_work_the_potential_for_a_deposit_refund_system_to_create_jobs_in_the_UK

¹⁰ Video Social Experiment Netherlands:

- Putting up a signpost in a pedestrian zone saying "Take away for free" and emptying two big bags with several hundred cans and small PET bottles (no deposit in NL) around it.
- Second experiment. Same thing, but emptying several hundred large PET bottles around it (with 0.25 € deposit in NL)

<https://www.youtube.com/watch?v= B0dmcVW9eU>

Germany ended up in littering or municipal waste streams other than the Green Dot stream. Over the past decades the quantity of beverages consumed away from home has sharply increased. The need for a collection system that is also able to target beverage containers consumed away from home is therefore even higher. No curbside program can effectively target the increasing quantity of beverages people drink away from home and deposit systems address both in home and away from home consumption of drinks.

Today retail and industry have concluded that *“the deposit system has led to a significantly higher recovery rate of metal [~96%] and PET [~98%] beverage containers. This improves the life cycle assessments of disposable beverage containers and prevents the destruction of the landscape. This “Littering” almost completely disappeared”*¹¹.

South Australia, which has a deposit system since 1977, has the lowest percentage of beverage containers in litter compared to any other State in Australia¹².

The State of Michigan has the lowest percentage of beverage containers as part of total beach litter compared to its neighboring states without a deposit system¹³.

Recent extensive marine litter research conducted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) further suggests that *“bottles and cans accounted for one in every 12 pieces of rubbish collected in South Australia. In New South Wales bottles and cans were about one in every three pieces of litter and in Victoria about one in five”*.¹⁴

New South Wales after years of conflict with the beverage industry¹⁵ just recently announced to introduce a deposit system to increase the quality of recycling and to tackle the problem of street and beach litter¹⁶. The system shall become operational in 2017. Queensland has further announced that it will follow suit¹⁷ wanting the system to become operational in 2018.

Deposit laws significantly reduce container litter and other types of litter. Following the implementation of deposit systems in various US states, container litter has been reduced by 69 to 84 percent (including in New York), while total litter has been reduced by 34-64 percent¹⁸.

¹¹ BGVZ: Bund Getränkeverpackungen der Zukunft (Association of Beverage Packaging of the Future)

(Association of beverage manufacturers, retailers and the packaging industry. Members include:

Aldi, Lidl, Lekkerland, MEG, PepsiCo, Red Bull, Rexam, Ball) DE - BGVZ (2013) / www.bgvz.org

¹² EPA: http://www.epa.sa.gov.au/environmental_info/container_deposit#litter

¹³ USA - Michigan_Deposit_System (Information film on the system) + MichiganLitterCleanupCosts FINAL (CRI)

¹⁴ <http://www.smh.com.au/environment/litter-data-recycles-case-for-bottle-and-can-refund-20130410-2hltv.html> + TV report on the research <http://www.abc.net.au/catalyst/stories/3583576.htm> (10m:55s)

¹⁵ NSW Government letter to NPCIA (Beverage Industry Council) (123114)

¹⁶ Video Press Conference: https://www.youtube.com/watch?v=ykq9haH3m_0 NSW Premier Mike Baird and Environment Minister, Rob Stokes announce NSW will have a drink container deposit system to clean up litter and improve recycling.

¹⁷ <http://www.abc.net.au/radionational/programs/breakfast/2018-target-for-container-deposit/6485656>

¹⁸ <http://www.bottlebill.org/about/mythfact.htm>

2. Do you have evidence that is relevant to any consideration of how a deposit return system could be designed and managed?

(e.g. the governance arrangements and contracting; the way in which services are procured; the extent of public/private/third sector involvement; the ownership of material within the scheme; on the coverage of materials/products; the implications for re-usable/recyclable container design; the interaction with other Scottish/UK regulatory systems; changes/amendments that would improve the performance or value of the initial system proposed)

In 2001 TOMRA developed a business model development guide titled “Central Organisation One-Way Deposit Germany”¹⁹.

