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Rosemary Gaul

From: [redacted]
Sent: 12 November 2020 16:43
To: wastecomments
Cc: [redacted]
Subject: CONSULTATION RESPONSE TOMRA: Deposit Return Scheme - Consultation Document on Potential Models for Ireland
Attachments: 20201112_Ireland_Consultation_Response_Final_TOMRA.pdf

Importance: High

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Dear Sir or Madame,

Please find attached the consultation response on Potential DRS Models for Ireland, by TOMRA Systems ASA.

The document is split into three parts:

1. Deposit Return Scheme - Consultation Document on Potential Models for Ireland (Page 1-12)
2. TOMRA Consultation Response (Page 13-29)
3. Appendix including supporting documents and presentations (Page 30-147)

Please do not hesitate to contact me in case further information or clarifications are required.

Best regards,

[redacted]

TOMRA

LEADING THE RESOURCE REVOLUTION

[redacted]

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TOMRA
COLLECTION SOLUTIONS

LEADING THE RESOURCE REVOLUTION

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Rialtas na hÉireann
Government of Ireland

Deposit Return Scheme

Consultation Document on Potential Models for Ireland

2 October 2020

1 Introduction

The Programme for Government – Our Shared Future – and the Waste Action Plan for a Circular Economy set out the Government's commitment to introduce a Deposit and Return Scheme (DRS) for plastic bottles and aluminium cans.

The milestones in establishing a DRS are as follows:

1. Public consultation on design options (now);
2. Public consultation on preferred model and draft regulations (Q1 2021);
3. Commencement of underpinning legislation (Q3 2021);
4. Introduction of scheme (Q3 2022).

This document is the consultation paper on design options set out at 1 above. In it, we describe a number of potential DRS models that could operate in Ireland. Alongside this consultation paper, the Department of the Environment, Climate and Communication is also publishing a report it commissioned from Eunomia Research and Consulting to analyse options for Ireland to increase its capture of plastic bottles and aluminium beverage containers (referred to throughout this paper as 'the DRS study').

To facilitate a structured response, the paper poses some questions for consideration. Respondents are not required to respond to all questions and are free to raise other relevant points. All submissions are welcome and will be considered in developing the new Deposit and Refund Scheme.

Submissions can be made to the following e mail address:
Wastecomments@DCCAE.gov.ie

The closing date for submissions is **5pm, Thursday 12 November, 2020**.

Responses to this consultation are subject to the provisions of the **Freedom of Information Act 2014 and Access to Information on the Environment Regulations 2007-2014.** Confidential or commercially sensitive information should be clearly identified in your submission, however parties should also note that any or all responses to the consultation are subject in their entirety to the provisions of the FOI Acts and will be published on the website of the Department of Communications, Climate Action and Environment.

By responding to the consultation, respondents consent to their name being published online with the submission. The Department will redact personal addresses and personal email addresses prior to publication. We would draw attention to the Department's privacy statement:

'The Department of the Environment, Climate and Communication requires responders to provide certain personal data in order to provide services and carry out the functions of the Department. Your personal data may be exchanged with other Government Departments and Agencies in certain circumstances, where lawful. Full details can be found in our Data Privacy Notice.'

2 What is a DRS?

Deposit and return schemes have been around for decades and were originally designed by the beverage industry as a way of ensuring the return of bottles to be washed, refilled and resold. In Ireland, some people will recognise this as a system that was previously used to ensure that milk and soft drinks bottles were returned for reuse.

A DRS for beverage containers therefore involves the application of a refundable deposit to incentivise consumers to return their beverage containers for recycling or reuse. While the primary function of a DRS is to increase recycling rates and support the circular economy (by keeping materials in productive use and securing the resource value of existing materials and reducing demand for new materials), in some countries they have also been shown to assist in the reduction of littering of beverage containers.

As set out in the DRS study, generally the system works as follows:

- Beverage producers initiate the deposit by paying it into a deposit account;
- Retailers pay the deposit to producers/ distributors at the wholesale stage;
- Consumers pay the deposit to retailers, along with the price of the beverage;
- Consumers claim a full refund when they return their used beverage container to a designated return location;
- The return location is reimbursed for the refunded deposit from the deposit account; and
- The returned used beverage containers are transported to be processed and recycled. The material can be used to manufacture new containers.

A DRS can be voluntary (e.g. industry-led) or statutory (mandated by legislation). Many other EU Member States have DR systems in place already and others are planning or considering the introduction of a DRS.

3 How are plastic bottles and cans collected at present?

In Ireland, the main route through which plastic bottles and aluminium drinks cans are currently captured is kerbside collection. Most households (approx. 80%) in Ireland are served with kerbside collections in either a two-bin or three-bin service – one bin for mixed dry recycling (MDR), one for mixed residual waste (MRW) and in many areas also a food/organics bin (the provision of food/organics bins to households in every town with 500 or more residents is now mandatory). Beverage containers (plastic and aluminium) are therefore collected in the MDR bin alongside other household packaging, paper and card. Complementing kerbside collection, there is a network of 1,848 locations where beverage containers can be brought for recycling. In addition to providing a convenient drop-off location for some households, these are likely to capture just a small proportion of beverage containers consumed and disposed 'on-the-go'.

4 Why do we need a DRS?

There is a number of reasons why we need a DRS but put simply, too few plastic bottles and cans are being captured for recycling by our current system and too many are being discarded as litter.

We are falling short of the required levels of recycling. The Single Use Plastics Directive sets a collection target of 90% for plastic bottles by 2029 with an interim target of 77% by 2025. The DRS study shows that we are currently achieving an estimated 55% separate collection for Polyethylene Terephthalate bottles (PET) and aluminium beverage cans, leaving us behind the 2025 target and well short of our 2029 target. . The SUP Directive also requires that PET beverage bottles contain at least 25% recycled plastic by 2025 and that all plastic beverage bottles contain 30% by 2030. A well operated DRS is capable of producing high quality food grade recyclate which can be used by beverage manufacturers to meet these recycling content targets.

While a number of Member States do so, there is no specific EU obligation to operate DRS. Article 9 of the Single Use Plastics Directive includes the establishment of DRS as a means by which Member States may seek to achieve the targets.

However, the DRS study concludes that there is no evidence to suggest that the current system could be enhanced to reliably achieve a 90% separate collection rate and that a DRS is considered to be the only feasible way to achieve the 90% target.

In terms of litter, litter from packaging (which includes bottle caps, plastic bottles and cans) is a problem in Ireland, accounting for 18.2% of litter. Coastwatch estimates that plastic bottles and aluminium cans are among the top five marine litter items. While there are direct clean-up costs associated with littering, the report published alongside this consultation document shows that littering has a significant disamenity value on communities. The DRS study estimates that a DRS could reduce this disamenity value by €95m and reduce littering by 85%.

The DRS study also provides estimates of potential avoided materials loss and the value of avoided greenhouse gas emissions that could be delivered through the introduction of a DRS. With a 90% return rate, a DRS could reduce the tonnage of deposit-bearing containers that are landfilled or incinerated by 88%. The consequent reduction in greenhouse gas emissions in a year is valued at €1.83 million, with the annual reduction in other air pollutants valued at €550,000.

5 What will a DRS mean for consumers?

As set out above, a DRS for beverage containers involves the application of a refundable deposit to incentivise consumers to return their beverage containers for recycling or reuse. Consumers will pay a deposit that will apply to relevant plastic or aluminium beverage drinks containers. It is suggested that consumers will pay a deposit of €0.20 at the point of purchasing a beverage contained in a plastic bottle or aluminium can. This deposit will be redeemed when the empty container is returned. This creates an incentive for consumers to return empty containers – provided they return their empty container, there is no charge.

The specific methods for refund can vary but are generally cashless.

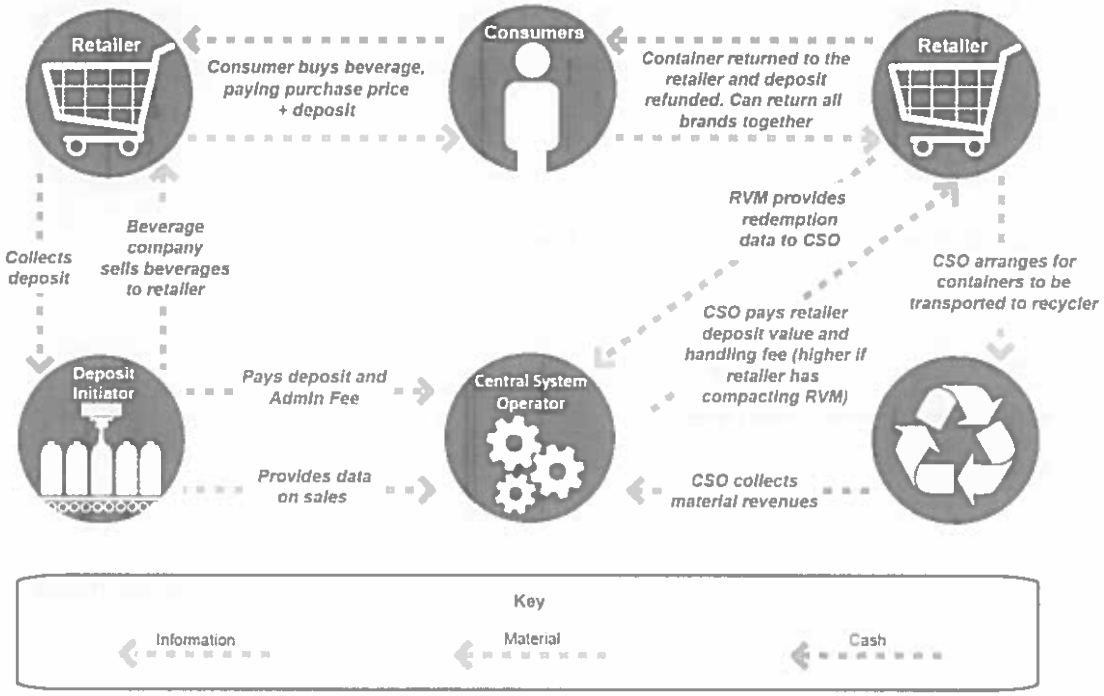
6 What beverage containers will be included in scope of the DRS?

As set out in the *Waste Action Plan for a Circular Economy*, the scheme will apply to:

- PET plastic beverage bottles (up to 3 litres volume) and;
- aluminium beverage cans.

It will not apply to glass bottles or composite beverage containers such as Tetrapak/Elopak. It will also not apply to plastic milk cartons due to the risk of contamination.

7 How would a DRS operate?



A DRS is a form of extended producer responsibility (EPR). Under an EPR model, producers take over the responsibility for collecting or taking back used goods and for sorting and treating for their eventual recycling. Ireland successfully uses the EPR model for dealing with

a number of waste streams. EPR systems based on the 'producer pays' principle already operate in Ireland in the following waste streams:

- Waste Electrical and Electronic Equipment (WEEE);
- Batteries;
- Packaging;
- End of life vehicles (ELVs);
- Tyres;
- Farm plastics.

A DRS for plastic bottles and aluminium beverage cans is a form of EPR and, as with other EPR systems in Ireland, it has been decided that the operation of the DRS will be statutorily mandated.

It will also operate on the basis that relevant containers can be returned to any place of purchase which is participating in the Scheme. Consumers could take their empties back to any participating beverage retailer – not just the retailer from whom the beverage was purchased.

Within these parameters, there are a number of options for how a DRS could work.

These fall into 3 main categories:

1. Centralised or operational DRS
2. Decentralised or financial DRS.
3. Hybrid of 1 & 2.

A brief description of each model is set out below. The DRS study indicates that the model chosen significantly impacts on results.

As set out above, whichever model is ultimately chosen, the scheme would be supported, as other EPR models are, by specific secondary legislation or regulations. These regulations may provide or set out:

- The level of the deposit;

- That producers are being tasked with responsibility for establishing a DRS and operating it on a financially sound basis;
- The process whereby a scheme operator is to be appointed by the Minister (including the application process and matters to which the Minister would have regard in appointing a scheme operator);
- The specific obligations to be placed on the scheme operator in terms, for example, of collection rates and quality or contamination standards to be delivered;
- Specific obligations to be placed on other operators across the system
- The awareness raising and educational responsibilities of the scheme operator;
- Penalties for failure to meet obligations.

7.1 Centralised or operational DRS

Centralised schemes are producer owned and led.

In the case of a DRS in Ireland for plastic bottles and aluminium drinks cans, this means that a centralised scheme would be owned and led by drinks producers placing their products on the Irish market in beverage containers within the scope of the scheme. Producers could establish their own scheme operator or seek to partner with an approved scheme under an existing EPR.

Centralised schemes are generally underpinned by legislation which provides for a means of Government authorisation of a scheme that is then mandated to achieve specific performance targets in terms of separate collection and recycling of plastic bottles and aluminium cans. A centralised or operational model operates on the basis of a central budget which is held by the DRS body or scheme operator (for example, think Repak in terms of packaging, or WEEE Ireland / ERP in terms of WEEE). Drinks producers would be required to become members of and fund the DRS.

The scheme operator sets producer fees and is directly responsible for managing the collection, sorting, treatment and sale (for recycling) of the materials collected. Producers are essentially then charged on the basis of numbers of units placed on the market, in line with the polluter pays principle. The scheme operator also takes on responsibility for

providing return infrastructure in the form of Reverse Vending Machines (RVMs) at larger retail outlets and manual take back at smaller outlets (i.e. those that do not have the physical space to accommodate RVMs).

As with other EPR models the scheme operator would also be mandated, as part of a Ministerial approval process, with responsibility for awareness raising and education for businesses and wider society around the general operation of the DRS itself, the objectives it is required to achieve and the environmental importance of attaining these. So, for instance, the scheme operator would be responsible for ensuring that consumers understand the system and, in particular, that the deposit paid at the point of purchase is fully refundable and avoid a sense that the deposit is a price increase.

Similarly, the scheme operator would also be required to publish annual reports and accounts, including details of membership, governance, performance and educational / awareness raising activities.

Across the EU, this is the most common form of DRS.

7.2 Decentralised or financial model

Under a decentralised or financial system, the DRS scheme operator plays a more limited role – although the same obligations in relation to awareness raising and education, annual reports and accounts, governance etc would apply.

While a decentralised scheme would also be given legislative underpinning, responsibility for target attainment is given to producers generally. Operational responsibility is then left to other stakeholders, such as collectors, and these other stakeholders receive financial support from the scheme operator to fund their activities under the scheme.

Unlike the centralised or operational model, the scheme operator does not take ownership of the material. Typically producers will collect their own containers or will contract out collection of their own containers, so that there can be multiple collectors and different

systems under a decentralised system. Returned beverage containers are sorted and stored separately by producers.

The sharing of responsibilities under a decentralised system means that overall governance and accountability is shared by the scheme operator, producers, collectors and retailers. Responsibility for awareness raising and outreach may also be shared rather than held by a single entity as under the centralised model. The responsibility on each operator across the system in this model would be laid out in legislation.

7.3 Hybrid

A hybrid model brings in aspects of both the centralised and decentralised models. Financial management of DRS would rest with the scheme operator with the operational delivery – collection and recycling – contracted by the scheme operator to collectors and municipal recycling facilities (MRFs). Once again, the obligations outlined above in relation to awareness raising and education, annual reports and accounts, governance etc would apply.

As under the decentralised model, the scheme operator does not take ownership of the material. Instead, this resides with the waste operators (collectors / MRFs).

Whereas under the decentralised model producers collect their own containers or will contract out collection of their own containers, in the hybrid model waste collectors would collect all producers' beverage containers.

8 Consultation questions:

- The Report recommends a centralised, operational model for Ireland. Do you agree with this recommendation?
- If not, do you favour a:
    a) decentralised / financial DRS; or,
    b) hybrid.
- Are there other models you believe could work in an Irish context?
- What role should waste collectors play in the operation of a DRS?
- The DRS study proposes a deposit per container of €0.20. Do you think this is appropriate? If not should it be higher or lower or should different deposit rates apply depending on container size?
- Consumers need to know about a DRS long before it becomes operational – do you have any suggestions as to how best the introduction of a DRS can be communicated to the public?
- What enforcement measures should be considered in parallel with the introduction of a DRS?
- How should cross-border issues be treated to ensure producers are not at a competitive disadvantage relative to producers in Northern Ireland?

Deposit Return Scheme
Consultation Response on Potential Models for Ireland

Date: 12 November 2020

Respondent Name: TOMRA SYSTEMS ASA

TOMRA

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1. About TOMRA

TOMRA was founded on an innovation in 1972 that began with the design, manufacturing and sale of reverse vending machines (RVMs) for automated collection of used beverage containers. Today TOMRA provides technology-led solutions that enable the circular economy with advanced collection and sorting systems that optimise resource recovery and minimise waste in the food, recycling, and mining industries.

With an installed base of approximately 83,000 systems in over 60 markets, TOMRA Reverse Vending is the world's leading provider of reverse vending solutions. Every year TOMRA facilitates the collection of more than 40 billion empty cans and bottles and provides retailers and other customers with an effective and efficient way of collecting, sorting and processing these containers.

In addition, TOMRA creates sensor-based technologies for sorting and process analysis within the recycling, mining, food and other industries. With more than 13,740 installations worldwide, TOMRA Sorting Solutions offers a unique range of complementary sorting technologies, the most extensive service base, and the widest geographic and market segment coverage in the industry. Subsequently, TOMRA is a global leader in its field and has pioneered the automation of waste sorting. Its flexible sorting systems perform an extensive range of sorting tasks and are able to both prepare and sort various types of metals and waste for either material recycling or energy recovery. Currently TOMRA Sorting Recycling has an installed base of close to 5,960 units across more than 40 markets.

The information contained in this consultation response represents TOMRA Systems ASA's extensive experience, opinion, approach and attitude towards the establishment of a modern, cost efficient Deposit Return System (DRS) for single-use beverage containers.

2. DRS in the framework of a Circular Economy:

Within the framework of the Circular Economy, a Deposit Return System (DRS) is the most suited and efficient economic instrument when aiming to achieve full circularity for beverage containers. Besides being the only solution able to fulfil the Extended Producer Responsibility (EPR) obligations for close to 100% of the products sold to the market, it is also the best application of the polluter pays principal.

A well designed, modern, efficient DRS is thereby able to:

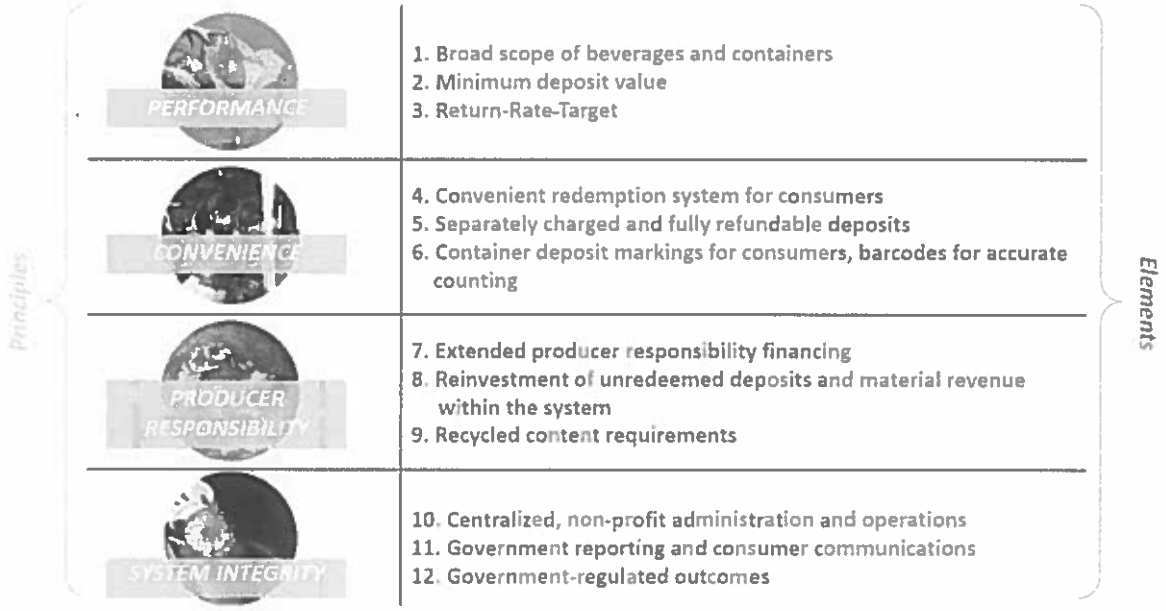
1. Achieve high collection and recycling rates above 90%[1]
2. Guarantee a stable feedstock and supply of high quality secondary raw materials for the domestic processing and recycling industry, which can subsequently be integrated into new products (bottle-to-bottle)
3. Achieve an instant reduction of terrestrial and marine litter, particularly for those beverage containers consumed on-the-go

[1] European collection rate average for PET bottles in the 10 existing European DRS is >90%

The overall aim of any DRS should be:

1. Maximising the quantity and quality of the targeted materials when it comes to collection, sorting and high-quality recycling
2. Preventing terrestrial and marine litter
3. Easy access for the consumer
4. Running at the lowest possible cost for all stakeholders involved thereby achieving maximum economic and environmental benefits
5. Fulfilling the Extended Producer Responsibility (EPR) obligation

However, no two existing deposit systems are identical - local culture, industry structure and political objectives form the system. The system needs to be adapted to the existing environment in which it shall operate. TOMRA has built on more than 48 years of experience in the field of DRS (single use/refillable) concluding 12 key elements, which are recommended to be included in a modern cost efficient DRS, in order to achieve the above desired key results:



It is important to note that when talking about a DRS for single-use beverage containers, a clear legal framework needs to be set by the government. A voluntary approach without legislative basis has shown that the desired results will not be achieved. Therefore, all globally existing DRS are mandated by law.

Voluntary DRS are traditionally implemented for refillable bottles.

3. Consultation Questions

Question 1 + 2:
The Report recommends a centralised, operational model for Ireland. Do you agree with this recommendation? If not, do you favour a) decentralised / financial DRS; or, b) hybrid

Yes. Experience shows that best results in terms of economic and environmental efficiency, as well as prime transparency, are accomplished if the DRS is managed by a centralised non-profit organisation, mutually owned by the obligated stakeholders from beverage industry/importers and retail. It is today the most effective way to reach maximum equality, system integrity, transparency, and efficiency within the system.

As part of their Extended Producer Responsibility (EPR) obligation, the stakeholders must bear the investment and running costs of the system. As a consequence, these stakeholders are the legal owners of the DRS management organisation.
This needs to be mandated by law. The appointment of the Central System Operator is concluded by the respective regulatory body (Ministry of Environment or EPA) after a public tendering process.

The main benefits of a centrally administered and operated DRS can be summarised as follows:

- Economies of scale
- Prevent free riding
- Ease for consumers
- Better for public education
- Transparency
- System integrity
- Reduced complexity
- Level playing field

However, there are also differences in the set-up and efficiency of centrally organised systems. Therefore, the focus should be on the Nordic, in particular Norway, as well as the Baltic systems, such as Lithuania and Estonia[2].

Composition of Central System Operator:
The Central System Operator is traditionally composed of representatives from the beverage industry/importers and retail.

The reason being:

- The beverage industry is responsible for fulfilling its EPR obligations, preferably at the lowest possible cost.
- The beverage industry is responsible for financing the system.
- Retailers are very often drinks producers themselves (white brands).
- Retailers are responsible for establishing an efficient and accessible collection infrastructure in order to achieve the desired legally binding collection targets.
- Retailers receive a "handling fee" per empty beverage container collected. This handling fee shall cover the direct costs [means of collection (RVM/Manual), loss of space, time dedicated

[2] It is important to note that Scotland (DRS will start on 1st July 2022), based its future DRS on Norway and Latvia (DRS will start on 1st February 2022) based it future DRS on Estonia and Lithuania.

to maintenance, cleaning, coverage of electricity and internet costs] associated to the collection of these containers.

As producers need to pay an "Administration Fee" for each unit sold into the market, the aim is for this Administration Fee to be as low as possible.

As retailers receive a "handling fee" per unit collected, the aim is for this handling fee to be as high as possible. Not only does the handling fee represent the highest cost for the DRS, but as the Administration Fee, as well as the handling fee need to be readjusted periodically, it makes sense to have both stakeholders represented on the management board of the system. Most commonly this is done through the respective associations.
Yet, it does not necessarily mean that the shares are distributed equally, this distribution can vary from system to system.

Estonia:

Eesti Pandipakend OU (EPP)

- 25% Association of Producers of Soft Drinks
- 25% Estonian Association of Brewers
- 25% Association of Importers of Soft Drinks and Beer
- 25% Estonian Retail Association

Lithuania:

Užstato Sistemos Administratorius (USAD)

- Lithuanian Brewers Association
- Association of Lithuanian Trade Enterprises
- Lithuanian Natural Mineral Water Manufacturers' Association

Norway:

Infinitum

- 7.5% Grocery Manufactures' Service Office
- 33.5% Norwegian Association of Wholesale Grocers
- 15% Coop Norway
- 1.5% Norwegian Federation of Petrol Dealers
- 35% The Norwegian Brewers' Service Office
- 7.5% Federation of Norwegian Food and Drink Industry

Central System Operator responsibilities:
The Central System Operator is responsible for coordinating and executing an efficient and transparent money-material flow within the system.

Efficiency through Central Organisation

Central Organisation in place to ensure efficiency of system and full transparent flow of money, data and material streams

Data management, deposit clearing and reporting

Marketing of collected material

Operation of the logistics system

Marketing of deposit system towards consumers

1. Data management, deposit clearing and reporting

    a. Collection of deposit from producer
    b. Collection of Administration Fee from producer and retailer where applicable
    c. Aggregation of sales data from producers
    d. Aggregation of collection data from automated and manual collection sites
    e. Clearing of deposits across the different levels of trade
    f. Administration/payment of handling fees (see Appendix for detailed description) to retail
    g. Matching sales and collection data
    h. Fraud monitoring/management
    i. Reporting to competent body (Government) of achieved collection rates

2. Operation of logistics system

    a. Registration of new products/containers into the system
    b. Design/control the use of deposit labels
    c. Manage/design the flow of empty containers + clearing of deposits
    d. Approval/certification and quality assurance of manual collection procedures
    e. Approval/certification of collection equipment (RVMs, counting station equipment, bags, boxes etc.)
    f. Counting of manually collected containers
    g. Awarding of transportation and depot contracts
    h. Operation of counting/sorting centre

3. Marketing of collected material

    a. Negotiation of contracts/sale of collected material
    b. Quality assurance and product development

c. Sorting and bailing of collected materials (preparation for recycling)

4. Marketing of deposit system towards the consumer

   a. Continuous awareness building towards the consumer

System economics

1. An efficient DRS relies on three main income streams:

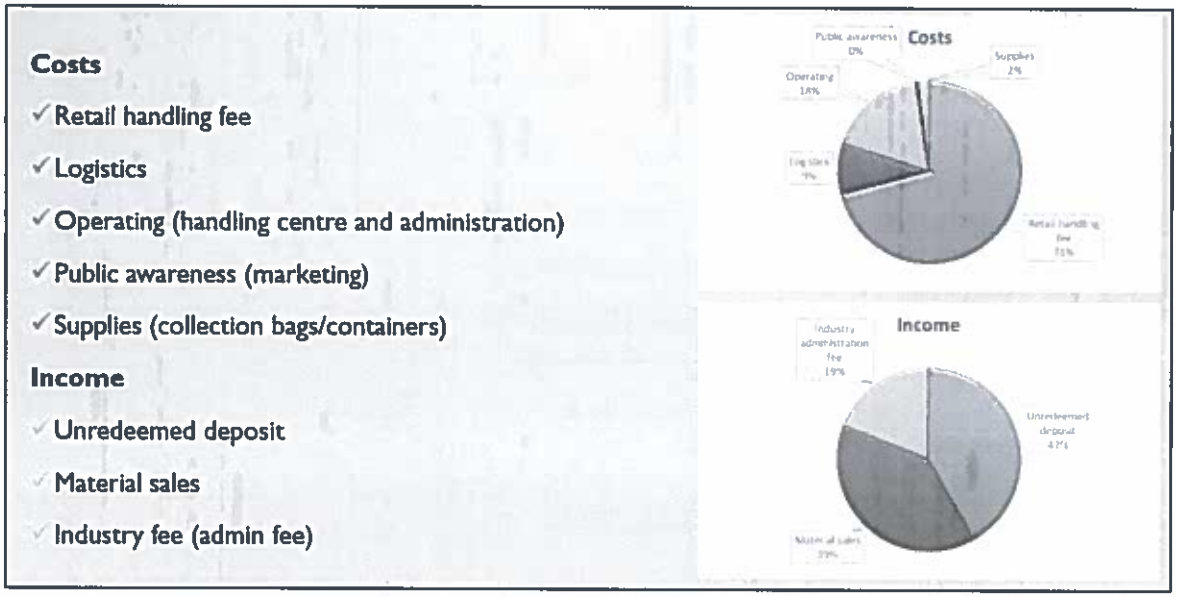
   a. Unredeemed deposits
   b. Producer/importer fee paid by the producer into the system
   c. Sales of collected materials

2. As the DRS follows the not-for-profit principle:

   a. Any economic profit made in the DRS is reinvested into the system to optimise existing costs
   b. Profits are not paid out to the shareholders

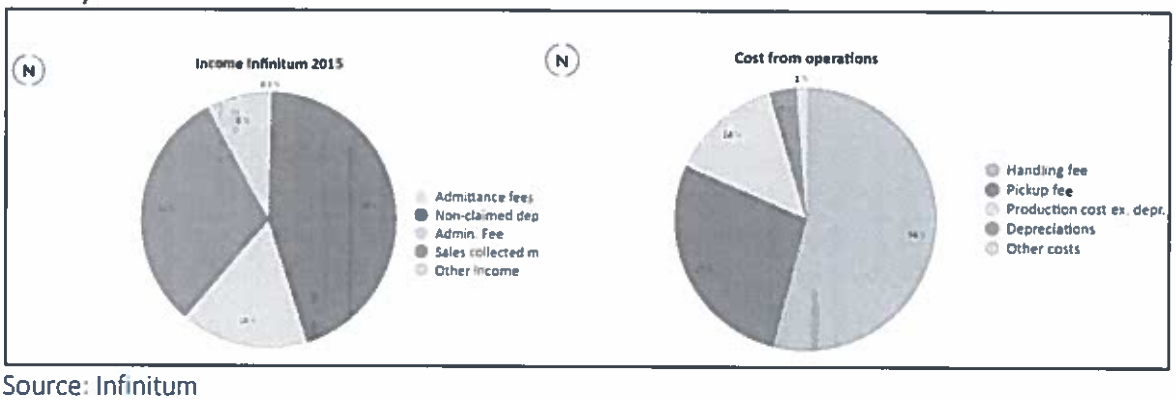
Deposit operator profit and loss calculation (P&L)	
Registration fee (annual/fixed)	=
Administration Fee (per unit sold):	=
Sale of commodities/material:	=
Unredeemed deposit (100% - R%):	=
Finance/interest:	=
Sum income:	**= x**
Handling fees (to retail):	=
Pick-up and freight:	=
Administration/management:	=
Operation of counting/sorting centre	=
Marketing/Information/PR:	=
Sum costs:	**= y**
Net result (long term):	**= x-y ~ 0→ not for profit**

Estonia:



Source: Eesti Pandipakend (EPP)

Norway:



Source: Infinitum

Lithuania:

Source: Užstato Sistemos Administratorius (USAD)

Question 3:
Are there other models you believe could work in an Irish context?

We are not aware of any other models that reach the desired environmental and economic outcomes.

Question 4:
What role should waste collectors play in the operation of a DRS?

Waste collectors and the wider waste management industry have the following operational opportunities available in a DRS:

- Logistics (collection and transport)
- Operation of counting and/or sorting centre
- Resource trading
- Recycling

Generally speaking, the traditional waste management sector has a vital role to play in creating a circular economy, in which DRS plays a crucial role. Compared to the traditional waste management approach, where collected materials are disposed of or incinerated at the end of their usage, the circular economy is aiming at the high quality and quantity collection and reprocessing of materials which are placed back into production lines, thereby representing an important and valuable feedstock for the recycling and manufacturing industry.

But what does this mean for the traditional waste management sector? First of all, it means a change in perception and mindset of how waste is being perceived, away from old patterns of consumption, discard and waste towards consumption, optimisation for recycling and reuse. Waste is composed of various high value resources. A resource is therefore nothing that should be simply discarded, but reprocessed and re-used as often as possible. As a consequence, industries need to adapt towards becoming materials and resource managers, rather than waste managers. However, in order to achieve this, high-quality collection needs to be maximised, as it is only possible to sort and recycle what is being collected.

Being a material and resource manager particularly the collection mechanisms, flow and handling of these valuable materials needs optimisation and innovative approaches, ideally using existing infrastructures. For a circular economy, the optimisation of existing transport chains and complex logistics and infrastructure networks is as crucial as the optimisation of waste collection, transport and handling. Recovering clean material fractions requires the separate collection of selected material streams which again entails new diverse business opportunities.

A good example is Remondis being one of the leading waste management companies in Europe. Today in Germany, Remondis is at the forefront when it comes to championing the manual return logistics. Their activities include reverse logistics, counting and sorting centre operations, processing and recycling. In addition, they also adapted their re-processing infrastructure and are a strong active player in the PET and glass recycling industry.

New infrastructures need to be established and existing ones expanded, such as recovery and reprocessing facilities, technologies and software in order to divert the valuables from the waste stream and re-supply industries with high quality materials which are put back into production.

Question 5:

The DRS study proposes a deposit per container of €0.20. Do you think this is appropriate? If not should it be higher or lower or should different deposit rates apply depending on container size?

TOMRA strongly supports the proposed deposit amount of 0.20€. Experiences from other DRS have shown that that the amount is sufficient to quickly reach collection and recycling rates above 90%.
In case variable deposit amounts are applied it is recommended that the lowest deposit amount is 0.20€.

Experience from other markets show that the final decision on the appropriate deposit amount is taken by the government. However, the Central System Operator should have a say in advising the government on what is most appropriate. It is thereby important to keep various factors in mind:

- The deposit amount needs to have the right balance between being high enough to incentivise the consumer and being low enough to discourage fraud.
- The deposit amount needs to be aligned with the cost of living.
- The deposit amount needs to be aligned with the purchasing power.
- The deposit amount needs to take into account the inflation amount over time.
- The deposit amount needs be set at a rate that still motivates consumers to return containers 5-10 years from the year of introduction.
- The deposit should be excluded from any VAT.
- In order to avoid confusion among consumers and achieve system simplicity and cost efficiency, particularly in the system administration, it is recommended that the deposit amount is flat across all drinks containers included in the system. In addition:
    - Producers might switch to containers types with a lower deposit value, in order to avoid charging a higher deposit amount.
    - Producers face increased costs by applying different barcode for the same container type.

The deposit value is a key contributor for reaching the set collection targets.
Should the collection rates stagnate at a rate that is not desired, the Central System Operator should be able to propose and advise the government to increase the amount in order to reach higher collection results.

This approach was taken in Estonia in 2016, where the deposit amount was raised from 0.04€/0.08€ to a uniform 0.10€ which quickly resulted in a higher collection rate.
A similar approach was taken in Norway in 2018, where the deposit amount increased from 0.01NOK/0.025 NOK to 0.02NOK/0.03NOK.

Question 6:

Consumers need to know about a DRS long before it becomes operational - do you have any suggestions as to how best the introduction of a DRS can be communicated to the public?

Constant and ongoing communication campaigns play a key role in any DRS, particularly prior and during the start-up phase of the system. As the aim of any DRS is to achieve the highest possible collection and subsequent recycling targets for the targeted beverage containers, communication campaigns, next to the right deposit value, are a key contributor in achieving this. Not only is it important for the consumer to understand how the system works, but to also understand the benefits the system brings to the environment and society. The responsibility hereby lays with the Central System Operator, who is financially and operationally responsible for keeping society informed about the system and its benefits.

Planning a „Public Education Program" over four distinct phases of the scheme, each with a set of key activities, can prove to be particularly effective. These phases include:

- Preparation
- Pre-launch
- Post-launch
- Ongoing campaign

Initial preparations should take place at least six months in advance of the DRS launch. These preparations will culminate in an intense period of media approximately four weeks before the scheme launch that will focus on boosting awareness of the DRS. Following the launch, there should be a further intense period of media and events that will continue to grow awareness and educate consumers. After this initial burst, additional campaigns can be used strategically and tactically in response to specific communication needs as the plan transfers into a "business as usual" phase.

Experiences from the Nordic and Baltic systems[3] show that extensive and continuous emphasis and effort is placed on wide reaching communication campaigns through:

- TV advertisements
- Radio advertisements
- Public advertisements
- Newspaper advertisements
- Social media advertisements
- Online video platforms

Examples from Sweden (Central System Operator: Returpack):
https://www.youtube.com/watch?v=87e3xEKMhZc&t=31s (Returpack the movie)
https://www.youtube.com/user/pantameranu (Returpack YouTube page)

[3] Central System Operators:

a. Estonia: Eesti Pandipakend (EPP) https://eestipandipakend.ee/en/
b. Finland: Suomen Palautuspakkaus Oy (Palpa) https://www.palpa.fi/english/
c. Lithuania: Užstato Sistemos Administratorius (USAD) https://grazintiverta.lt/en/for-business/
d. Norway: Infinitum https://infinitum.no/english
e. Sweden Returpack: https://pantamera.nu/om-oss/returpack-in-english/

Examples from Norway (Central System Operator: Infinitum):
https://www.youtube.com/watch?v=w1P397IE02I (Infinitum Shark ad)
https://www.youtube.com/user/norskresirk (Infinitum YouTube page)

Examples from Lithuania (Central System Operator: Užstato Sistemos Administratorius (USAD):
https://www.youtube.com/watch?v=uUIz2SkaPf0 (Explaining the communication campaign)
https://www.youtube.com/watch?v=6XUP9a94GgA (Life within an RVM)

Examples from Finland (Central System Operator: Suomen Palautuspakkaus Oy (Palpa))
https://www.youtube.com/watch?v=rNwAm01Dm-g (Palpa return system for beverage containers)

Examples from Estonia: Central System Operator: Eesti Pandipakend (EPP)
https://eestipandipakend.ee/oppematerjalid/
https://eestipandipakend.ee/tarbija/video/
https://www.youtube.com/channel/UCUSTohxUvyxxWaILkk8hYjQ (EPP Youtube Page)

In Lithuania, the legislation stipulates that the system "administrator for single-use packaging deposit system shall appropriate at least 1 percent of its annual turnover for public awareness and information on management of packaging waste". [Article 112 Administration of single-use packaging deposit system (10)].
Through this approach it is guaranteed that particularly at the beginning of the scheme sufficient financial resources are allocated to communication. However, as the system becomes more efficient and the consumer more aware, legislation should be flexible to decreasing the required amount when going into the "business as usual" phase. It should then be up to the Central System Operator to decide the sufficient amount put into communication.

Question 7:
What enforcement measures should be considered in parallel with the introduction of a DRS?

System:
The aim of the DRS should be to maximise the collection quantity and quality of targeted materials, and subsequently increase the high-quality recycling rates through a broad range of beverage containers. The Central System Operator should therefore be responsible for meeting the legally binding collection targets set by the government.

The collection targets, which need to be set by the government, should follow a staggered approach[4]. For example:

- 70% collection in year 1
- 80% collection in year 2
- 90% collection from year 3

It is important that when targets are not met, the system is penalised. If penalties are not in place, the system is, for instance, provided with an economic incentive to keep the collection rates low and maximise the collection of unredeemed deposits. Therefore, any penalty needs to exceed any economic gain the system could have from keeping the collection rates too low.
Penalties could include:

- Doubling the deposit amount
- Financial penalty

Producer:
Front-end fraud: Under-reporting (lower amount of containers reported to the Central System Operator than actually placed onto the market by the producer/importer) results in less money entering the system and potentially resulting in an over-redemption of a specific product, subsequently leading to a financial loss in the system. It is crucial that the Central System Operator constantly checks on producers and importers by focusing on:

1. Sales data vs. return data à If there is an over-redemption by one product, it is likely that the sales figures have been under-reported.
2. Potential parallel (grey) imports at customs, which should be checked regularly.

Any type of fraud by the producers/importers should result in a meaningful penalty.

Retail:
Within a "return to retail" DRS, retailer responsibility includes providing an accessible return location and properly informing the consumer about the DRS. For instance, on the product shelves it is important that the deposit value is displayed separately from the product price, in order for the consumer to understand that the deposit amount is neither a price increase of the product nor a tax, but is a fully refundable deposit. Refusal to accept empty beverage containers or not correctly informing the consumer about how the system operates within the premises should result in a meaningful penalty.

[4] Common approach applied in various DRS. The most recent inclusion of this approach was done in the Deposit and Return Scheme for Scotland Regulations

Question 8:

How should cross-border issues be treated to ensure producers are not at a competitive disadvantage relative to producers in Northern Ireland?

As the deposit is fully refundable it should not be seen as a price increase and therefore should not pose a competitive disadvantage. Consumers quickly understand the deposit return concept.

Taking into account the theoretical scenario that both, the Republic of Ireland and Northern Ireland operate their individuals DRS, there should be no competitive disadvantages, as long at the respective deposit amounts are similar and both systems are run efficiently.

When looking at a DRS market which borders a non-DRS market, another important consideration is cross-border fraud and how this risk might be minimised.

The most common approach within a DRS is to use a domestic/country specific/unique barcode. This way the system is able to clearly identify that the containers returned belong to the respective DRS domestic barcode: this approach entails that the included beverage containers are equipped with a domestic, country specific/unique barcode only to be used in the respective DRS market. Through this approach containers coming from outside the DRS are not accepted within the system and cannot be redeemed.

The incurred costs associated to the barcoding, which is fully financed by the producers, needs to be set in relation to the actual value the collected material has.

As mentioned earlier, the financing of the DRS relies on three main income streams:

1. One of them being the sale of the collected material. For instance:

   Metal: In Norway, the value of the collected aluminium cans is so high, that the Administration Fee is negative. This means that the producer is literally getting paid by the Central System Operator for each object placed into the system. In Estonia and Sweden, the Administration Fee is 0. Subsequently, the product price in all three markets should stay at the rate where it is or even decrease.

   Plastic: Although the value of the collected materials is higher than in any other collection scheme, it is still not comparable to the value of the aluminium cans. However, it can be observed that the more efficient the system becomes the more the Administration Fees decrease. As a consequence, the product price might increase insignificantly (Lithuania example).

2. The second income stream for the DRS is the unredeemed deposits:

   Cross border fraud can result in used beverage containers entering the DRS including a payout of a deposit amount, which was never initially paid into the system. As a consequence, there will be an artificially high collection rate, resulting in a financial loss for the system, which ultimately needs to be compensated by increasing the Administration Fee per unit paid.

In order to reduce the risk of cross-border fraud the following measures should be implemented:

1. **National/domestic barcode** only applicable for the beverage containers sold in the Republic of Ireland.

2. **Visual logo**:
    a. For consumer information and manual take-back recognition (visual check)
    b. For technology to recognize the visual in combination with the barcode

3. **Security logo**: unique visual logo printed in special ink as applied in Denmark, Germany or Michigan (only three markets globally) is not recommended to be introduced to the Republic of Irelands DRS, when taking into account the fraud risk and the associated potential costs attached to this. Applying the above points 1 and 2 should be sufficient.

4. APPENDIX

a. Handling Fee
b. TOMRA's Key Design Elements for a Modern DRS – Presentation
c. TOMRA's Key Design Elements for a Modern DRS - Detailed Handout
d. Infinitum – Presentation
e. Palpa – Presentation
f. USAD – Presentation
g. EPP - Presentation

a. Handling Fee:

Handling Fees (HF) must cover the direct costs associated to the collection of empty beverage containers.

Costs include:

- Purchase and operating costs of RVMs
- Space requirements
- Electricity and online connection
- Personnel
- Utilities
- Bags used for manual return
- Tags used for manual return
- Transport/logistics (if collected containers are backhauled by retailers)

As the HF is the largest cost for the system it must be carefully calculated and agreed on between the Central System Operator and the retail sector based on the overall system calculation.

Handling fees are usually remitted to the retailer along with the deposit, thereby simplifying the accounting process.

Automated vs. Manual

Handling fees for automated return:

- Higher handling fee compared to manually received containers
- Compaction within the RVM results in lower logistics costs, as less "air" is being transported
- RVMs transfer collection data electronically to the Central System Operator, thereby increasing administrative efficiency.

Handling fees for manual return:

- Lower handling fee compared to automatically received containers
- Non-compaction results in higher logistics costs, as a lot of "air" is being transported
- Manually received containers need to be counted and sorted at the Central System Operators counting centre using an "Industrial RVM". This additional step increases the operational and administrative costs of the system, resulting in lower handling fees.

In general, the Central System Operator foresees handling fees to retail in order to stimulate automation of the deposit redemption. Automation reduces the cost for logistics through compaction, as well as the costs for administration through online data reporting.

RVMs help to reduce costs of the overall operation of the DRS.