TOMRA has extensive experience in markets where deposits on one-way containers exist. These markets exist in the Nordic countries of Sweden²⁰, Finland, and Norway²¹ as well as the United States and Canada. The purpose of this document was to share these experiences with stakeholders in the German market to develop a solution that minimizes overall system costs and resulting impacts on individual business operations. Although retail and industry in Germany did not opt for a centralised deposit model the guideline still represents TOMRA’s recommendations of how to set-up a cost effective centralised deposit system.

TOMRA strongly supports the proposed centralized deposit model for Scotland, as the centralised “Nordic” return to retail deposit model is experienced as being the best in class.

The most important consideration when setting up a deposit return scheme is to construct a system that is easy to use for all stakeholders involved and can operated at the lowest possible cost.

Taking our experience from deposit markets around the world TOMRA has identified 9 key parameters decision-makers should take into consideration when implementing a deposit return system:

1. Scope of legislation

- a. How tight or how open shall the system be?
- b. It is important to take into considerations any factors relating to the free movement of goods within the EU. The Commission has published a Communication on Beverage Packaging Deposit Systems and the Free Movement of Goods (2009/C 107/01). It is the result of DG Enterprise’s analysis of main barriers to trade in drinks packaging, and is based on court rulings in the field of packaging waste (such as deposit and ecotaxes). In this text, the Commission describes through detailed guidelines how to set up a mandatory deposit system in conformity with EU legislation²².
- c. Particularly the labelling and barcoding of the beverage containers shall not act as a barrier to entry. We therefore welcome the suggested approach recommending the combination of unique and open barcode which is also commonly applied in other deposit return systems.

¹⁹ TOM - Blue_Book_Deposit_Model_(Tomra 2001)

²⁰ Returpack: <https://www.youtube.com/watch?v=87e3xEKMhZc>

²¹ Infinitum (former Norsk Resirk): <https://www.youtube.com/watch?v=ox48VHtJbI0>

²² EU - Deposit Free Movement of goods (EU Gorka 2009)

Regardless of the barcode the deposit containers should be equipped with a visual logo for consumer information and manual take-back recognition (visual check).
A security logo as applied in Denmark, Germany or Michigan is not recommended.

2. Targets and penalties

- a. It is recommended that clear recycling targets are set for the respective beverage containers.
- b. If these targets are not met the system needs to be penalized. Setting clear targets also prevents any efforts in keeping the return rates of containers intentionally low in order to maximize financial profits from unredeemed deposits.

3. Deposit value

- a. Experience has shown that deposit systems very quickly achieve a return rate of >80% with a 10 cents deposit (see: RETURN RATES 2012 - FINAL (TOMRA 2013)).
- b. It is therefore that we welcome the suggested deposit value for Scotland in the range between 10p – 20p and think that this is an appropriate level of incentive. It is not recommended to go below 10p.

4. Container type coverage

- a. In order to avoid consumer confusion and the discrimination of different packaging types the system should from the beginning be set up as comprehensive as possible.
- b. We therefore welcome the suggested inclusion of the following beverage container fractions: PET, HDPE, Glass, Metal, Carton. Also the included content should be very rigidly defined and ideally include all beverages sold in the above containers.

5. Point of return

- a. It is clearly recommended that the point of return should be the point of sale. Traditionally the reverse vending machines are in the entrance area of the supermarket or in close proximity on the parking lot, as the first thing the consumer does when going shopping is to return the containers and get the deposit voucher.
- b. In addition, having reverse vending machines close to the shop entrance creates traffic around the point of sale and in addition leads to increased spending behavior by consumers of up to 50%²³.

6. Financials

- a. In a centralized deposit model the system is carried on three pillars. (1) Producer fee, (2) Unredeemed deposits, (3) value of the collected material.
- b. Being a non for profit organization the central organization should allocate financial profits back into the system by for instance lowering logistics costs, lowering the administration/product fee for producers, increasing the handling fee (financial compensation) to retail for each container received, or increasing marketing efforts and environmental awareness campaigns.