Source: Infinitum

For further information or clarifications please contact:

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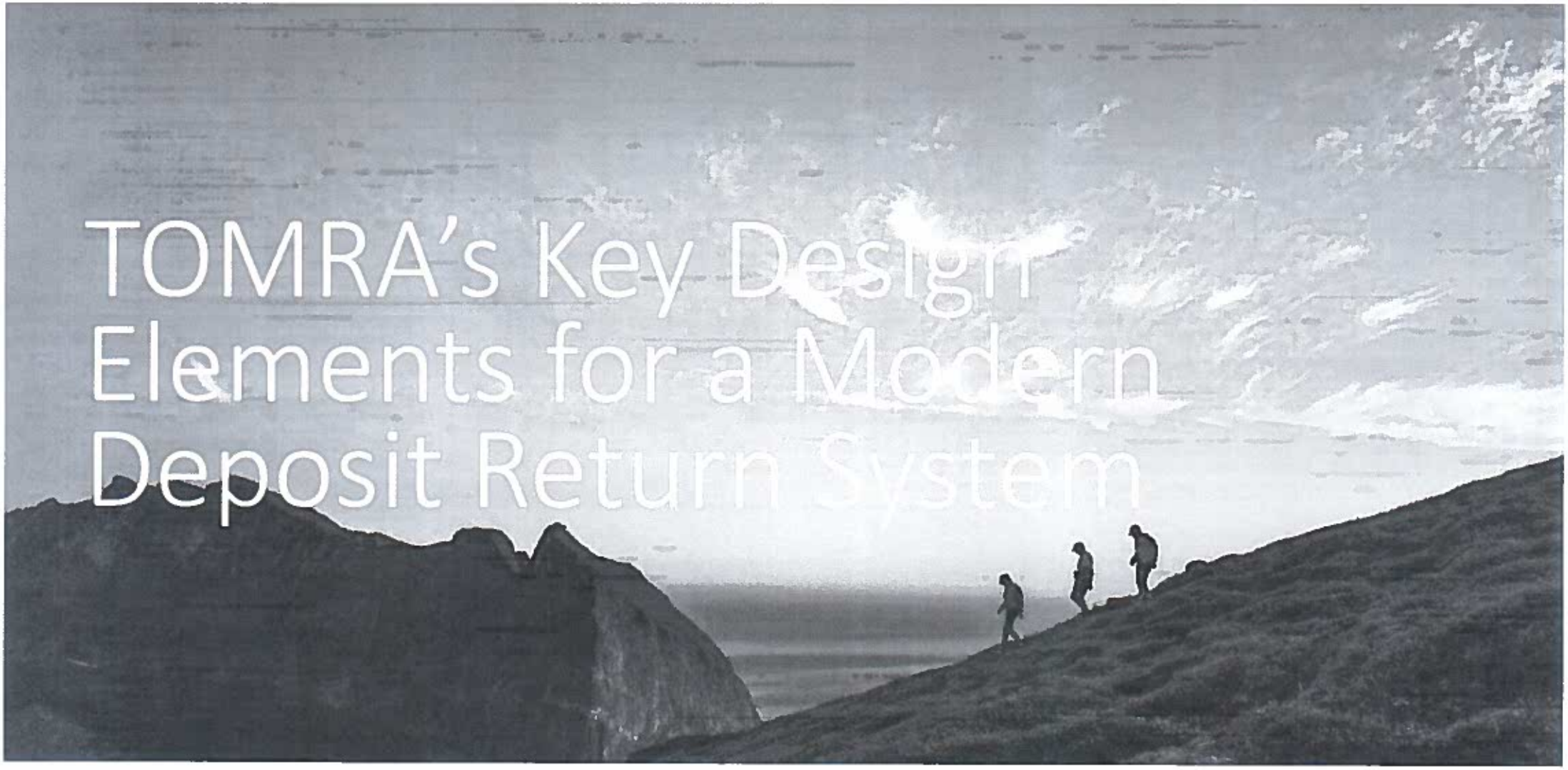


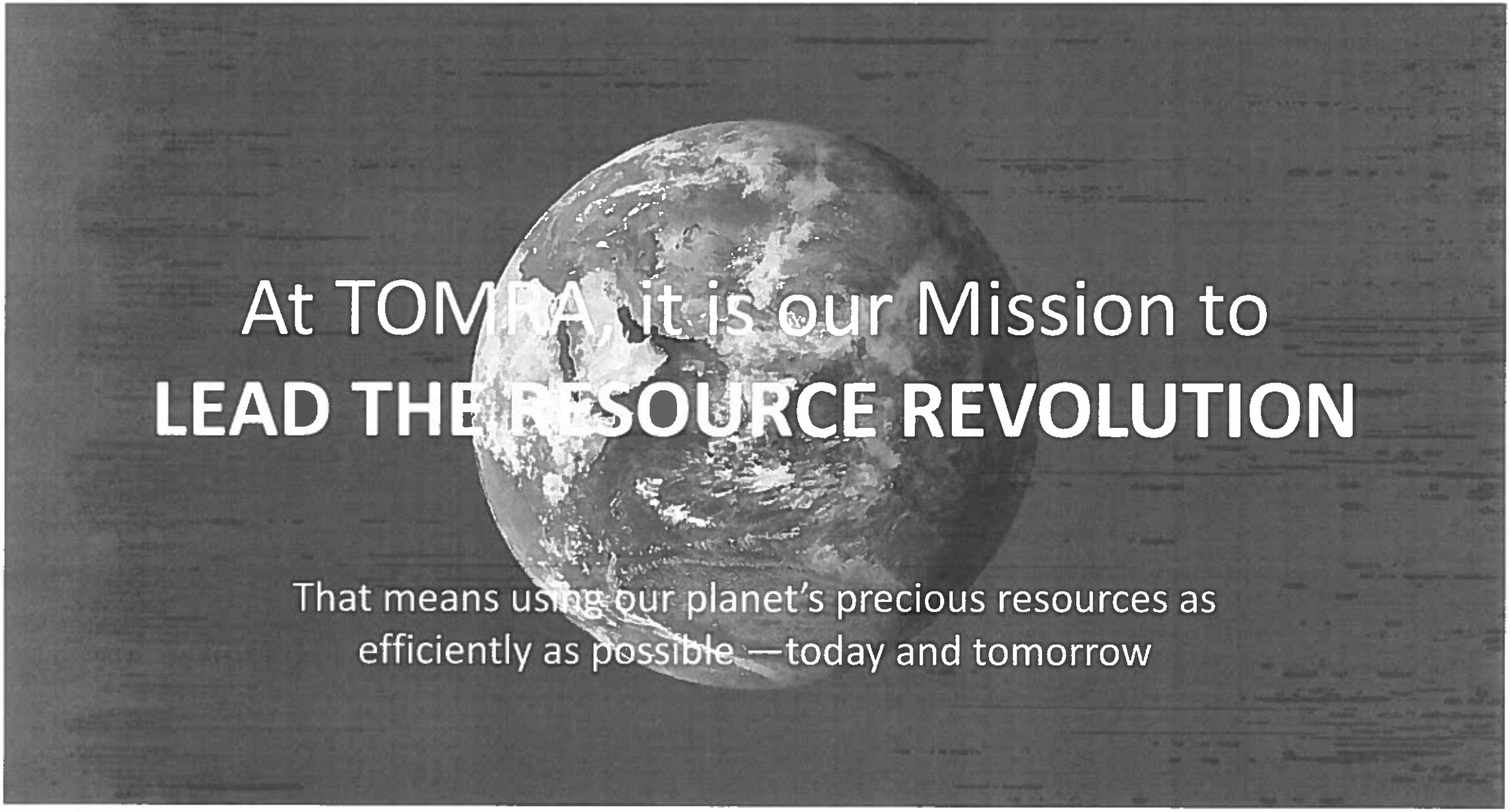
TOMRA's Key Design Elements for a Modern Deposit Return System

TOMRA

YOUR NAME
Title
dd mm.yy

Today's Agenda

Time	Session	Facilitator
Time– Time am/pm (duration mins)	**Introductions**	All
Time– Time am/pm (duration mins)	**Introduction to TOMRA**	Your name
Time– Time am/pm (duration mins)	**Key Principles and Elements of Modern Deposit Return Systems**	Your name
Time– Time am/pm (duration mins)	**Q&A**	Your name


At TOMRA, it is our Mission to
LEAD THE RESOURCE REVOLUTION
That means using our planet's precious resources as
efficiently as possible —today and tomorrow


TOMRA

4,500+ Employees Globally

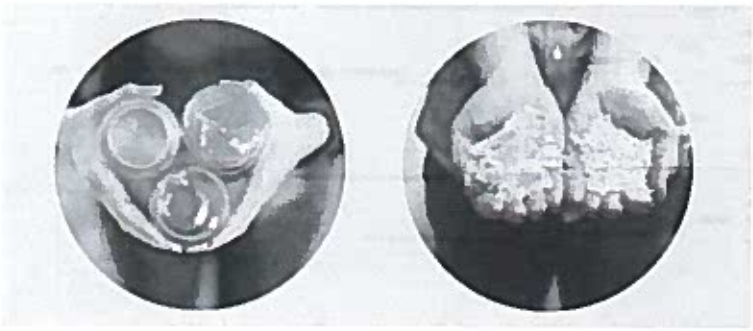
Ca. €880m Annual Turnover In 2019

TOMRA

TOMRA SORTING SOLUTIONS

TOMRA COLLECTION SOLUTIONS

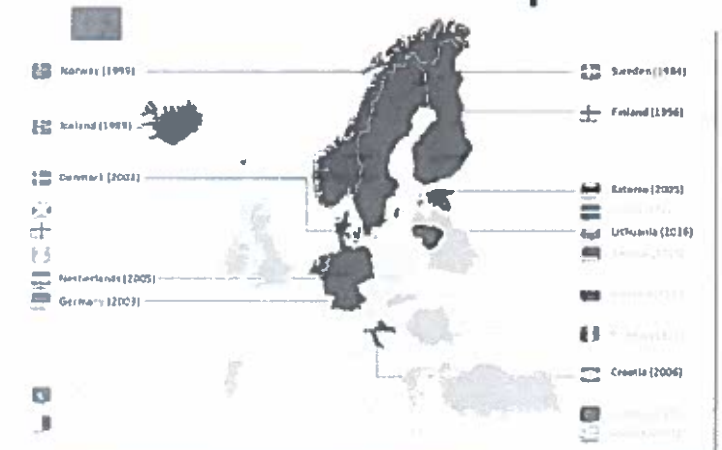
FOOD | RECYCLING | MINING



REVERSE VENDING | MATERIAL RECOVERY

TOMRA Collection Solutions is the world's largest supplier of reverse vending solutions, helping to incentivize recycling at scale.

TOMRA has four decades of experience in deposit markets



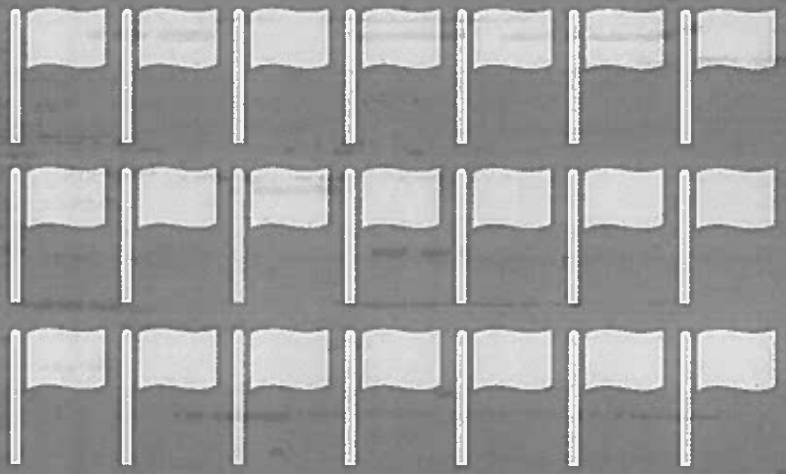
>40 BILLION

cans and bottles collected annually

82,000

Reverse Vending Machines installed globally

Deposit policies are undergoing a resurgence



21

Countries have passed container deposit laws since 2005.

10 in 2018 alone!

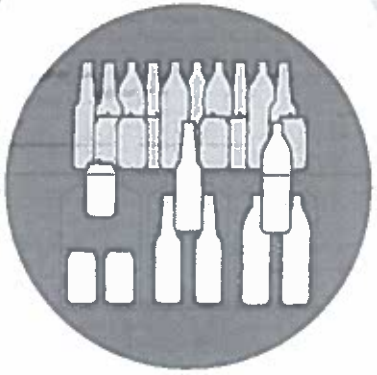
The EU Single Use Plastic Directive **mandates a 90% collection rate for plastic bottles.**

This signals that almost all EU member states will adopt deposit systems

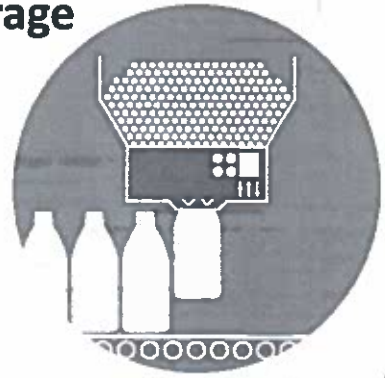
How a Deposit Return System Works

Consumer buys beverage with a deposit

Return beverage container to a collection point to recoup deposit



Beverage containers picked up and sorted further at a processing facility



Material ultimately **recycled into a new beverage containers**

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Principles of a Modern Deposit Return System

TOMRA

What We've Learned: modern Deposit Return Systems prioritize four principles

Performance

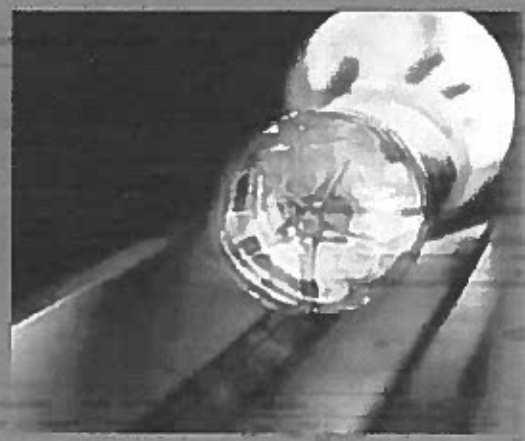
A minimum deposit value and broad beverage scope **delivers strong results.**

Convenience

Redemption is **accessible and fair** for all users.

Producer responsibility

Producers finance the system supported by a **balanced funding structure.**



System integrity

Producers manage the system, with **government oversight.**

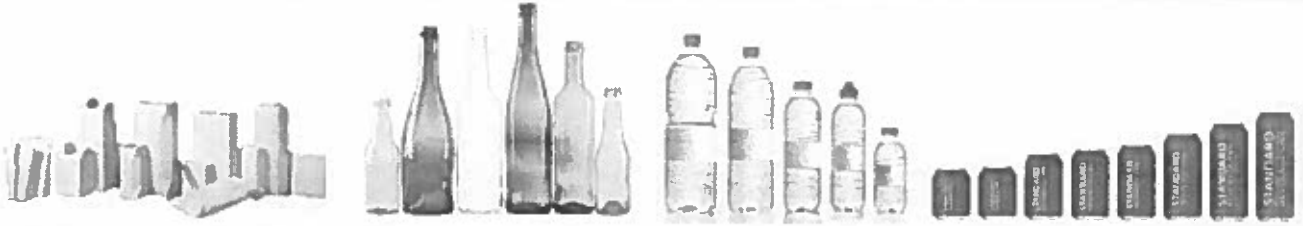
#1

Broad scope of beverages and containers

Beverage Type

Container Material

Container Size

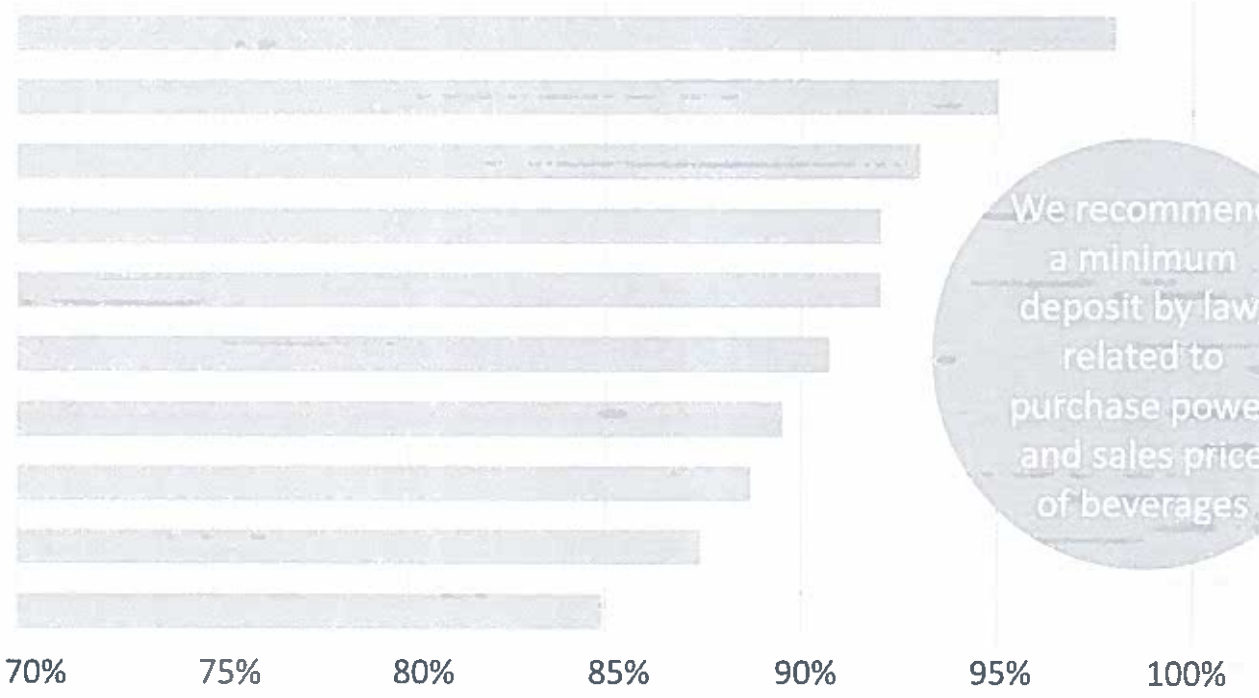


#2

Minimum deposit value

Top Ten Highest Performing DRS - Europe (2019).
Deposit Values vs. Redemption Rates

GERMANY	€0.25
NETHERLANDS	€0.25
FINLAND	€0.10 – 0.40
LITHUANIA	€0.10
DENMARK	€0.13 – 0.40
ESTONIA	€0.10
NORWAY	€0.18 – 0.27
CROATIA	€0.06
ICELAND	€0.10
SWEDEN	€0.09 – 0.19



We recommend a minimum deposit by law, related to purchase power and sales price of beverages.

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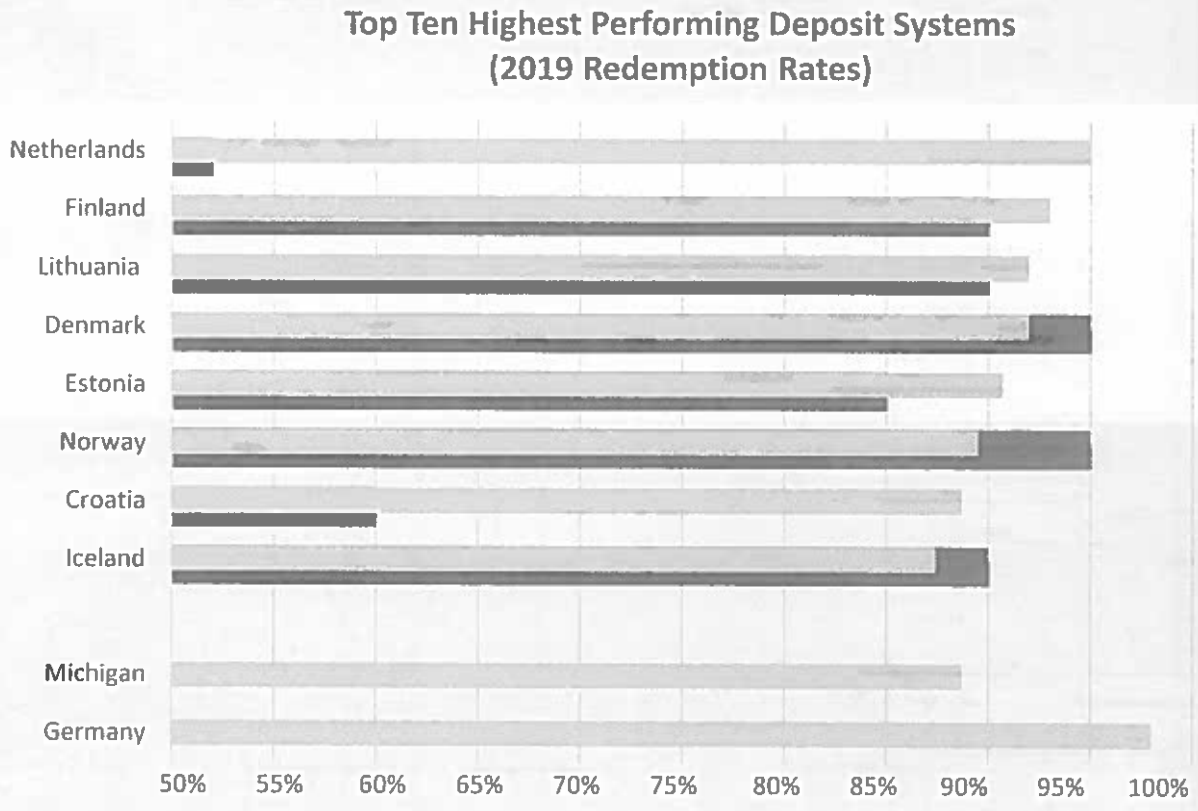
Source: ". Deposit Systems for One-Way Beverage Containers," Reloop. 2018. Norway: 2-3 NOK. Iceland: 16 ISK. Denmark: 1-3 DKK. Croatia: 0.5 HRK. Sweden: 1-2 SEK.

#3

Return-Rate Target

Modern DRSs are capable of routinely achieving a 90% return rate for recycling or more.

A 'return rate target' establishes one goal for all stakeholders to work towards and avoids any perverse incentives like purposefully keeping the return rate low to collect unredeemed deposits.

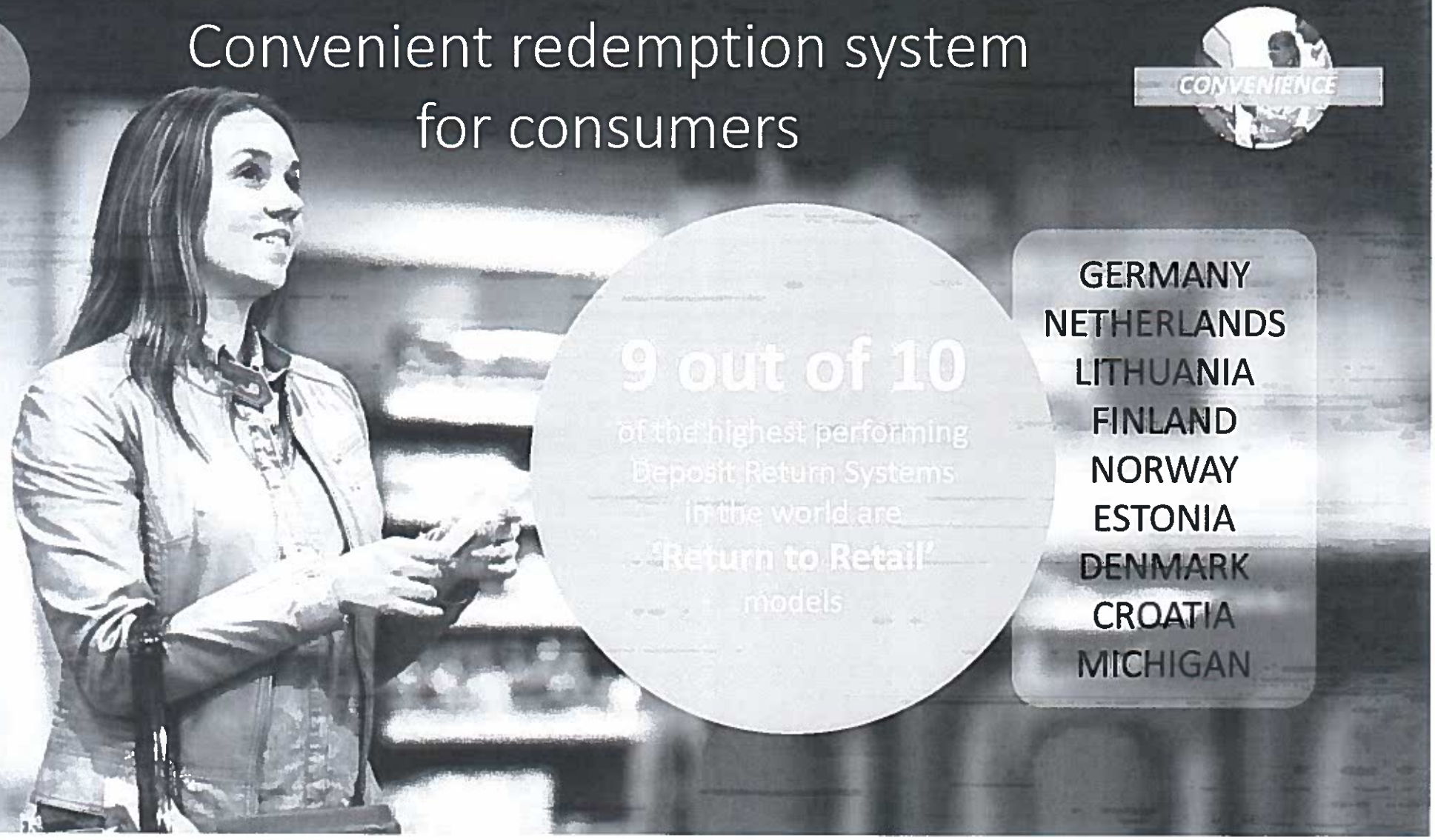


No legal requirement due to high deposit amount of 10 €ct.

No legal requirement due to very high deposit amount of 25 €ct.

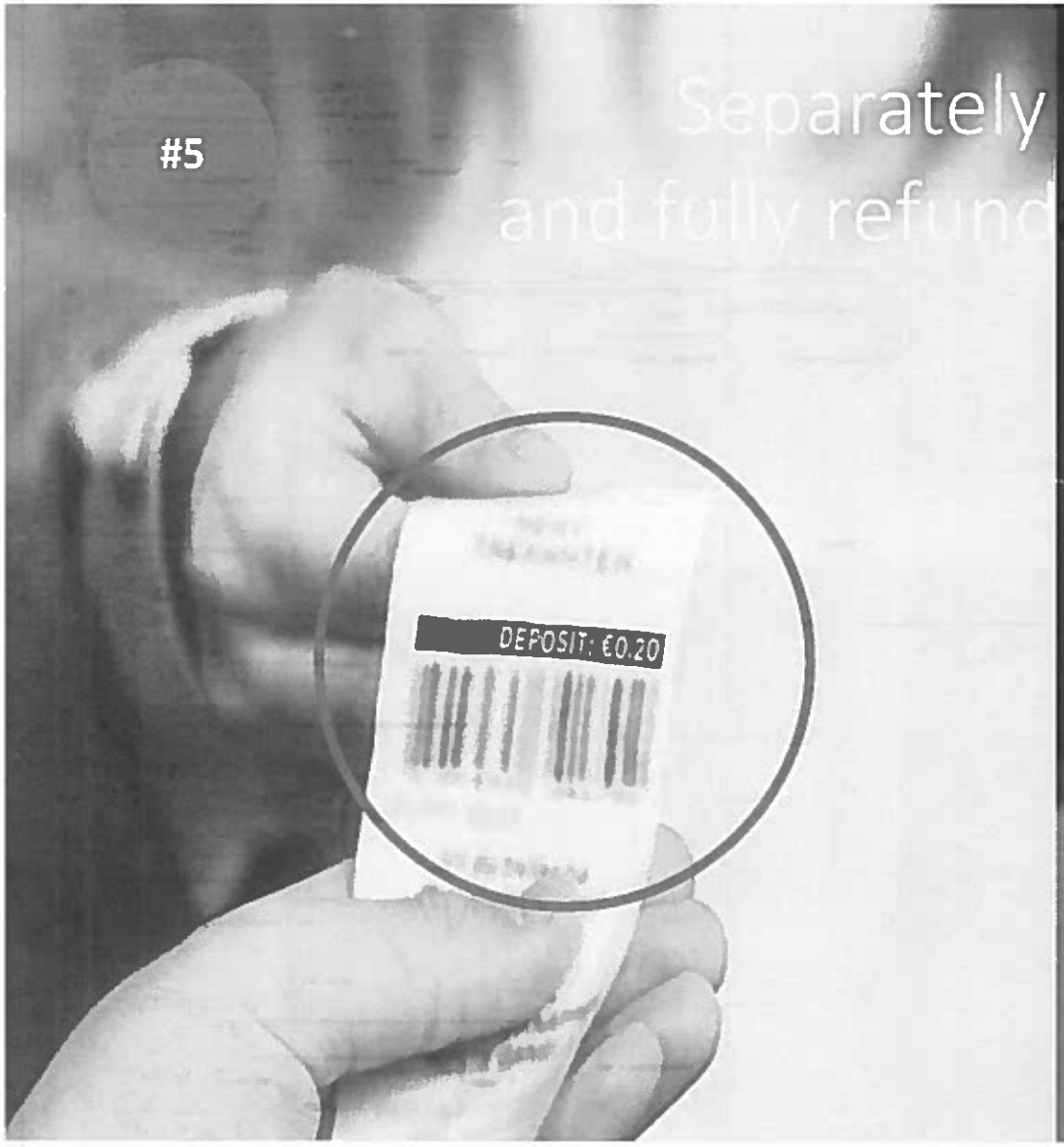
#4

Convenient redemption system for consumers



#5

Separately charged and fully refundable deposits



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#6

Container deposit markings for consumers, barcodes for accurate counting

GERMANY

SWEDEN

USA

DENMARK

NORWAY

ESTONIA

Solutions for small quantities

#7

Extended producer responsibility financing

Producer responsibility derives from:

Legal pressure

Public pressure

Producers cover:

An EPR fee per container
reflecting the
Net costs of the program

"Producers" include: Brand owners and importers (including e-commerce)

#8

Reinvestment of unredeemed deposits and material revenue within the system

PRODUCER RESPONSIBILITY

Recyclable commodity value

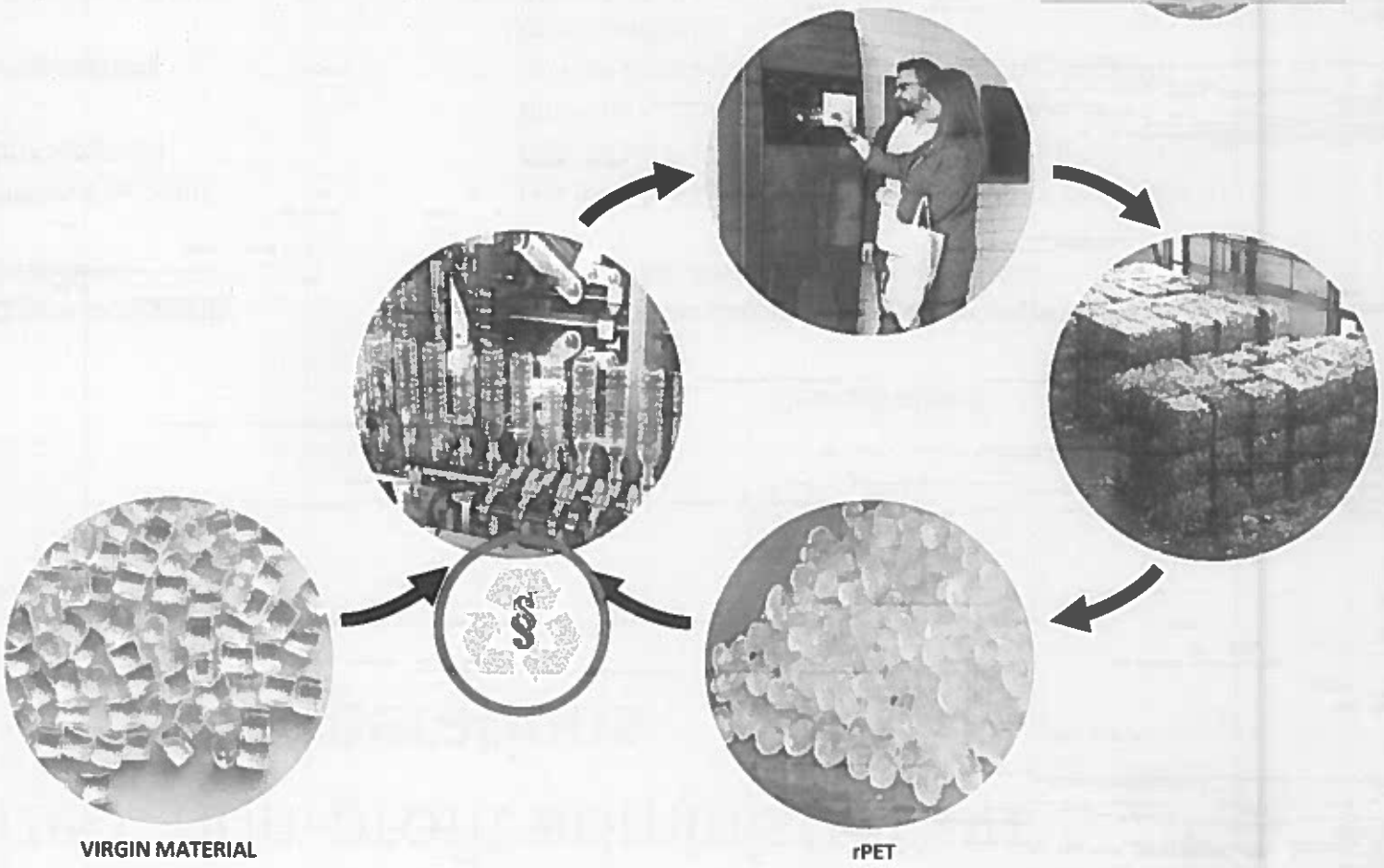
Unredeemed deposits

#9

Recycled content requirements

PRODUCER RESPONSIBILITY

- DRSs ensure containers consumed in a region are collected for recycling.
- Minimum recycled content standards address the other part of the equation: ensuring new bottles are made out of recycled material.



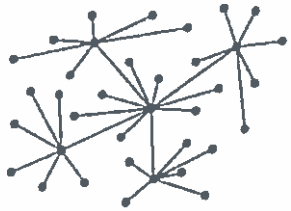
#10

Centralized, non-profit administration and operations

Centralized

Centralized management of the DRS by a non-profit owned by beverage producers and retailers

- Enables the system to run at the lowest possible cost (eliminates need for redundant contract services)
- Streamlines decision-making when program improvements are necessary
- Increases system integrity, minimizes 'free riders'



Decentralized

Individual brand owners are directly and individually responsible for administering the system

- Leads to brand owner and system-wide costs due to redundancies of services like container pick-ups and financial reconciliation.
- Lack of central coordination can stymie program improvements
- Typically lacks product registration resulting in product or distributor 'free riders' and consumer confusion when eligible containers are rejected for redemption

#10
continued

Breaking down the role of a Centralized System Manager

SYSTEM INTEGRITY

Owned and financed by

- Beverage producers and retailers
- Typically operates as a non-profit

Mission

- Accomplish all defined and set targets at lowest possible costs for its stakeholders

Responsibilities

- Deposit clearing
- Product registration
- Fraud protocol development
- Data management
- Performance reporting to government and communications to public
- Fulfillment of overall obligations and targets

#11

Government reporting and consumer communication

Government Reporting

Consumer Communication

*https://www.youtube.com/watch?v=pkTi0Tsh83M&fbclid=IwAR2qswyG4NjjmtZ7tjGQOKrQ18KFgNo9_5c79Z1VqJs_XAI7auFwNU9JNIU

#12

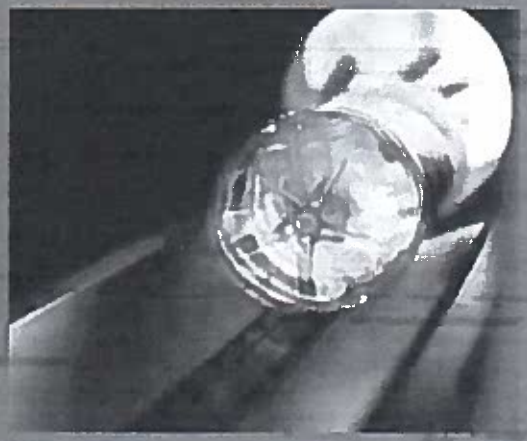
Government-regulated outcomes

SYSTEM INTEGRITY

Legislator must define:

- **Clear penalties for:**
  - **Illegal activities**
  - **Missed targets**
- **Enforcement agency**
- **Audit protocols**

Principles & Elements of Modern Deposit Return Systems



Performance

1. Broad scope of beverages and containers
2. Minimum deposit value
3. Return-rate target

Convenience

4. Convenient redemption system for consumers
5. Separately charged and fully refundable deposits
6. Container deposit markings for consumers, barcodes for accurate counting

Producer responsibility

7. Extended producer responsibility financing
8. Reinvestment of unredeemed deposits and material revenue within the system
9. Recycled content requirements

System integrity

10. Centralized, non-profit administration and operations
11. Government reporting and consumer communication
12. Government-regulated outcomes

Q&A

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APPENDIX

TOMRA's Key Design Elements for a Modern Deposit Return System

1: Broad scope of beverages and containers

2: Minimum deposit value

3: Return-Rate Target

4: Convenient redemption system for consumers

5: Separately charged and fully refundable deposits

6: Container deposit markings for consumers, barcodes for accurate counting

7: Extended producer responsibility financing

8: Reinvestment of unredeemed deposits and material revenue within the system

9: Recycled content requirements

10: Centralized, non-profit administration and operations

11: Government reporting and consumer communication

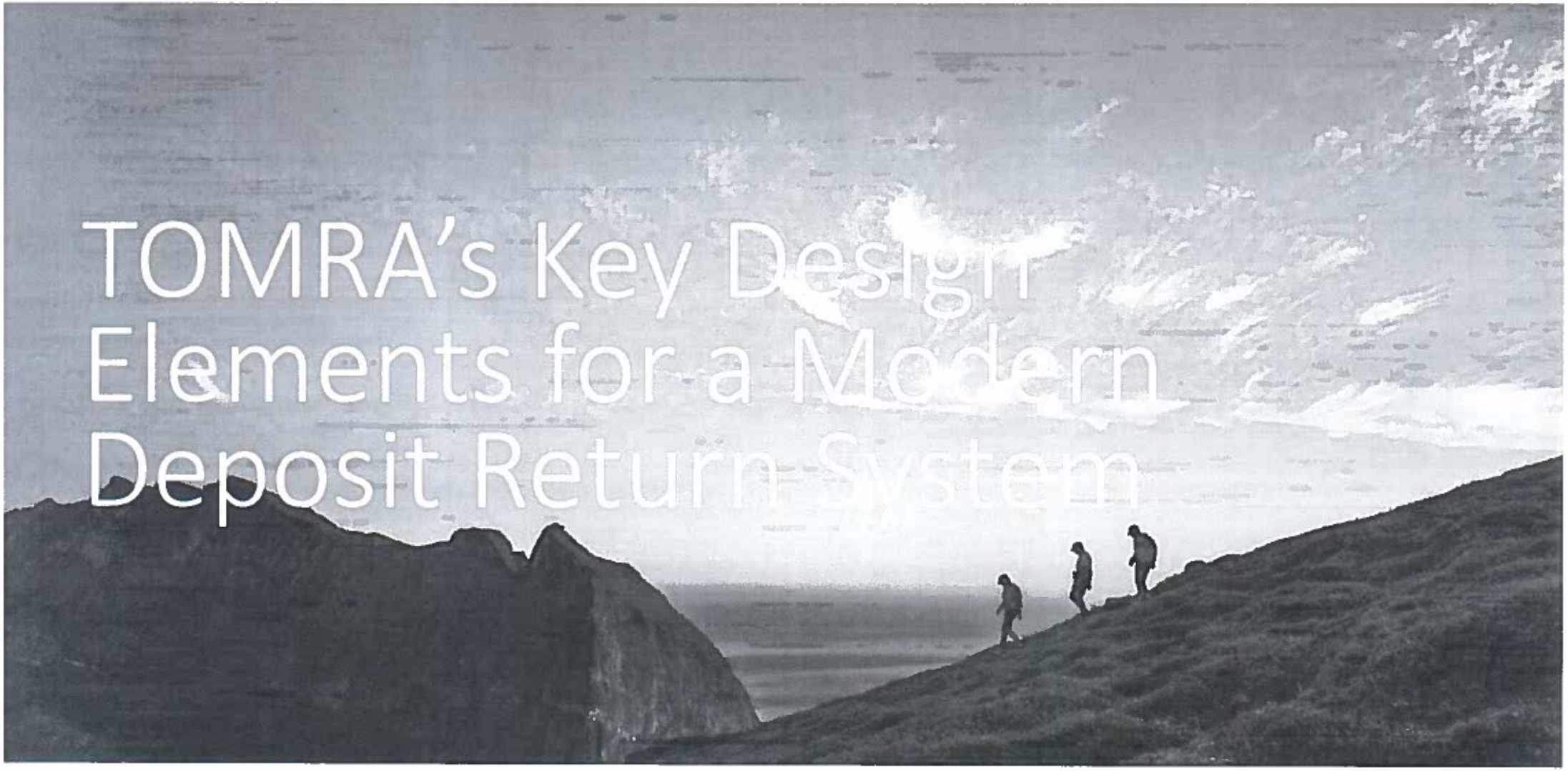
12: Government-regulated outcomes

About TOMRA

TOMRA SYSTEMS, ASA: TOMRA was founded on an innovation in 1972 that began with the design, manufacturing and sale of reverse vending machines (RVMs) for automated collection of used beverage containers. Today TOMRA provides technology-led solutions that enable the circular economy with advanced collection and sorting systems that optimize resource recovery and minimize waste in the food, recycling and mining industries.

TOMRA COLLECTION SOLUTIONS: With an installed base of approximately 83,000 systems in over 60 markets, TOMRA Reverse Vending is the world's leading provider of reverse vending solutions. Every year TOMRA facilitates the collection of more than 40 billion empty cans and bottles and provides retailers and other customers with an effective and efficient way of collecting, sorting and processing these containers.
TOMRA's material recovery business includes the pick-up, transportation, and processing of used beverage containers in North America, as well as the subsequent brokerage of the processed material to recyclers. The revenue stream in this business area is derived from fees received from bottlers based on the volume of containers processed. Currently, TOMRA Material Recovery processes over 340,000 metric tons of containers annually.

TOMRA SORTING SOLUTIONS: TOMRA Sorting Solutions creates sensor-based technologies for sorting and process analysis within the recycling, mining, food and other industries. With more than 13,740 installations worldwide, TOMRA Sorting Solutions offers a unique range of complementary sorting technologies, the most extensive service base, and the widest geographic and market segment coverage in the industry.
TOMRA Food is the leading provider of optical sorting and processing technology for the fresh and processed food industry. With approximately 10,210 sorting installations globally, TOMRA Sorting's food business is instrumental in optimizing the world's food utilization, safety and quality.
TOMRA Recycling is a global leader in its field and has pioneered the automation of waste sorting. Its flexible sorting systems perform an extensive range of sorting tasks and are able to both prepare and sort various types of metals and waste for either material recycling or energy recovery. Currently TOMRA Sorting Recycling has an installed base of close to 5,960 units across more than 40 markets.
TOMRA Mining provides a complete product portfolio for efficient material separation in various minerals and ore applications such as processing of industrial minerals, diamonds and gemstone recovery, and metal recovery from slag etc. With approximately 153 installations worldwide, TOMRA Sorting's mining business helps to extend the lifetime of mining operations, increasing the value of the deposit.
Altogether TOMRA has approximately 100,000 installations in over 80 markets worldwide and had total revenues of about 8.6 billion NOK in 2018. The TOMRA Group employs roughly 4,000 people globally, and is publicly listed on the Oslo Stock Exchange. (OSE: TOM).



TOMRA's Key Design Elements for a Modern Deposit Return System

TOMRA

YOUR NAME
Title
dd.mm.yy

Introduction

More countries are considering the implementation of a Deposit Return System (DRS) for single-use beverage containers, to address the challenges of meeting new waste recovery targets, ending littering and moving towards a 'circular economy'.

Given our experience in over 60 deposit markets, TOMRA has working-knowledge of the practices from around the world that separate high performing deposit systems from low-performing systems. In addition we are familiar with solutions to many of the challenges that stakeholders commonly face when designing deposit systems such as how DRS, curbside, 'informal economies' and other collection models can work together to eliminate waste and maximize resource recovery.

This year, our team conducted a review of every global deposit system and our 40+ years of experience in such markets to define our key learnings. The result of this analysis are included in this document and we are happy to share it with you.

We found that all high-performing deposit systems prioritize four principles: Performance, Convenience, Producer Responsibility, and System Integrity. Throughout this document we explain each principle and the twelve key elements that define each in practice. All of the elements, when applied together, will address these challenges we share today.

To implement a high-performing DRS, modifications of statutes, regulations and business models should be assumed.

What We've Learned: Modern Deposit Return Systems Prioritize Four Principles

Performance

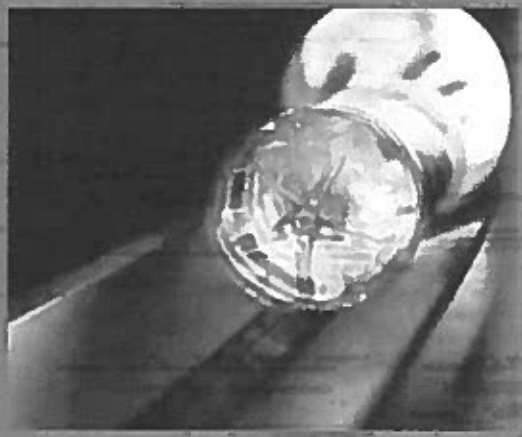
A minimum deposit value and broad beverage scope **delivers strong results.**

Convenience

Redemption is **accessible and the system is fair** for all users.

Producer responsibility

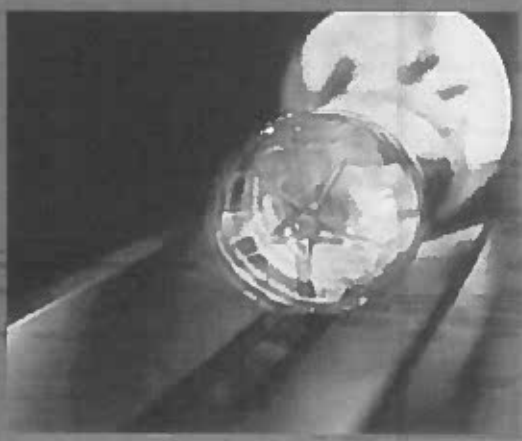
Producers finance the system supported by a **balanced funding structure.**



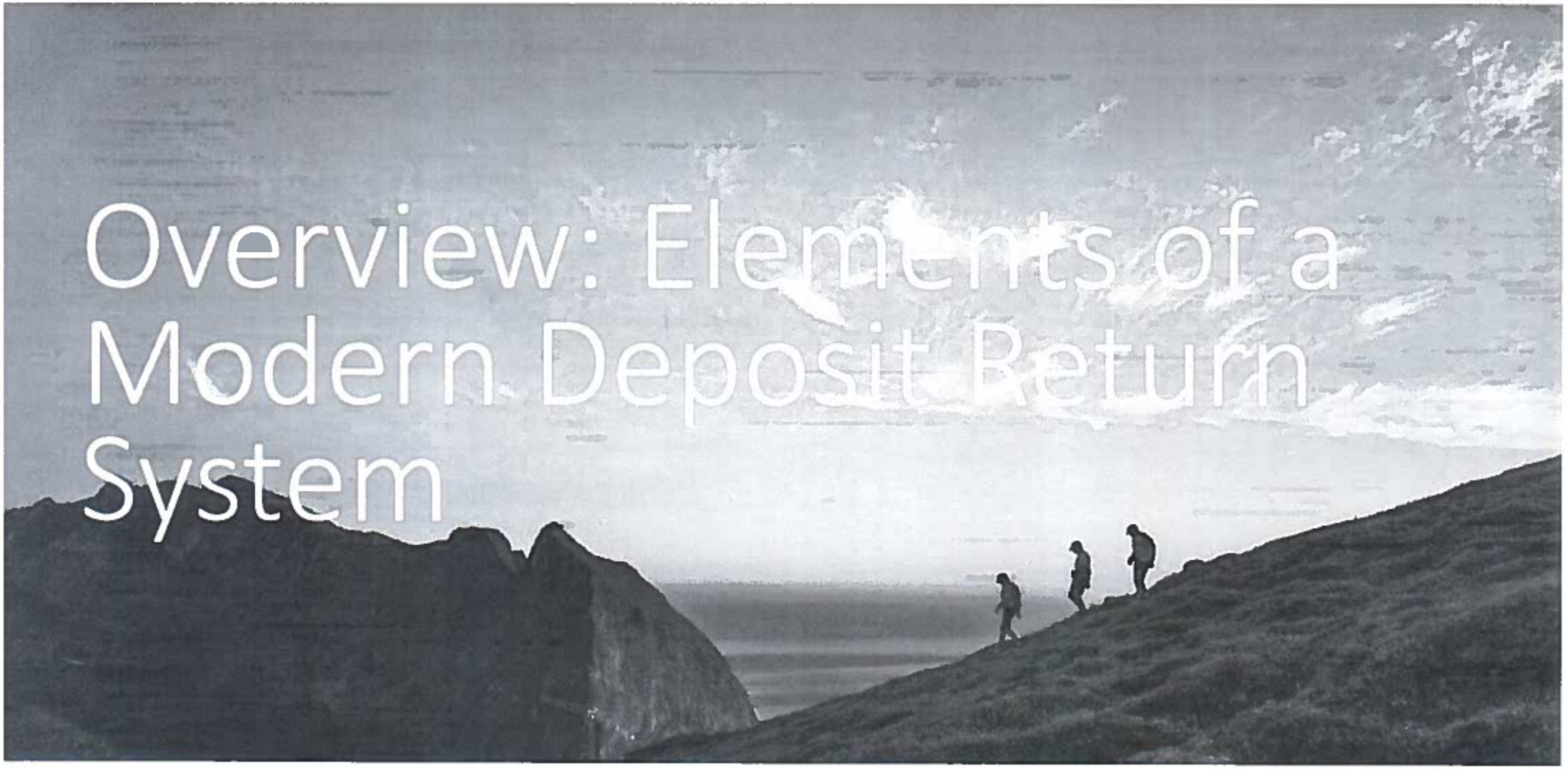
System integrity

Producers manage the system, with **government oversight.**

Principles & Elements of Modern Deposit Return Systems

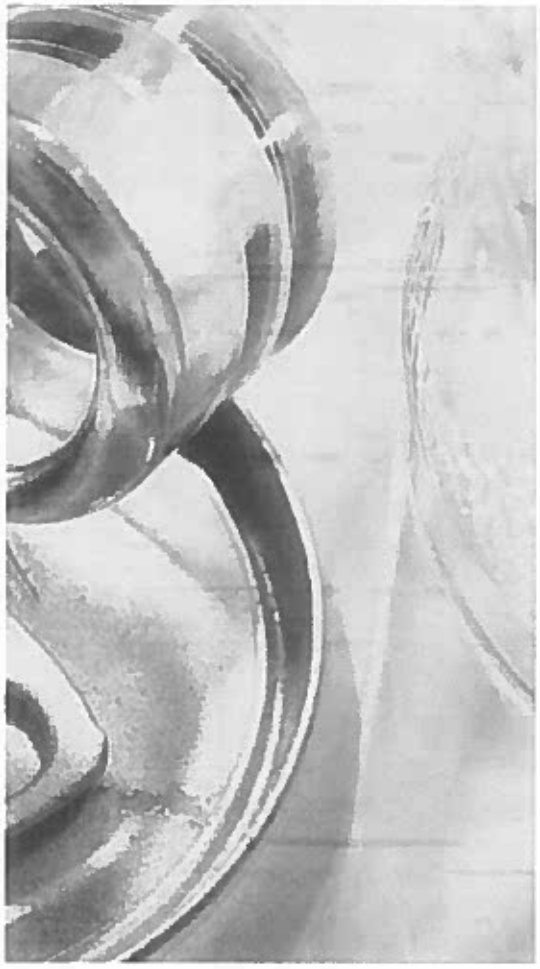


Performance	Convenience	Producer responsibility	System integrity
1. Broad scope of beverages and containers	4. Convenient redemption system for consumers	7. Extended producer responsibility financing	10. Centralized, non-profit administration and operations
2. Minimum deposit value	5. Separately charged and fully refundable deposits	8. Reinvestment of unredeemed deposits and material revenue within the system	11. Government reporting and consumer communication
3. Return-rate target	6. Container deposit markings for consumers, barcodes for accurate counting	9. Recycled content requirements	12. Government-regulated outcomes



TOMRA

#1: Broad scope of beverages and containers



To prevent confusion with the consumers, the legislation should clearly define the scope of the DRS.