²³ TOM - Profiling_Shoppers_in_Norway_Finland_and_Holland (TNS Gallup 2003)
TOM - Rapport-Tomra_Slutversion_Uppdaterad 2_EN (Shopper profiling 2014)
USA - NYPIRG_Shop_Where_You_Drop (NYPIRG 2013.02.04)

7. Handling Fees

- a. The collection of used beverage containers produces costs, especially within the retail sector.
- b. Reverse vending machines require investment, electricity, space, man power, as well as logistics. All of these factors play into the overall costs retailers somehow needs to cover.
- c. For this reason the majority of all deposit markets make use of a handling fee system, meaning the retailer receives a financial compensation for each container received.
- d. TOMRA encourages the integration of handling fees into any deposit return system and welcomed that this is also offered to retailers in Scotland.

8. Organisation

- a. TOMRA strongly supports the idea of a centralized administration as proposed in the study. Traditionally the central organization is set-up by retail and industry as a non-for-profit organisation.
 - Producers: fulfill their Producer Responsibility by participating in a take back scheme, which also requires their financial contribution.
 - Retailers: invest into a take-back infrastructure.
 - In addition producers want the administration costs to be as low as possible and retailers the handling fee as high as possible. This gives the system a healthy balance.
- b. In addition the central organisation shall take over the following tasks:
 - Data managements, deposit clearing and reporting
 - Marketing of collected material (owner of collected material)
 - Operation of logistics system
 - Marketing of the deposit system towards the consumer
- c. Also should the system operator be accredited by a government body.

9. Logistics

- a. The logistics within the central system fall under the responsibility of the system operator. Experiences from existing deposit systems around the world have thereby demonstrated that the most effective and commonly used way to keep costs low and to avoid the necessity of placing additional pick up vehicles on the roads is to use and rely on already existing logistical infrastructures predominantly through backhauling /reverse logistics²⁴. The operation of a deposit refund system should always try to achieve the required collection rate target at the lowest possible cost for all stakeholders involved. This also applies to the logistics and transport infrastructure.
- b. Also relating to logistics is the increasing trend of online shopping, not only in Scotland. In Germany online shopping is growing and retailers have quickly adapted by offering to backhaul empty containers upon delivery of new ones. One big retailer, Rewe (approx. 3,300 stores in Germany) states the following: *“Our driver is happy to take your empty beverage containers. Please understand that for reasons of space on the vehicle we are only able to take back the amount of containers you have ordered. Also, for hygienic reasons we reserve the right to refuse taking back very dirty containers. We would continue to appreciate if you – if*

²⁴ TOM - Different_logistic_systems_for_deposit_and_return_systems (TOMRA 2012)

possible – can sort out the empty containers prior to pick-up. The deposit value will be deducted from your final shopping invoice”²⁵.

3. Do you have any evidence on the anticipated impacts of a deposit return system on your own organisation, or on the public more widely? (e.g. costs to businesses; costs to the public; public acceptability)

A deposit system is a low-hanging fruit, requiring no public money. The only effort is the creation of a solid legal framework. Cities and municipalities are instead relieved from costs for street and beach cleaning as deposit helps reducing the amount of littering²⁶. Many regional decision makers recognize this. It was hence not a surprise when the Committee of the Regions in Brussels recently adopted an opinion to the Green Paper on Plastic Waste²⁷, in which it calls for the expansion of deposit systems in Europe to fight against litter, to increase recycling rates and to create new jobs.

Today more than 130 million Europeans (i.e. 26% of all Europeans) live in EU Member States with deposit systems on beverage packaging. More Member States are progressing towards their introduction. Lithuania will start the operation from February 2016 onwards and the Catalan Waste Agency will soon commission a deposit return feasibility study for Catalonia. In addition there is also a strong discussion in Belgium taking place with the Flemish government already having recently published a regional feasibility study.

Public attitudes:

A “deposit” is not a new concept or a surprise to consumers:

The concept of deposit has been increasingly used in many applications: supermarket trolley, lockers, timely limited IDs (e.g. ski pass), house renting, car renting, and they have always been applied to refillable containers.

Over the years TOMRA compiled public opinion polls conducted throughout the world. The data focuses on public attitudes towards beverage container deposit legislation in 9 countries²⁸.

Countries covered:

Australia (South Australia / Northern Territories / New South Wales (NSW) / National
Belgium
Germany
Hungary
Ireland

²⁵ <https://www.rewe.de/service/fragen/> (Was mache ich mit meinem Leergut? / What do I do with my empties?)