Legislation should state which type of beverages (e.g. mineral water, soft incl. sport drinks, juices, beer & cider, ready2drink tea and coffee, energy drinks, wine & liquors) are covered in which packaging materials (e.g. plastics, metals, glass, liquid paper board) and define the volume range (0,1 l to max. 3 l or 4 ounces to max. 101 ounces).

The specific challenges of each country/state/region should be taken into account, at the same time preventing market distortion and creating a fair playing field for producers and importers.

#2: Minimum deposit value

Giving a financial value to beverage containers indicates that they have a value for the society. Containers are viewed and treated as a resource, rather than trash.

A meaningful deposit is most effective, so consider the purchasing power of the respective market. Set it high enough to motivate the consumers to return their empty containers at a rate of 90%+, while not encouraging fraud.

A single deposit value for all beverages, packages and volumes is easiest for consumers to understand.

The DRS operator might propose a higher deposit than the minimum deposit defined by legislator, which of course must ultimately be approved by the government.

#3: Return-Rate Target

The legislator must define a minimum return rate target for the eligible containers under the DRS.

Today, all the high-performing programs have redemption rates exceeding 90% of the containers sold. This is achievable primarily through setting the correct deposit-level and providing convenient redemption opportunities.

Legislator could aim for staggered return rate target of at least 90% after the DRS is matured - e.g. return rate target of 70% the first year, followed by progressively increased targets to 90% upon year 3.

#4: Convenient redemption system for consumers

The most convenient programs are those, where the parties selling the beverages are also responsible for the take back of the empty containers. This concept is called return2retail.

Consumers will simply combine the return of the empty containers with the shopping of new goods. No extra tours to dedicated collection points are required - no additional traffic or emissions. All DRSs based on this return2retail concept prove significantly lower carbon footprint than other collection concepts, e.g. return2depot.

Depending on country specific circumstances, the legislator might consider exemptions from the take back obligation if the store is too small - e.g. below 100 m^2. Or it might plan for differentiated handling demands in urban vs. rural areas - <100 m^2 in urban area is not demanded to take back whereas the <100 m^2 in rural area must take back.

Of course, non-obliged retailers can opt in and participate in the DRS anyhow.

Retailers taking deposit containers back should receive a cost compensation for their services, a so-called handling fee - both for manual and automated accepted containers.

#5: Separately charged and fully refundable deposits

A deposit is a fully transparent amount of money, which is given as a security for an item (the beverage container) acquired for temporary use and should therefore be displayed and charged as a separate amount on top of the ordinary product sales price.

Consumer confusion through the integration of the deposit in the product price must be prevented.

The deposit value must be fully refunded when the eligible, empty container is returned to a redemption point.

Deposit should be exempted from VAT (sales tax).

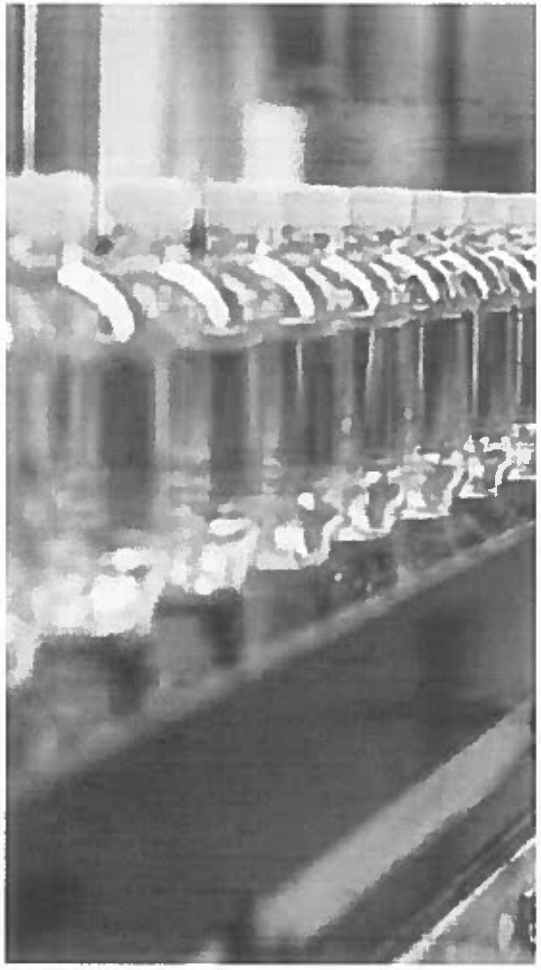
#6: Container deposit markings for consumers, barcodes for accurate counting

Every deposit container must carry a visual deposit logo, to enable the consumer to identify the deposit container as such.

The visual marking will also help the manual collection points to conclude the eligibility of a container.

In addition, the container must have a barcode according to GS1 standards, to allow for automated identification.

#7: Extended producer responsibility financing



The beverage industry and importers have, as part of their extended producer responsibility, to cover the potential net costs of the system and pay an EPR fee per deposit container sold to the market and reported to the DRS management organization.

To prevent cross-subsidizing from one material to the other, it is recommended to create individual cost centers per material fraction.

Producers (brand owners and importers), selling the beverages incl. e-commerce, are initiating the deposit and charging it to their clients.

In centrally operated DRS, the beverage industry and importers are then forwarding the received deposit money to the DRS management organization.

#8: Reinvestment of unredeemed deposits and material revenue within the system

The deposits, which are not reclaimed by the consumers, remain with the DRS respectively its management organization.

The total unredeemed deposit and the income from the sales of the collected packaging material is used to finance the DRS. In case it is not covering all the costs, the remaining net costs will be financed through a separate EPR fee, to be charged per container to the beverage industry/importers.

A budget process with projections of total beverage container sales and return rates including resulting unredeemed deposits and material value for the next business year will conclude the EPR fees per packaging type.

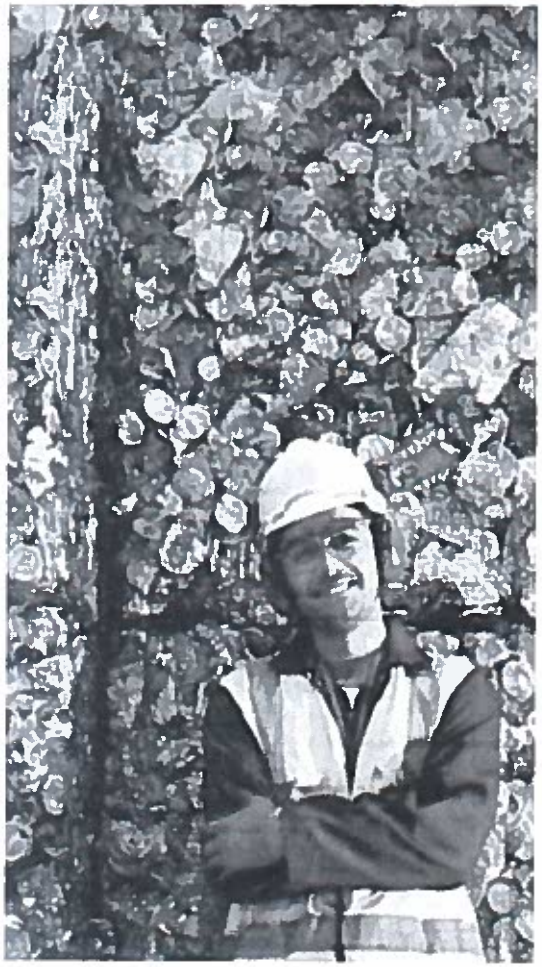
#9: Recycled content requirements

DRS maintains the cleanest material streams in high quantities. This allows for a constant and reliable material supply for high-grade, closed-loop applications.

This reduces reliance on raw materials (coming into the loop) and waste ending up in nature and landfills (going out of the loop).

The legislator should consider a mechanism to award higher recovery rates as well as the circularity of the resources run in the DRS (recycling content) through eco-modulation of fees.

#10: Centralized, non-profit administration and operations



Best results and prime transparency are accomplished, if the various streams (money, material & data) within the DRS are managed by a centralized non-profit organization, mutually owned by the obligated stakeholders, i.e. beverage industry/importers and retail.

The beverage industry/importers must bear the net costs of the system as a result from their EPR obligation and therefore it should be natural that they together with the other obligated party - the retail - own the management organization of the DRS.

Intention of the management organization is to accomplish all defined and set targets at lowest possible costs for its stakeholders. A possible profit would increase the overall system costs and is therefore not wanted.

The centralized non-profit organization should set-up a central container registration and maintain it in a central data base.

The entity will provide the central financing of the system, including the deposit clearing based on return figures of the products' barcodes. It must handle all data from individual stakeholders confidentially and consolidate those for reporting streams in an anonymous manner.

#11: Government reporting and consumer communication

The DRS management organization should be obliged to report at least once per year the audited, aggregated sales and collection reports per material fraction for the previous period to the responsible ministry in the Government.

The legislator should further demand that the DRS management organization publishes a publicly available annual report.

DRS management organization should run public awareness campaigns.

Communication of good results will also demonstrate environmental credentials to voters and consumers.

This image at left is from "Hello, I'm Seamus and I Want a Fish!" a short video raising awareness of the container deposit system in Oregon, developed by the system's operator, the Oregon Beverage Recycling Cooperative, and shared on social media.

#12: Government-regulated outcomes

The legislator must define clear penalties for criminal or illegal activities (e.g. fines) as well as liabilities for system non-achievements (e.g. a progressive environmental fee), which significantly exceed the value of the savings from the underperformance.

The legislator should define the enforcing and acting agency.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Appendix

TOMRA's Key Design Elements for a Modern Deposit Return System

1: Broad scope of beverages and containers

2: Minimum deposit value

3: Return-Rate Target

4: Convenient redemption system for consumers

5: Separately charged and fully refundable deposits

6: Container deposit markings for consumers, barcodes for accurate counting

7: Extended producer responsibility financing

8: Reinvestment of unredeemed deposits and material revenue within the system

9: Recycled content requirements

10: Centralized, non-profit administration and operations

11: Government reporting and consumer communication

12: Government-regulated outcomes

TOMRA

About TOMRA

TOMRA SYSTEMS, ASA: TOMRA was founded on an innovation in 1972 that began with the design, manufacturing and sale of reverse vending machines (RVMs) for automated collection of used beverage containers. Today TOMRA provides technology-led solutions that enable the circular economy with advanced collection and sorting systems that optimize resource recovery and minimize waste in the food, recycling and mining industries.

TOMRA COLLECTION SOLUTIONS: With an installed base of approximately 83,000 systems in over 60 markets, TOMRA Reverse Vending is the world's leading provider of reverse vending solutions. Every year TOMRA facilitates the collection of more than 40 billion empty cans and bottles and provides retailers and other customers with an effective and efficient way of collecting, sorting and processing these containers.
TOMRA's material recovery business includes the pick-up, transportation, and processing of used beverage containers in North America, as well as the subsequent brokerage of the processed material to recyclers. The revenue stream in this business area is derived from fees received from bottlers based on the volume of containers processed. Currently, TOMRA Material Recovery processes over 340,000 metric tons of containers annually.

TOMRA SORTING SOLUTIONS: TOMRA Sorting Solutions creates sensor-based technologies for sorting and process analysis within the recycling, mining, food and other industries. With more than 13,740 installations worldwide, TOMRA Sorting Solutions offers a unique range of complementary sorting technologies, the most extensive service base, and the widest geographic and market segment coverage in the industry.
TOMRA Food is the leading provider of optical sorting and processing technology for the fresh and processed food industry. With approximately 10,210 sorting installations globally, TOMRA Sorting's food business is instrumental in optimizing the world's food utilization, safety and quality.
TOMRA Recycling is a global leader in its field and has pioneered the automation of waste sorting. Its flexible sorting systems perform an extensive range of sorting tasks and are able to both prepare and sort various types of metals and waste for either material recycling or energy recovery. Currently TOMRA Sorting Recycling has an installed base of close to 5,960 units across more than 40 markets.
TOMRA Mining provides a complete product portfolio for efficient material separation in various minerals and ore applications such as processing of industrial minerals, diamonds and gemstone recovery, and metal recovery from slag etc. With approximately 153 installations worldwide, TOMRA Sorting's mining business helps to extend the lifetime of mining operations, increasing the value of the deposit.
Altogether TOMRA has approximately 100,000 installations in over 80 markets worldwide and had total revenues of about 8.6 billion NOK in 2018. The TOMRA Group employs roughly 4,000 people globally, and is publicly listed on the Oslo Stock Exchange. (OSE: TOM).


INFINITUM

PLASTIC CHALLENGE – EFFICIENT SOLUTIONS TO SECURE LITTER FREE NATURE AND MAXIMIZED COLLECTION

Kjell Olav Maldum, Infinitum AS,

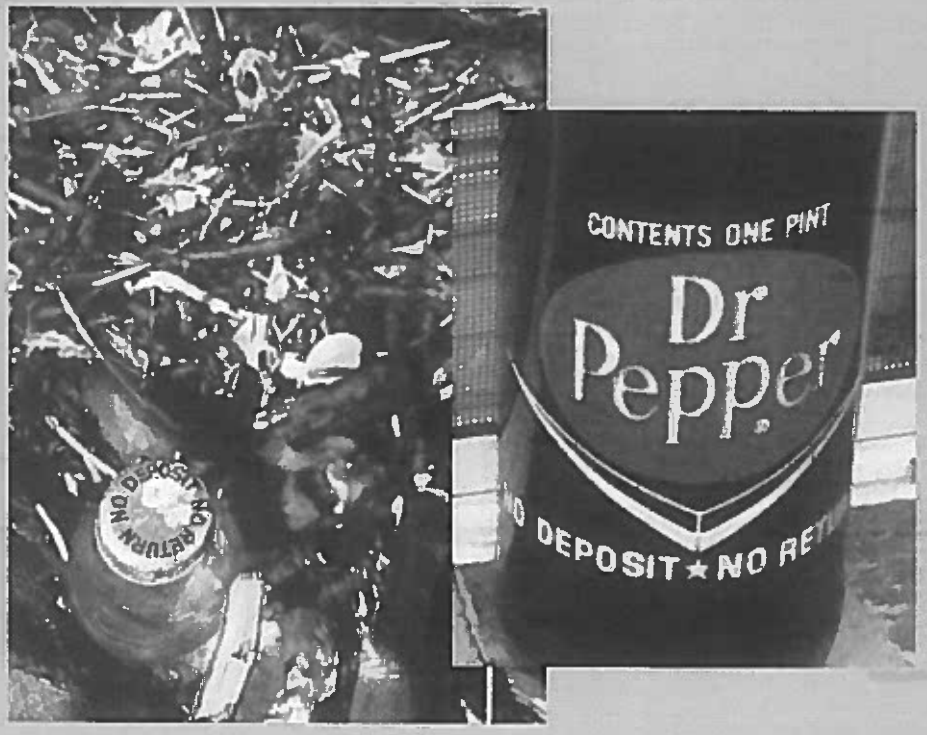
HIGHLIGHTS OF THE NORWEGIAN DRS:

- system organized by producers;
- cost efficient set up;
- all selling points obliged to take back;
- environment benefits compared to the curbside system (example of ROAF);
- collection of caps;
- inspiration for Scotland

- system organized by producers;
- all selling points obliged to take back;

INFINITUM
NORWEGIAN REGULATIONS AND MARKET

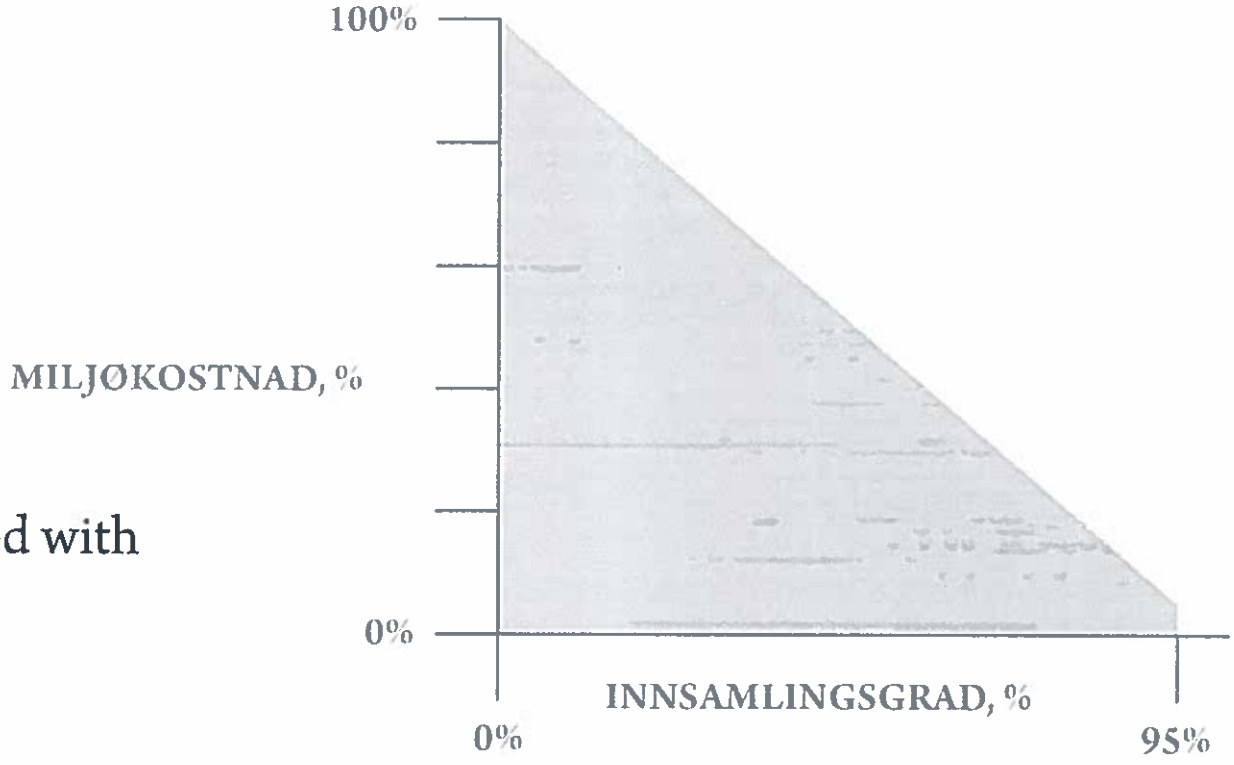
NO DEPOSIT, NO RETURN



ENVIRONMENTAL COST

- Anti litter cost!

- The environmental cost is reduced with increasing collection rate
  - Cans: kr. 5,88 - 0,61 EUR - 35 000,-/ton
  - Bottles: kr. 3,55 - 0,37 EUR - 10 000,-/ton



COLLECTION OF BEVERAGE CONTAINERS IN NORWAY

Curbside, one way glass and metal

Sirkel

Reusable Packaging
(breweries and beverage association)

Rentpack

Plastic packaging, packaging cardboard and beverage cartons

GRØNT PUNKT

Deposit systemet

INFINITUM

CHAPTER 6. TAKE-BACK SYSTEMS FOR BEVERAGE PACKAGING

Regulations relating to the recycling of waste (Waste Regulations). This is an unofficial translation of the Norwegian regulations.
Adopted under section 4 of the Act of 11 June 1976 No. 79 relating to the control of products and consumer services (the Product Control Act).

Section 6-1 Scope
The provisions of this chapter apply to take-back systems for beverage packaging. The provisions of this chapter apply only to take-back systems for packaging that are used in the distribution of beverages all the way to the consumer.
Section 6-2 Purpose
The purpose of the provisions of this chapter is to promote effective take-back systems for beverage packaging with a high recovery rate, so that these systems help to prevent litter and reduce waste from such packaging.
Section 6-3 Definitions
In this chapter, take-back system means a system under which the consumer can return empty packaging free of charge for recovery.
In this chapter, beverages means beverages in liquid form only, including liquid concentrates intended for mixing.
In this chapter, recovery means reuse, recycling and energy recovery
In this chapter, deposit and return scheme means a scheme under which the consumer and the point of sale pay a certain amount (deposit) for the packaging of an article on condition that the amount is refunded to the purchaser when the empty packaging is returned. In this chapter, primary packaging means a packaging unit (bottle, box or similar) into which the beverage is filled.

Section 6-4 Establishment and approval of take-back systems
The individual manufacturer or importer of beverages may set up and manage or join a take-back system for primary packaging. **The Norwegian Environment Agency will decide whether a take-back system is to be approved.**
A requirement for approval is that the take-back system is expected to achieve a minimum recovery rate of 25 %, and that the packaging is recovered in an environmentally sound way. Take-back systems based on energy recovery will only be approved if reuse or recycling is not technically, environmentally or financially feasible. Conditions may be set for approval.

Section 6-5 Determination of the return rate
The Norwegian Environment Agency will determine the return rate that a take-back system can be expected to achieve.
The return rate is set in advance for a maximum of one year at a time. **Decision on return rates are used as the basis for a reduction of the tax levied in accordance with the regulations issued by the Ministry of Finance relating to special taxes** see Chapter 3-5 on taxes on beverage packaging (environmental tax and basic tax).

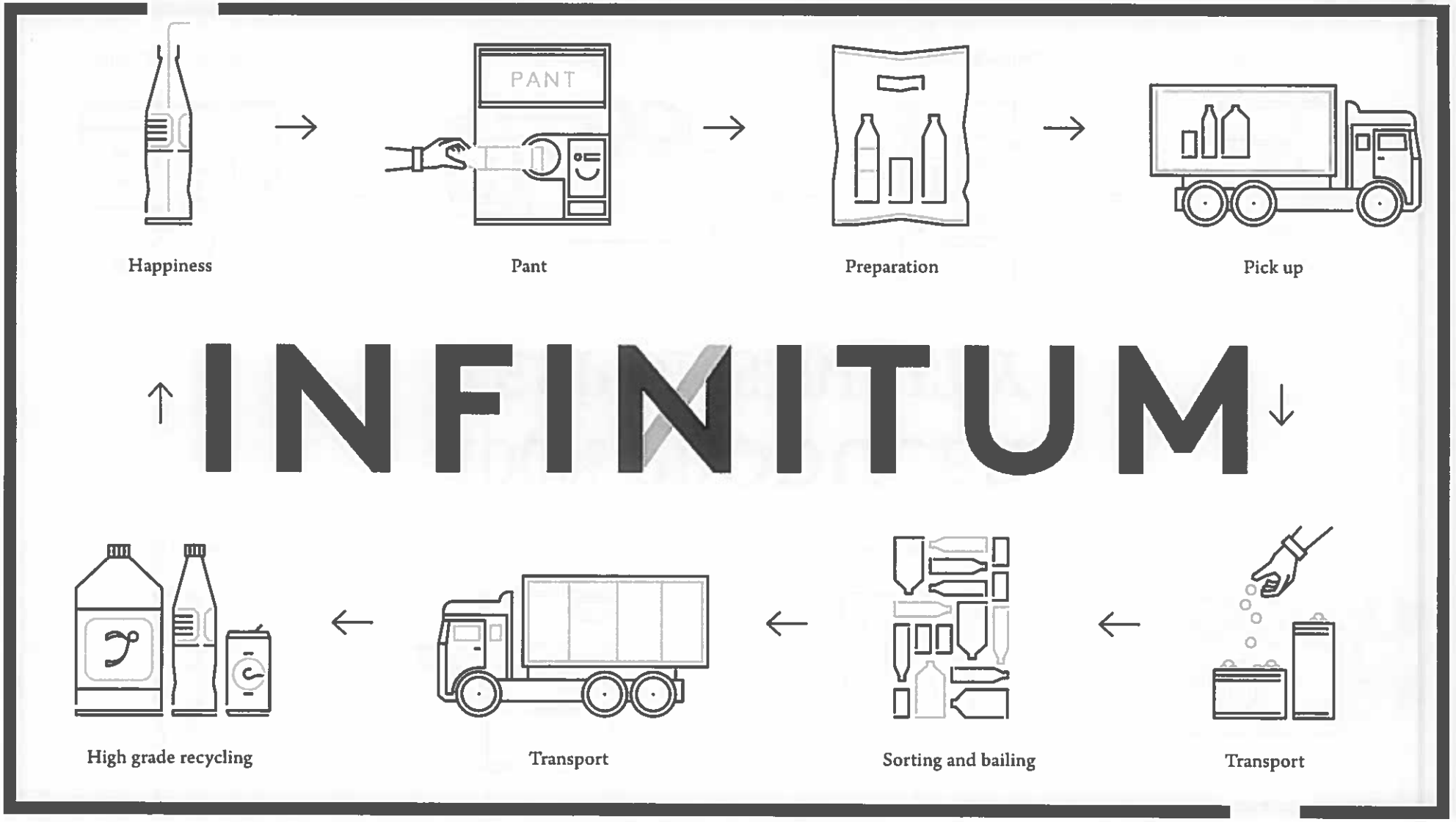
Section 6-6 Labelling
Primary packaging that is included in a deposit and return scheme shall carry a deposit symbol showing the amount of the deposit. The minimum size of the deposit symbol shall be 9 mm x 9mm.
The deposit mark shall be printed on the primary packaging itself or on the label. For imported products and products belonging to small product series, an adhesive label may be used.
The minimum size requirement for the deposit symbol, see the first paragraph, applies from 1 September 2018

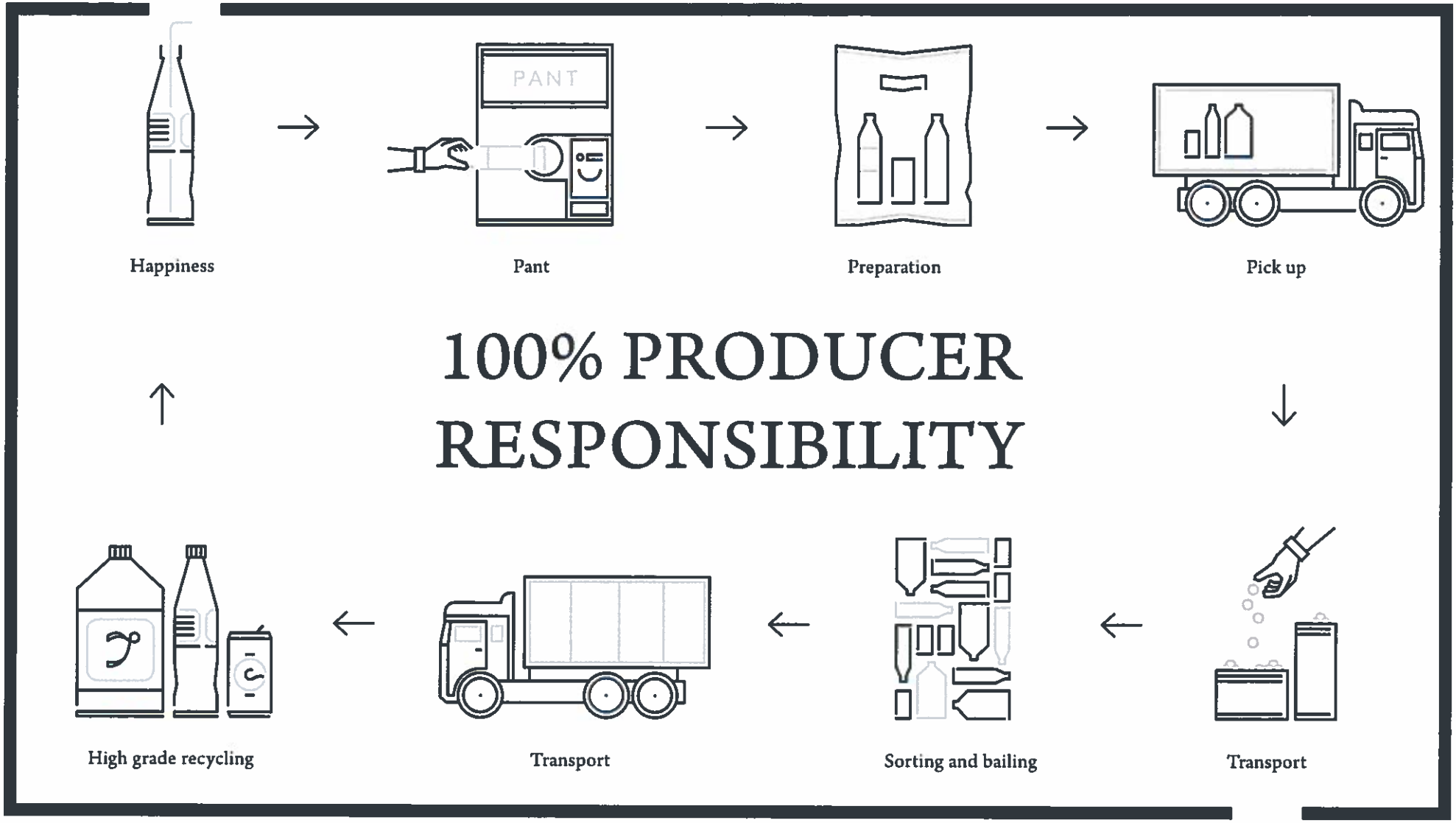
Section 6-7 Return of packaging that is included in a deposit and return scheme to points of sale
Points of sale of beverages in packaging that is included in a deposit and return scheme have a duty to accept reasonable quantities of empty packaging for products that they themselves retail. When packaging is returned to a point of sale, the consumer may claim a cash refund of the deposit.

Section 6-8 Deposit rates
For primary packaging included in a deposit and return system, the point of sale and the consumer shall pay a deposit according to the following rates:
a) for primary packaging with a nominal volume of up to and including 50 cl: NOK 2.00 per unit
b) for primary packaging with a nominal volume of more than 50 cl: NOK 3.00 per unit.

If the purchase price of primary packaging exceeds the deposit rates set out in the first paragraph, or if the return rate for a type of primary packaging is particularly low, the company operating a take-back system may request the Norwegian Environment Agency to determine a higher deposit rate. The Norwegian Environment Agency may set conditions for determining special deposit rates.

Section 6-9 Prohibition on particular forms of packaging
The Norwegian Environment Agency may prohibit the use of primary packaging that hinders the appropriate implementation of established deposit and return schemes.


PANT
Happiness
Pant
Preparation
Pick up
INFINITUM
High grade recycling
Transport
Sorting and bailing
Transport


PANT
Happiness
Pant
Preparation
Pick up
100% PRODUCER RESPONSIBILITY
Transport
Sorting and bailing
Transport
High grade recycling

INFINITUM AS

Private owned value chain company owned 50/50 producer and retail
Operation started 3. of may 1999. DRS in Norway since 1902.

1.3 billion cans and bottles in 2019.

- 22 400 tonnes of PET
- 80% of recycled content in all PET bottles possible in Norway today!

- 9 300 tonnes of aluminum
- Recovered by Hydro Holmestrand (Norway)

Shortest possible path between main task for the packaging material

IMPORTANT QUESTIONS TO ASK

- What's the problem?
  - Littering and/or resources
  - Deliver a product/service at lowest environmental impact possible

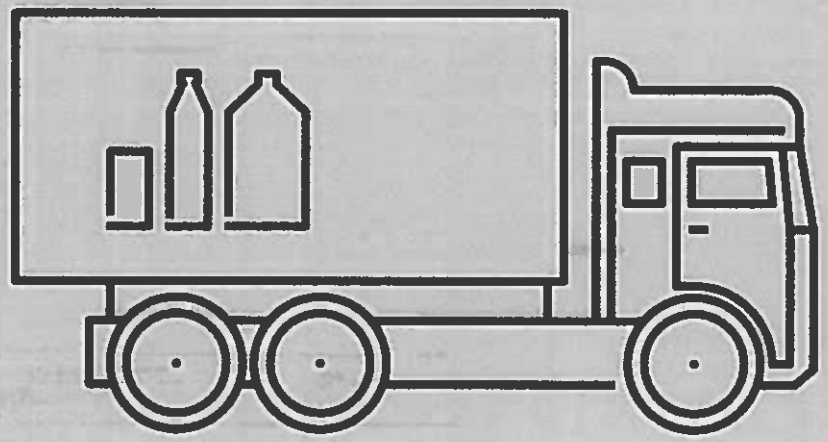
- What's the collection rate?
  - How to achieve highest possible collection rates?

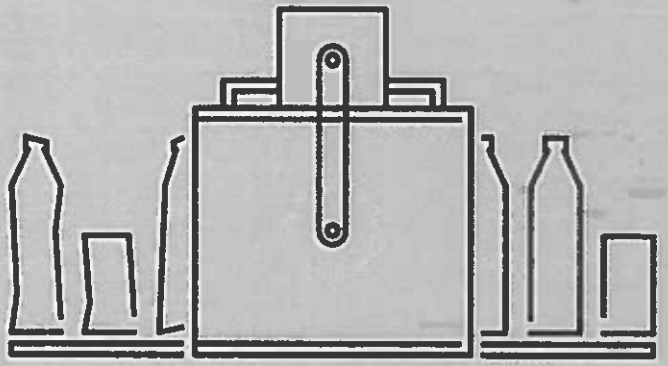
- What's the yield in collection and recycling process?
  - How to achieve the highest environmental effect

- What's the cost per unit for the producer/consumer? (extended producer responsibility cost)
  - How to achieve the lowest pr unite?

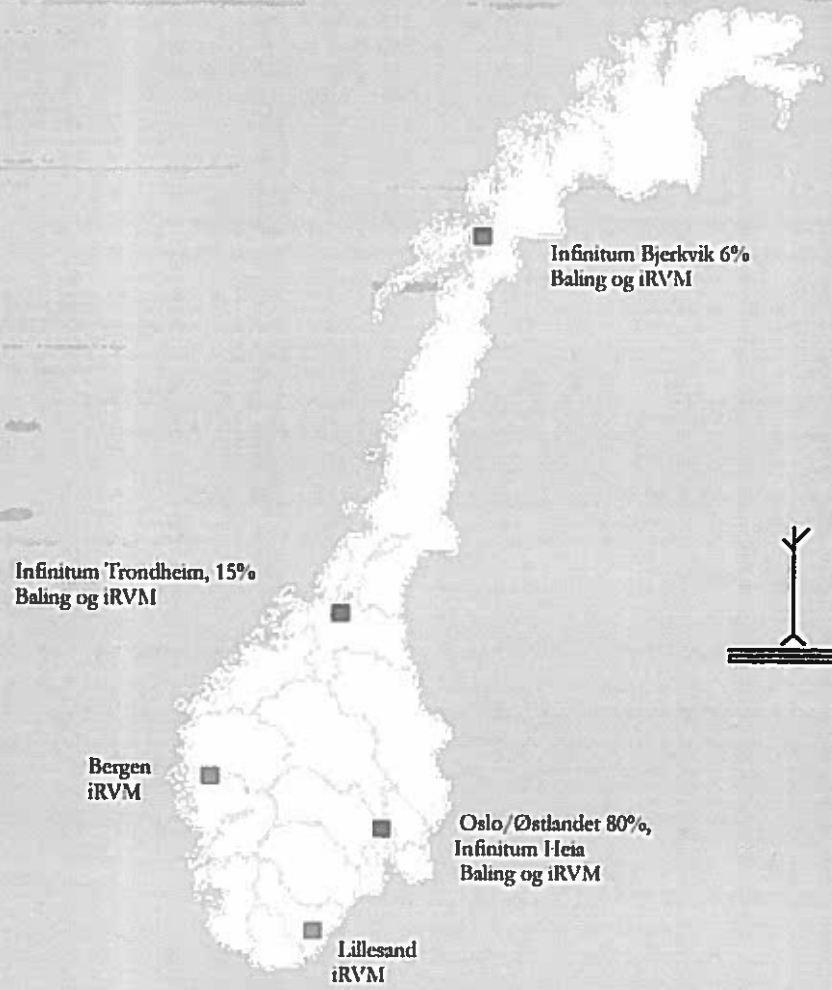
- cost efficient set up;

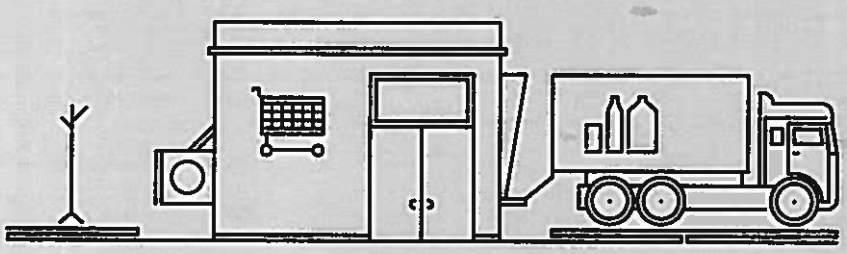
LOGISTICS AND PRODUCTION





PRODUCTION FACILITIES





EFFICIENT LOGISTICS

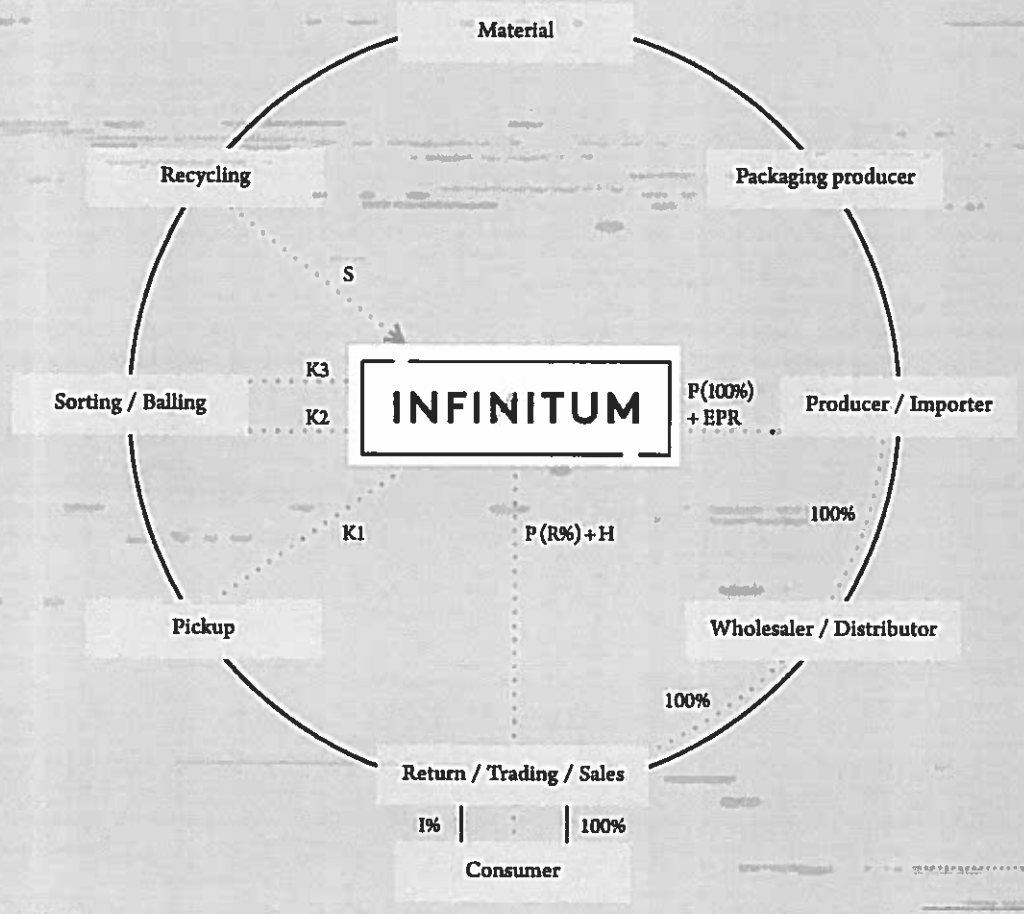
94% collected through 3 700 RVM in grocery stores
1,5 mill bags

6 % from 11 300 pick up points without RVM
400 000 bags

<1 % Company's with internet sales of grocery og beverage

According to the regulations - all outlets selling beverage with deposit is obliged to accept deposit bottles/cans and disburse deposit as cash!

MATERIAL- AND CASH FLOWS



P: Deposit
EPR: Epr. fee (pr. unit)
H: Handling fee
K1: Purchase of pick-up service
K2: Cost of handling and bailing
K3: Purchase of transport to recycle
S: Sales of collected material
I% The collection rate

Unredeemed deposit accrues to Infinitum

Cash flow
Material flow

EPR COST PRODUCER/IMPORTER

01.10.2018	Aluminium	Steel	PET	HDPE
Basis EPR	-NOK 0,08	NOK 0,21	NOK 0,10	NOK 0,10
Light blue			NOK 0,08	NOK 0,08
Colored or sleeve > 75 %			NOK 0,15	NOK 0,15
Sleeve eller label	NOK 0,03	NOK 0,03		

Infinitum NOK 2,8 per kg PET

EPR COST PRODUCER/IMPORTER

Tabell vederlag i Europa:

Land	Retursystem	Vederlagssats (NOK/kg) i 2020
Østerrike	Ara	All plast: 6,95
Belgia	Fost Plus	Pet: 2,46 HDPE -flasker: 3,58 Annen plast: 7,11
Sverige	FTI	Fra 3,26 til 4,91***
Nederland	Avfalfonds Verpakkingen	Fra 3,60 til 6,00***
Spania	EcoEmbes	Hardplast: 3,77 Pet: 4,33 Folie + annen plast: 7,39
Italia	Conai	Fra 2,08 til 3,69***

***Landene har differensiert vederlag på plast (økomodulering), avhengig av ma
gjenvinnbarhet. God gjenvinnbarhet betyr lavest pris, ikke/vanskelig gjenvinnba
havest pris

DEPOSIT AND COLLECTION 2019

Supply chain	No. of cans	Tonnes of cans	% of added	No. of PET	Tonnes of PET	% added to the market
Total sales	684,093,737	9,478	-	619,262,956	22,323	0%
Value chain	-14,079,824	-180	-	10,631,013	405	0%
Added (sales + value chain)	670,013,913	9,297	100%	629,893,969	22,728	100%
Total returned through reverse vending machines	**598,643,369**	**8,324**	**89.5%**	**556,570,503**	**20,316**	**89.4%**
From central sorting plant	5,328,154	74	0.8%	1,132,496	39	0.2 % *
From slag sorting	40,832,520	566	6.1 %	-	-	0.0 % *
From materials sorted at source	4,595,052	61	0.7 %	1,329,523	44	0.2 % *
Waste-to-energy	9,664,485	134	1.4 %	42,228,252	1,343	5.9 %
Total recycled from waste	**60,420,211**	**835**	**9.0 %**	**44,690,271**	**1,426**	**6.3 %**
Total recycled	**659,063,580**	**9,159**	**98.5 %**	**601,260,774**	**21,742**	**95.7 %**
Incineration waste in bottom ash	13,610,840	189	2.0 %	-	-	-
Energy recycling incineration	1,884,106	26	0.3 %	7,536,117	236	1.0 %
Unknown allocations	-4,544,613	-76	-0.8 %	21,097,078	750	3.3% **
Total not returned	**71,370,544**	**973**	**10.5 %**	**73,323,466**	**2,412**	**10.6%**
Total	**670,013,913**	**9,297**	**100%**	**629,893,969**	**22,728**	**100%**
Foreign items	36,729,975			5,854,506		

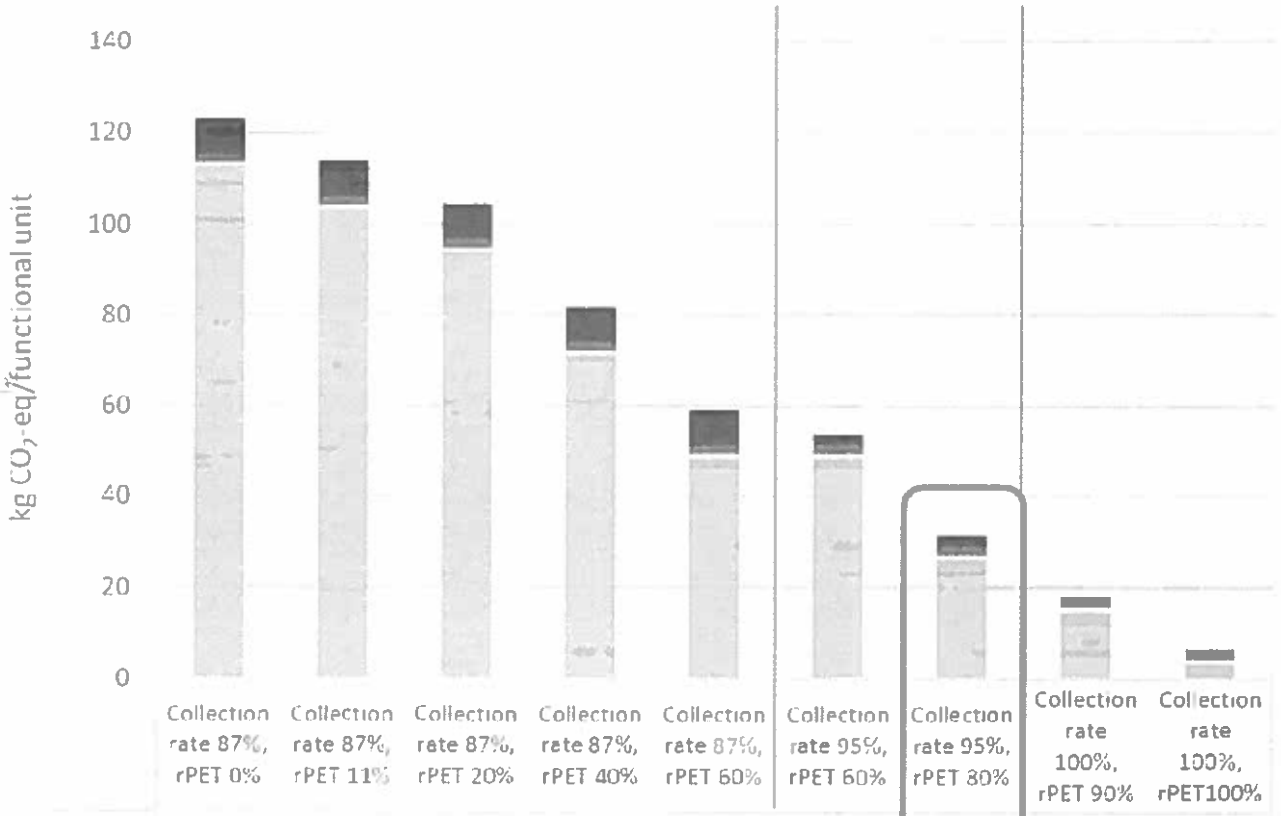
- environment benefits compared to the curbside system (example of ROAF)

COST EFFICIENT COLLECTION
LOWEST CARBON FOOTPRINT

En hustand på to personer kaster i gjennomsnitt 50 kroner pant rett i restavfallet hvert år.