²⁶ CDS impacts for Tasmanian Local Government FINAL December 2013 / ESP - Retorna_Municipalities_Executive Summary_ENG (2013)

²⁷ http://www.toad.cor.europa.eu/ViewDoc.aspx?doc=cdr%5cenv-e-v%5cdossiers%5cenv-e-v-036%5cEN%5cCDR3751-2013_00_00_TRA_PAC_EN.doc&docid=2940732

²⁸ Opinion_Polls_on_a_Global_Scale (2011)

Netherlands
Spain
United Kingdom (UK)
United States of America (USA)

Data gathered: Between 1970 and 2013.

The results can be summarized as followed:

Australia (South (1975))	95%	in favour of introducing deposit legislation
Australia (North (2011))	79%	in favour of introducing deposit legislation
Australia (NSW (2012))	80%	in favour of introducing deposit legislation
Australia (National (2012))	82%	in favour of introducing deposit legislation
Australia (National (2013 / 1))	87%	in favour of introducing deposit legislation
Australia (National (2013 / 2))	87%	in favour of introducing deposit legislation
Belgium (2011)	62%	in favour of introducing deposit legislation
Germany (2001):	76%	in favour of introducing deposit legislation
Hungary (2013)	66%	in favour of introducing deposit legislation
Ireland (2013)	89,4%	in favour of introducing deposit legislation
Netherlands (2006)	78%	in favour of introducing deposit legislation
Spain (2013)	86%	in favour of introducing deposit legislation
UK (2008):	82%	in favour of 5 pence deposit
	80%	in favour of 10 pence deposit
UK (2010):	89%	in favour of introducing deposit legislation
USA: National (1989)	70%	in favour of introducing deposit legislation
USA: National (1990)	70,4%	in favour of introducing deposit legislation
USA: National (1993)	76%	in favour of introducing deposit legislation
USA: Oregon (1975)	90%	in favour of introducing deposit legislation
USA: Iowa (1979)	56%	in favour of introducing deposit legislation
USA: Iowa (2000)	71,7%	in favour of introducing deposit legislation
USA: Maine (1979)	84%	in favour of introducing deposit legislation
USA: Michigan (1987)	90%	in favour of introducing deposit legislation
USA: Massachusetts (1989)	78%	in favour of introducing deposit legislation
USA: Vermont (1989)	83%	in favour of introducing deposit legislation
USA: Washington (1970)	80%	in favour of introducing deposit legislation
USA: Tennessee (2008)	80,4%	in favour of introducing deposit legislation
USA: Tennessee (2009)	83,2%	in favour of introducing deposit legislation
USA (1975-2009 total)	78%	in favour of introducing deposit legislation

Average support out of all opinion polls: 79,68%

It is therefore not a surprise that nearly 80 per cent of the Scottish public support the introduction of a deposit return scheme as recently shown by polling conducted by the Association for the Protection of Rural Scotland (APRS)²⁹. It confirms the overall trend seen.

²⁹ <http://www.heraldsotland.com/news/environment/78-support-bottle-deposit-scheme.126878730>

Deposit systems are not only well accepted and liked by the public but also by policy makers. The Dutch government has last week decided that the deposit system in the Netherlands will not be abolished, Spain, Malta, and Belgium are currently investigating the implementation of a deposit return system, Lithuania, New South Wales and Queensland have already taken the decision to take the matter forward.

TOMRA therefore encourages the Scottish Government to take the implementation of a deposit return system in Scotland forward in order to achieve high recycling rates, capture valuable resources, recover quality input material for bottle-to-bottle recycling, stop beverage container littering, change behavior within society, improve environmental standards, achieve landfill reductions, save local authorities money and create green jobs.

Implementing a deposit return system in Scotland is not only a strong step towards becoming a Zero Waste society, but also an important building block to becoming a Circular Economy.

Also TOMRA would be happy to participate in any future working groups taking place to explore how such a scheme might be best introduced.

Thomas Morgenstern
Vice President Governmental Affairs
thomas.morgenstern@tomra.com
+49 (0) 160 53 27 833