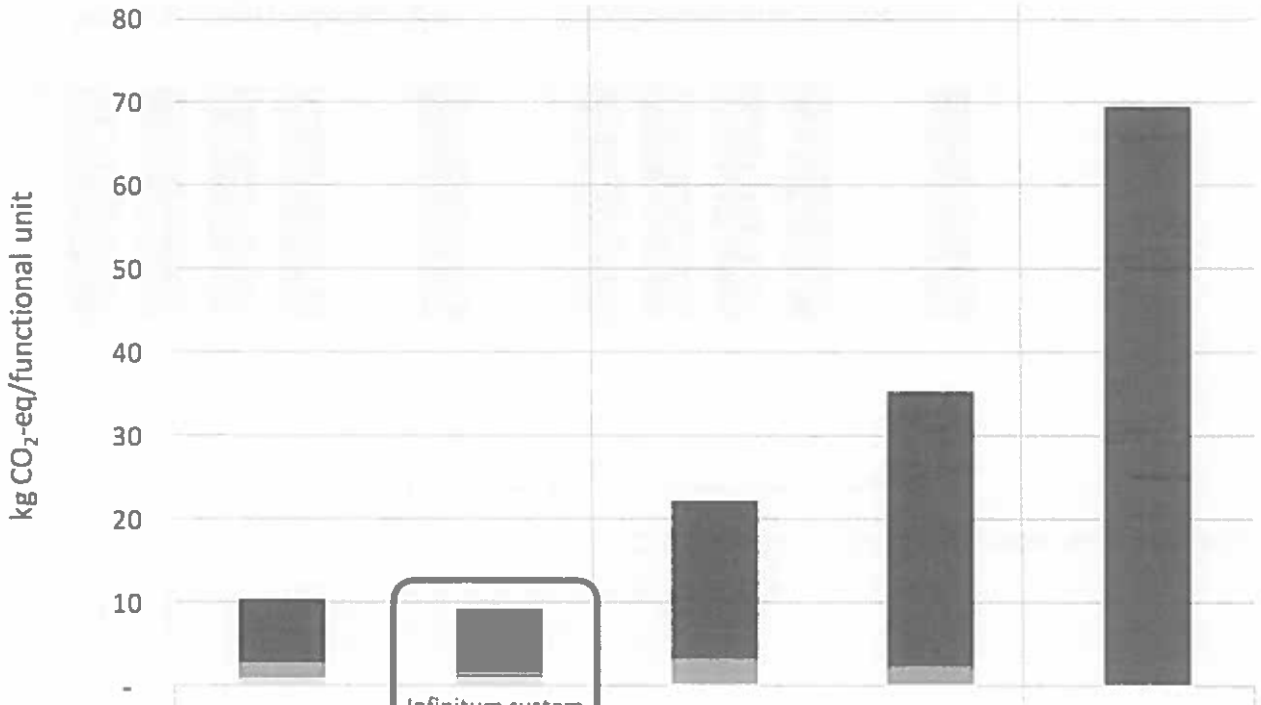
Det ekstra volumet fører til at vi hvert år tømmer ca. 40 000 beholdere helt unødvendig.

Grovt anslått går det 5 millioner tapte kroner gjennom sorterings-anlegget til ROAF hvert år.



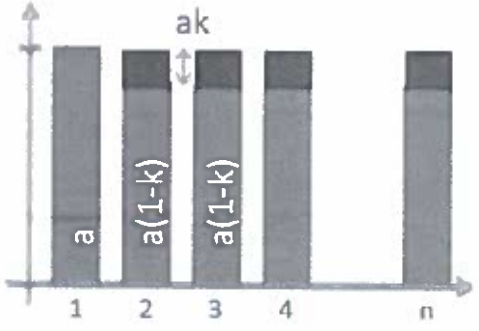
	Collection rate 87%, rPET 0%	Collection rate 87%, rPET 11%	Collection rate 87%, rPET 20%	Collection rate 87%, rPET 40%	Collection rate 87%, rPET 60%	Collection rate 95%, rPET 60%	Collection rate 95%, rPET 80%	Collection rate 100%, rPET 90%	Collection rate 100%, rPET100%
Incineration (incl. Transport)	7,7	7,7	7,7	7,7	7,7	2,2	2,2	0	0
Transport from consumers to recycling	1,8	1,8	1,8	1,8	1,8	2,0	2,0	2,1	2,1
Reverse vending machine	0,9	0,9	0,9	0,9	0,9	1,0	1,0	1,1	1,1
rPET in preform	0,0	0,4	0,7	1,4	2,0	2,0	2,7	3,1	3,4
vPET in preform	112,6	102,9	93,2	69,9	46,6	46,6	23,3	11,7	0
Total	123,0	113,8	104,4	81,7	59,1	53,9	31,3	17,9	6,6

Figur 4: Klimagassutslipp per funksjonell enhet (produksjon, innsamling og behandling av PET flasker benyttet til distribusjon av 1000 liter drikkevare) for optimaliserte scenarier for Infinitums system for PET- flasker.

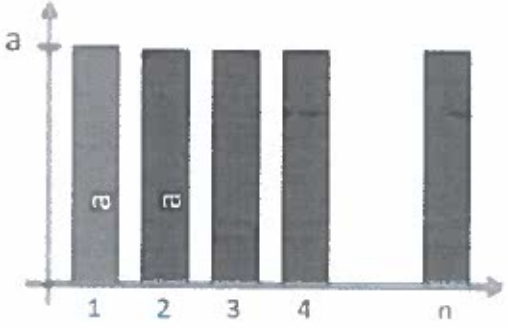


	Infinitum system, Main transport model (86 % collection rate)	Infinitum system, Infinitum's transport model (86 % collection rate)	GPN system (70 % collection rate)	GPN system (50 % collection rate)	Incineration scenario (93 % incineration)
Incineration (incl. Transport)	7,70	7,70	18,83	32,98	69,47
Transport from consumers to recycling	1,81	0,59	3,38	2,42	0,00
Reverse vending machine	0,94	0,94	0,00	0,00	0,00
Total	10,45	9,23	22,21	35,39	69,47

DEPOSIT AGAIN AND AGAIN AND … !



Recycling (virgin production and incineration of loss)



Virgin production and incineration

Annual saving of **2 640 GWh** when using PET bottles instead of glass bottles!

Equivalent to annual energy consumption of 1.1 million Tesla cars

CO_2 EMISSION FOR BEVERAGE 1000 L

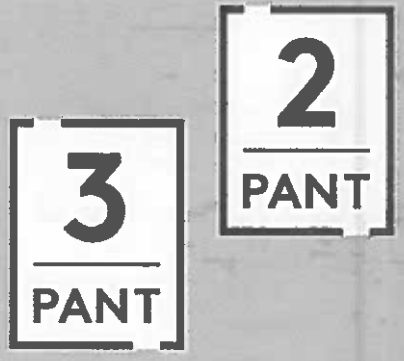
Vinmonopolet:
Glass bottles (0,75L): 875 kg
Bag-in-box (3L): 159 kg
Carton (1L): 138 kg

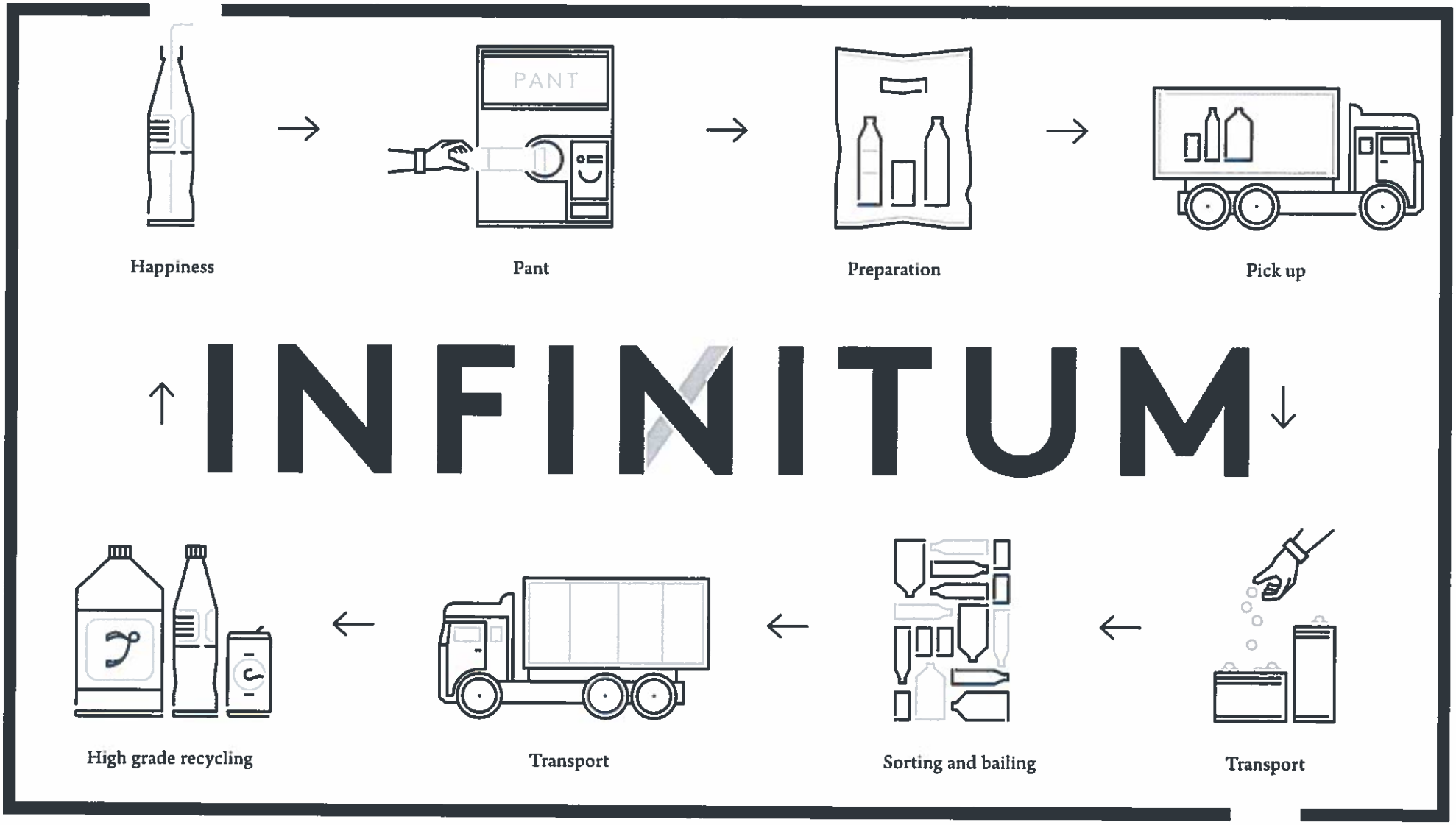
PET with deposit:
0% recycled PET (1 L): 123 kg
100% recycled PET (1 L): 6,6 kg

Cans with deposit:
100% recycled alu (0,45 L): 100,8 kg
20% recycled alu (0,45 L): 800,4 kg

THE "NORWEGIAN MODEL"

- Environmental cost modell
- 100 % producer responsibility
- Product price + deposit (deposit not included in the product price)
- Deposit without VAT
- All selling points i obliged to take back the empties and pay out the deposit
- No restriction on content
- Centralized clearing with Infinitum, solidarity
- Balanced ownership, value chain approach
- Design for recycling – bottle to bottle




PANT
Happiness
Pant
Preparation
Pick up
INFINITUM
High grade recycling
Transport
Sorting and bailing
Transport


PALPA
1,9 Billion environmental
acts in a year

Suomen Palautuspakkaus (Palpa) in brief

- Established in 1996
- Deposit refund systems for cans, PET bottles and one way glass bottles
- Private, non-profit company
- Ownership
  - 50 % Beverage industry
  - 50 % Retailers
  - Owners are threated equally with other members, no financial benefits
- Turnover ~80 M€
  - Deposits not included
- 14 employees
- Palpa's strategy is run the return systems by network of companies and outsource all operations

Recycling is part of our nature

On average each Finnish citizen returns Palpa packages in a year:

25
Glass bottles

89
Plastic bottles

234
Beverage cans

348
Total packages in a year

Palpa return systems 2019

	Aluminium can	PET bottle	One Way Glass bottle	Total
Return rate	95 %	90 %	87 %	93 %
Deposit value	0,15 €	0,10 € (0 – 0,35 l) 0,20 € (0,36 – 0,99 l) 0,40 € (> 1 l)	0,10 €	
Return volume	1.3 Bn	490 M	138 M	1.928 Bn
Materials recycled	18.500 tn	14.200 tn	54.500 tn	87.200 tn
Deposit products	2.453	2.968	17.343	22.764
Memberships	91	122	187	Nbr of companies: 263

Other data 2019

- 350 M€ worth deposits managed
- 4.600 retail and 9.500 horeca collection locations
- 2.347 new products registered
- ~4.000 RVMs in ~3.000 retail locations
  - Can returns: 99,5% RVM
  - PET returns: 98,5% RVM
  - Glass returns: 74% RVM (26 % horeca)

Package recognition and material recycling

- Package recognized based on barcode and package dimensions/shape
  - To secure correct payment to consumer
  - To support early sorting of material
  - To make sure that system costs are correctly allocated to different return systems and companies
- Material requirements agreed together with material recycling companies
  - Container body
  - Label
  - Glue
  - Ink

Transportation and operators

Collecting transportation

- Backhaul (mostly producers and retailers)
- From retail stores/horeca to transporters'/retailers' terminals (150)

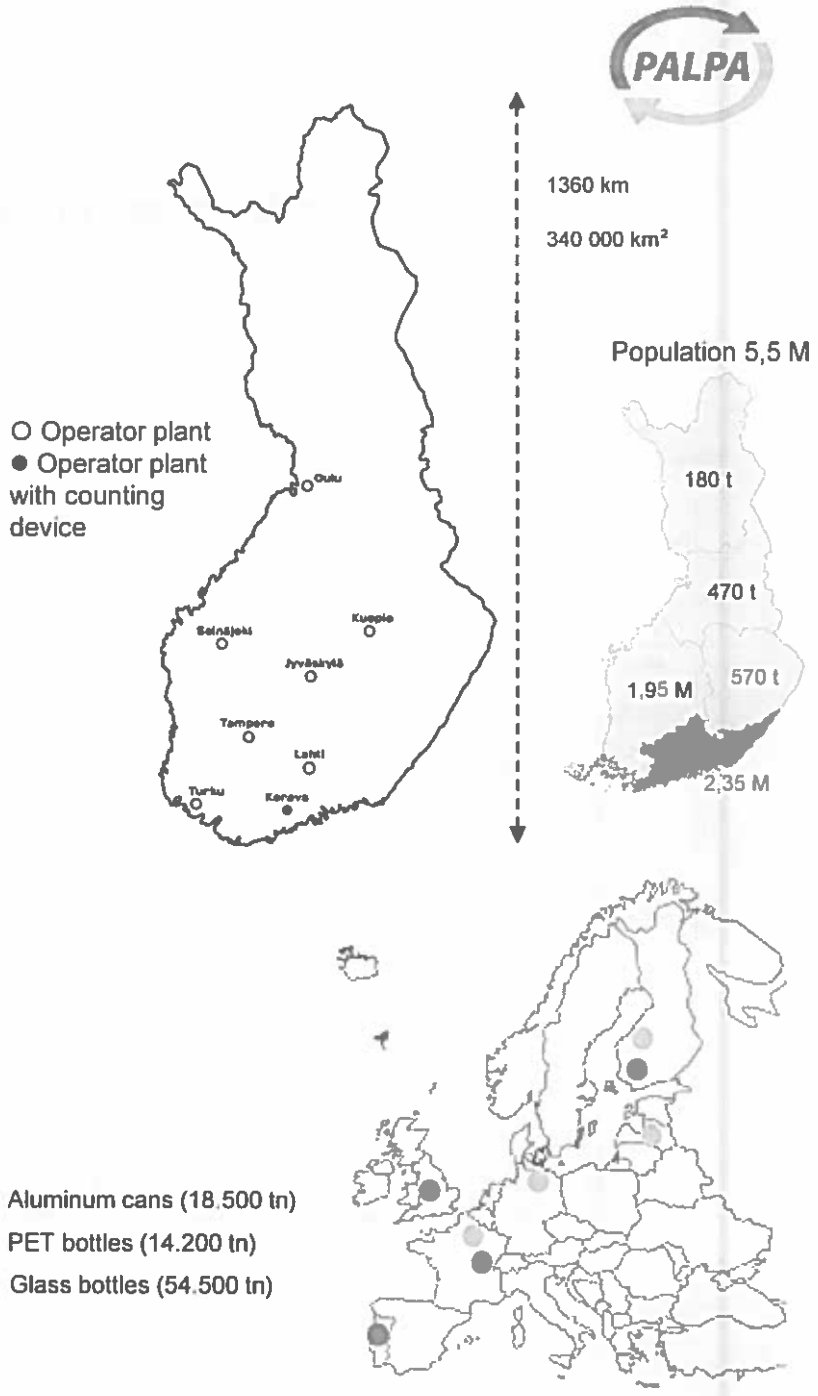
Frame transport

- From transporters' terminals to operators' plants (8)

Can/PET baling at operator plants

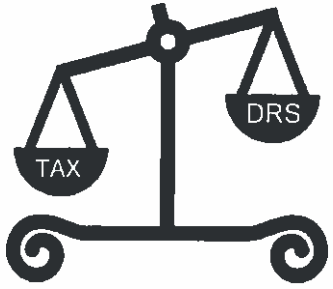
Emptying service (glass)

- Directly from retail stores (1400) and horeca points (1000) to operators' plants (aluminium/pet/glass) or to glass recycler in Finland



Based on governmental steering

- Packaging tax for certain beverages
  - Importers and producers have to pay packaging tax of 0.51 € / ltr for packages in customs tariff group CN 22 (e.g. waters, soft drinks, all alcohols)
  - Importer or producer is tax exempt if the company and the products are registered in deposit return system
    - 97 % of liters sold are in deposit system
  - ➢ Joining in return system is not mandatory
- Waste law
  - Retailer selling products belonging to deposit system is obliged to receive empty deposit containers from consumers



Financing the recycling systems

- Revenues come from material sales, unredeemed deposits and recycling fees
  - Recycling fees are paid by beverage producers and importers
- Costs are collection logistics, material handling, handling fees to retail, fixed costs
- All the fees are based on real costs

Other materials

Palpa video

- https://www.youtube.com/watch?v=rNwAm01Dm-g

Waste law

- https://www.finlex.fi/en/laki/kaannokset/2011/en20110646.pdf
- Chapter 7, page 28

Government Decree on a return system for beverage containers

- Https://www.finlex.fi/en/laki/kaannokset/2013/en20130526.pdf
  - E.g. miminum deposti values, recycling targets

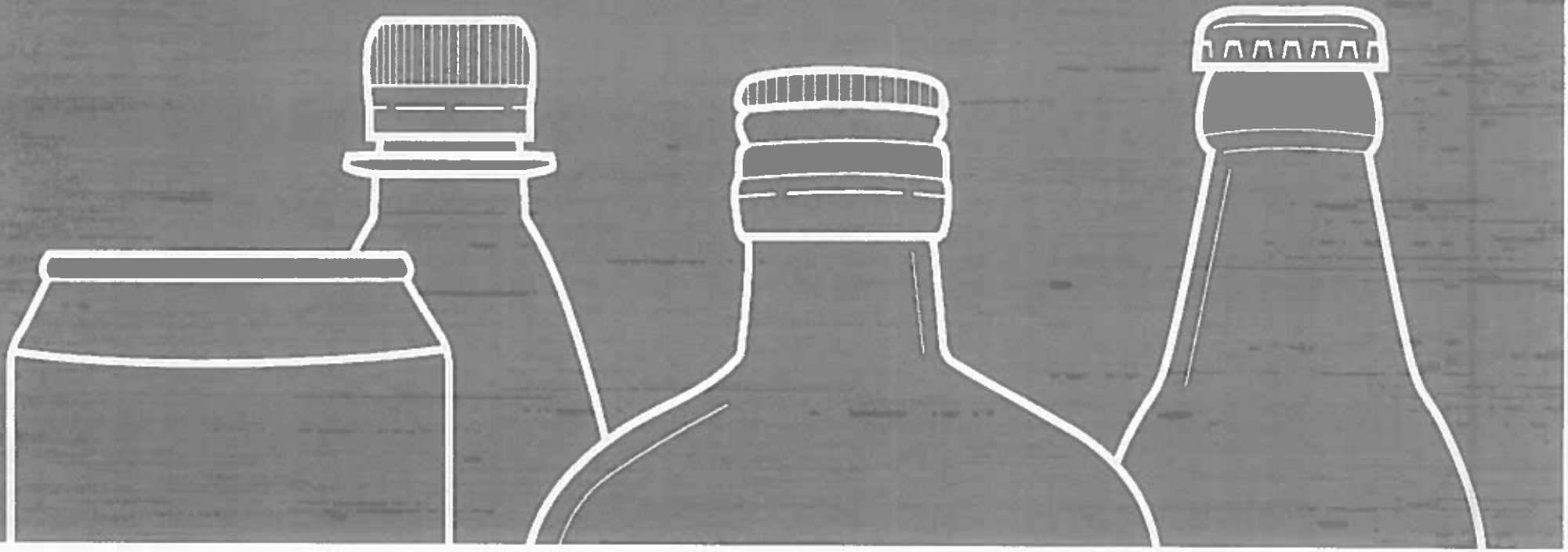
Return system for refillable glass bottles

- https://www.ekopullo.fi/en/

PALPA

www.palpa.fi

tommi.vihavainen@palpa.fi



Lithuania's Deposit System

Public Institution
Užstato Sistemos Administratorius

Deposit system management

A public institution *Užstato Sistemos Administratorius (**USAD**)* is a non-profit organization that has an underlying objective of managing the deposit system as indicated in Law on Packaging and Packaging Waste

- **Founded and managed by directly involved industries**
  - Lithuanian Brewers Association
  - Association of Lithuanian Trade Enterprises
  - Lithuanian Natural Mineral Water Manufacturers' Association

Deposit system scope

01/02/2016
Mandatory deposit system for beverage packages launched in Lithuania

Beverage packages types in the mandatory deposit system (capacity from 0,10 to 3,0 litre):

PET

Metal
(Al and Fe cans)

Glass

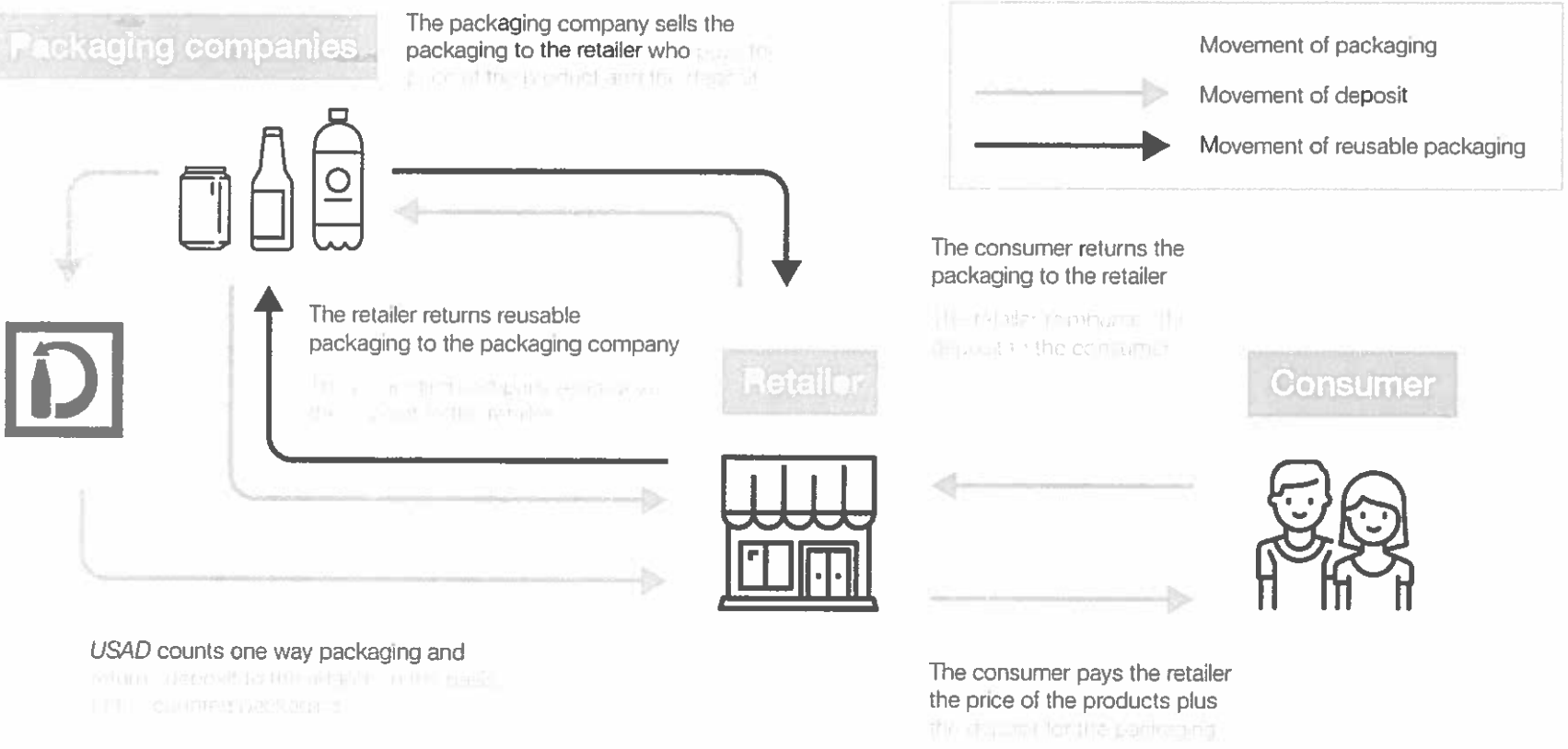
Deposit system scope

Beverage categories in the mandatory deposit system:

- Beer, Beer mixes
- Cider, Pear cider
- Other fermented alcohol drinks and mixes
- Non-alcoholic drinks
- Water
- Juices and nectars

Annual volumes ~660 mln beverage containers

How does everything work?



Deposit system infrastructure

Amount of collection points and their types:

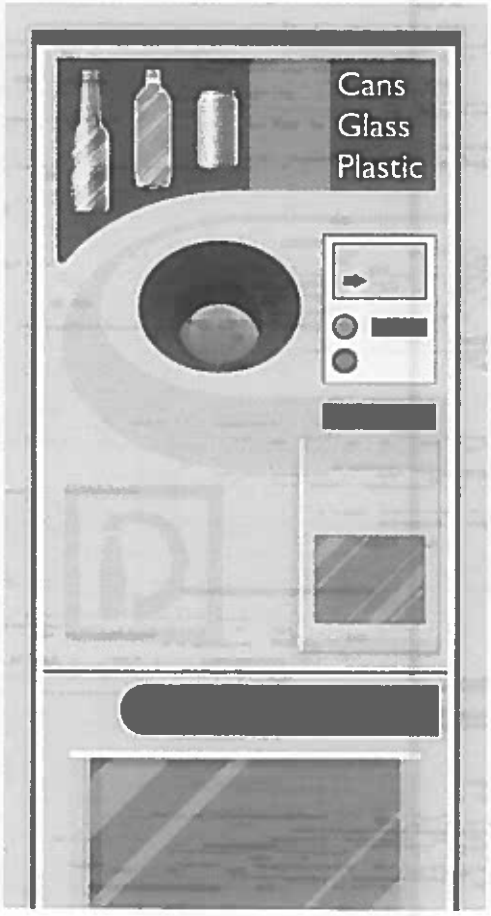
Reverse vending machine (RVM) points –
close to 1.000

Manual collection points –
over 1.700

Total 2.700

In total over
1.100
RVMs installed

89%
of packages
are collected
in RVM points



Producers obligations

Marking deposit packages with **deposit logo**

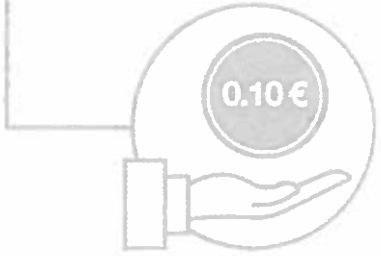
Charging deposit for each sold deposit package

Choosing type of **barcode:** universal or unique

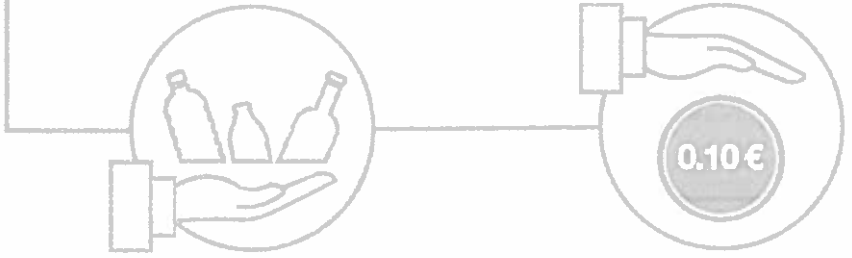
Participating in deposit system and **financing** it

Retailers obligations

- Taking deposit from consumers

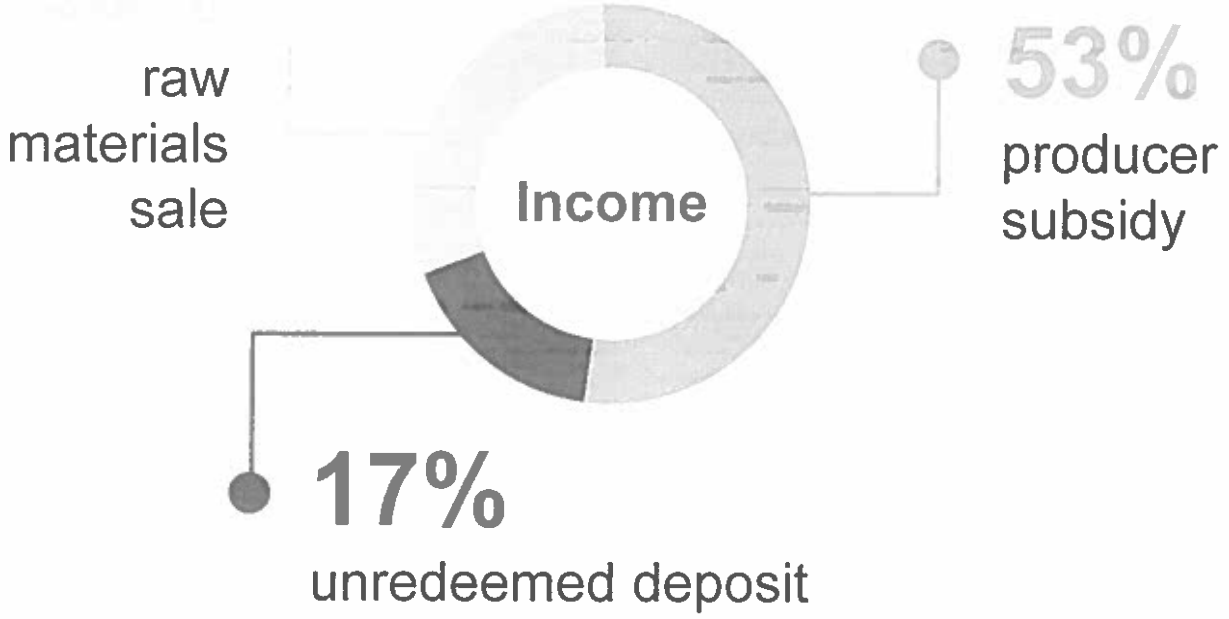


- Taking back deposit packages from consumers and returning deposit

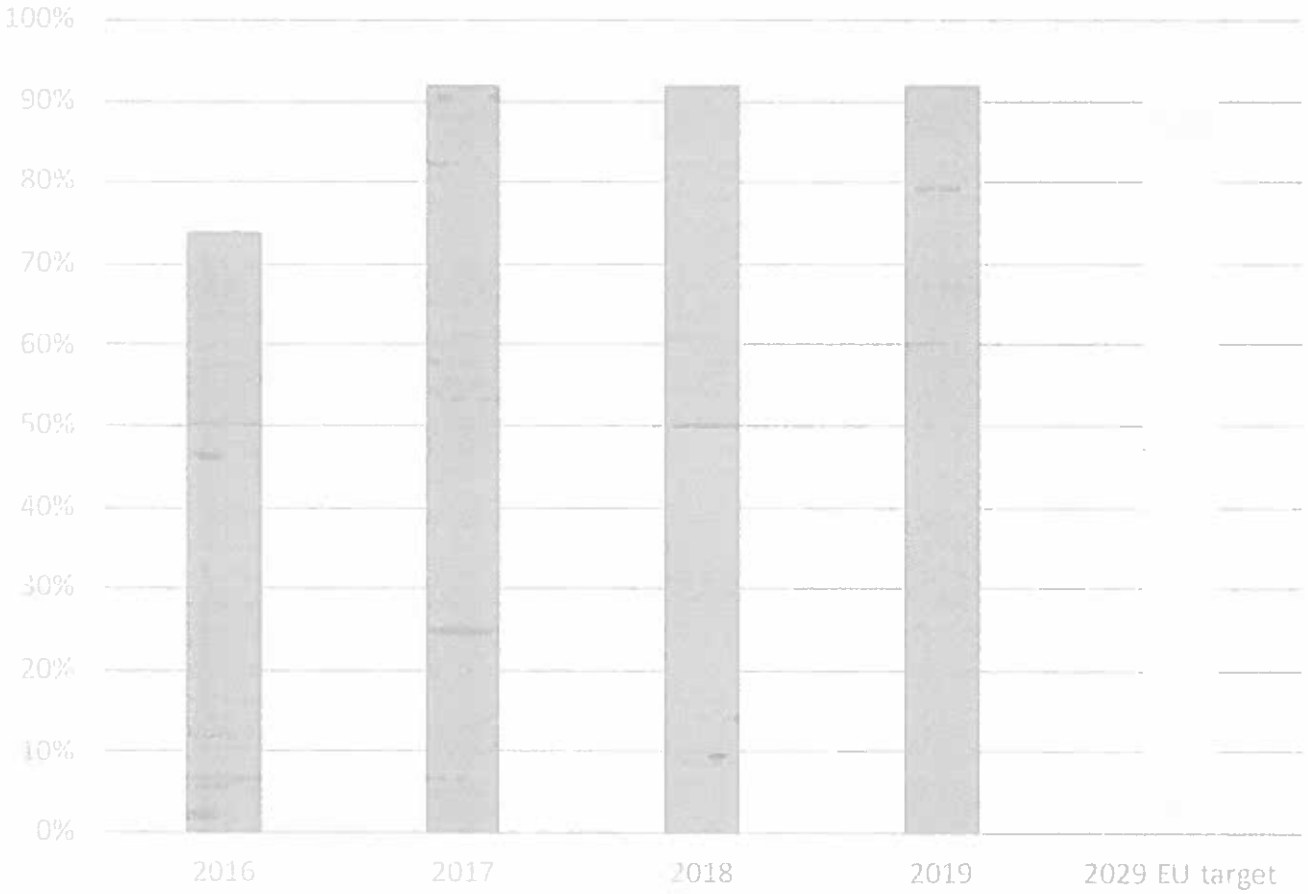


System revenues

Producers
and **importers** are
the main sponsors
of the deposit system



Collection & recycling results



Targets for **2029** are already **achieved and exceeded**

Deposit system allows higher recycling targets vs. container system

Before deposit system introduction PET bottles recycling **was below 33%**

Collection & recycling results

In the first 4 years we collected:

2.100.000.000 ⇨ **80.000** ⇨ **8 Eiffel towers**

beverage containers — tones

Recycling volumes:

2016 – **16.000 tones** 2017 – **20.000 tones** 2018 – **21.000 tones**

2019 – **23.000 tones**

Collection & recycling quality

100% collected materials
are **recycled**

A very high quality
of collected materials –
clean and well sorted

Easy to recycle back to the bottles and cans

What do consumers think?

Consumer survey conducted in 2018* resulted:

**2 years after launching the deposit system*

97% of consumers answered that they are

satisfied

in general with functioning of the deposit system for single-use packaging

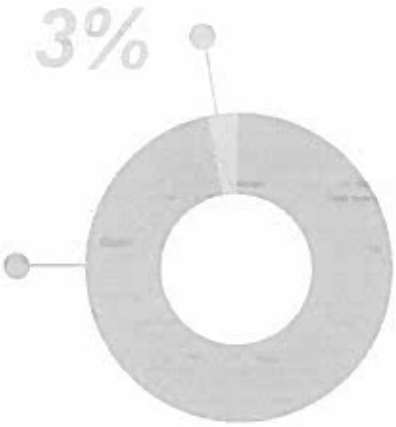
95% of consumers indicated that the **amount of garbage** in parks, at lakes and other natural places, visited by people, **decreased** after introduction of the packaging deposit system

What do consumers think?

Consumer survey conducted in 2018* resulted:

**2 years after launching the deposit system*

97% *of consumers claimed that the* ***deposit system is necessary***



Even more importantly:

93% of consumers admitted that introduction of the packaging deposit system encouraged them to regard sorting out of all-type waste with **more responsibility**

Thank You!

Viešoji įstaiga Užstato sistemos administratorius

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www.grazintiverta.lt

DEPOSIT RETURN SYSTEM

Kaupo Karba
CEO
11.03.2020

EESTI PANDIPAKEND

/eestipandipakend

ILUSAT HOMSET

Collection systems

DEPOSIT RETURN SYSTEM

CONTAINER

CURBSIDE

PACKAGES BAG

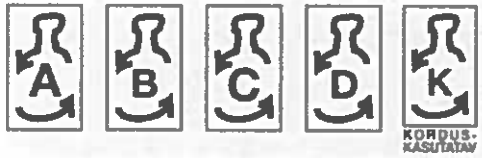
Deposit return system

PROS+

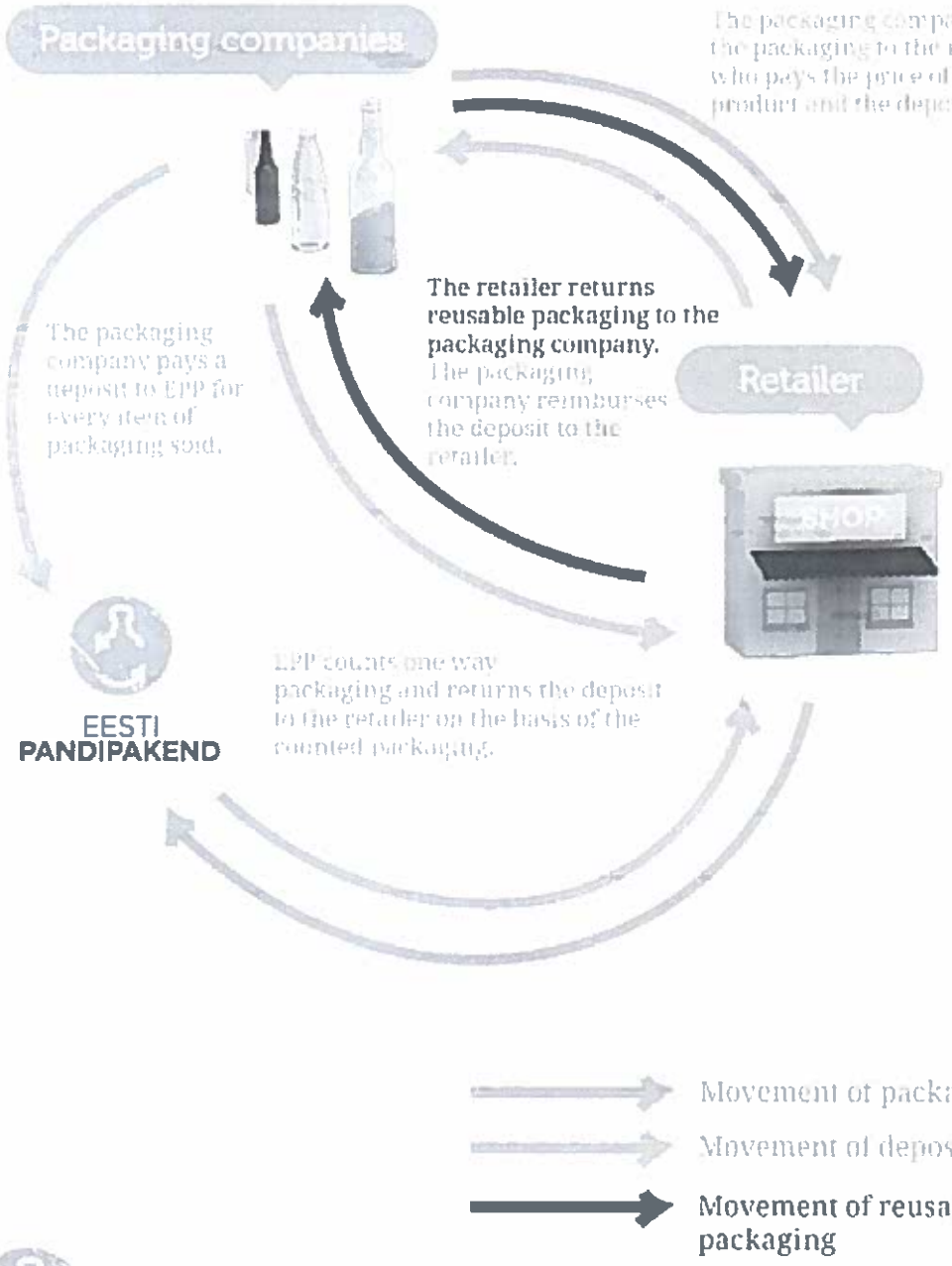
- **80-98%** of packages put to the market are collected
- Extremely clean and high quality material, **100% recyclable** (*upcycling*)
- High littering (incl marine littering) risk packages taken under control
- **Very fast results** due to monetary incentive
- Non-environmental friendly consumers contribute and get educated
- **Transparent data** and reporting

CONS-

- Potential consumer/ producer/retailer fraud, needs detailed controlling logics
- Stakeholders (producer, retailer) management
- Simple logic for consumer, but complex "kitchen side"



How the DRS works?



- Deposit does not raise the price of the product, but it is a separate price component that the consumer returns when he returns the package

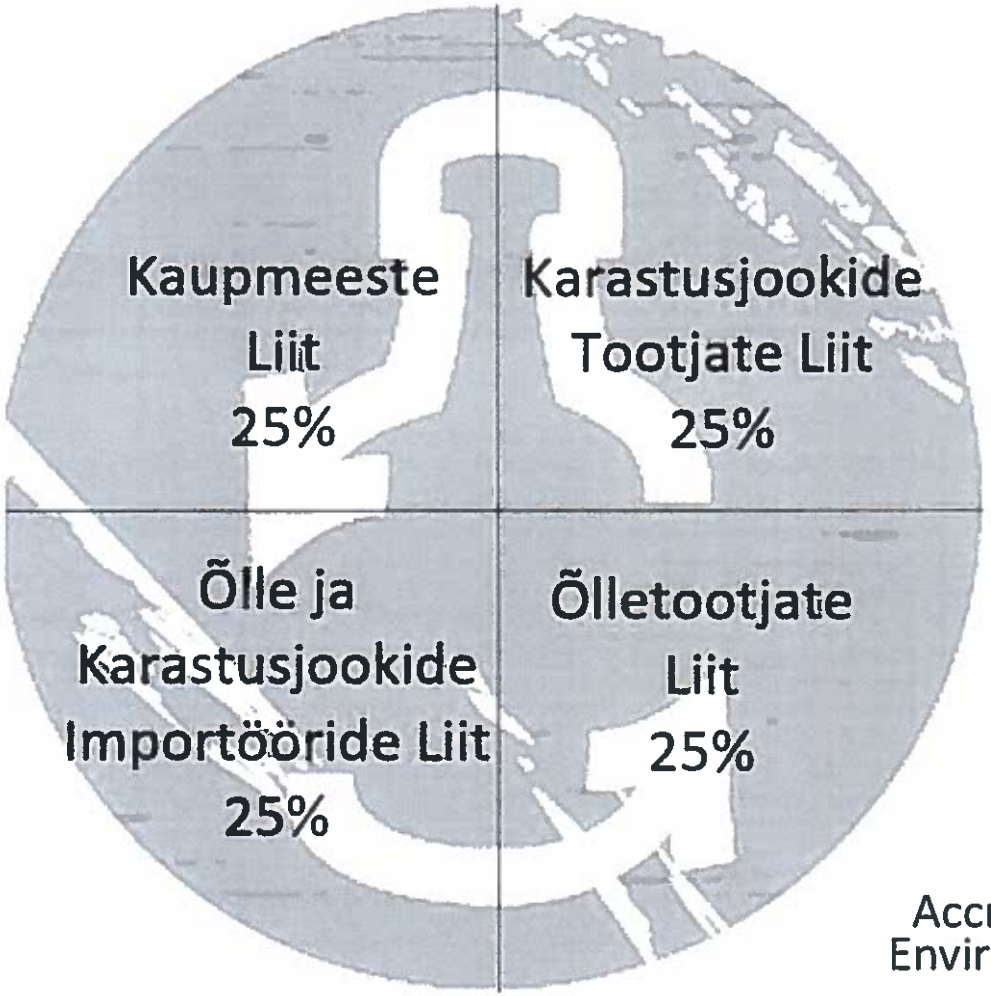
DEPOSIT SYSTEMS IN EUROPE

EESTI PANDIPAKEND

/eestipandipakend

ILUSAT HOMSET

EESTI PANDIPAKEND



Accredited by Ministry of Environment since 03/2005

Operating from 05/2005

Involvement of the deposit return system

PRODUCERS/IMPORTERS

- 349

Packages registered in the packaging register:

- 16000 packages (since 2005)
- ~5500 active packages

RETAILERS

- 820 collection points

  (manual or automated)
  - sh 570/730 reverse vending machines (RVM)

Horeca:

- 420 pick-up points

Product categories and materials

Products categories under deposit:

- Soft drink
- Water
- Beer
- Cider, perry
- Low-ethanol alcoholic beverages
- Juice, juice concentrate, nectar

Packages under deposit:

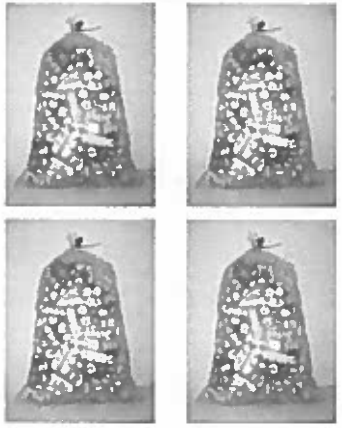
	deposit value (EUR)
Plastics (PET)	0,10
Metals (CAN)	0,10
Glass (oneway and refillable)	0,10

Collection structure

- Reverse vending machine (RVM)
- Manual collection

In 2006

- 80% manual collection
- 20% RVM



Since 2015

- 6% manual collection
- 94% RVM (80% compacted)

The CO2 footprint decreases up to 4 times

Deposit packages collection in Estonia

Oneway packages	2019 (2018)	Min requirement by excise law
Sales, million peaces	299 (277)	
Returns, million peaces	252 (240)	
PET return	87,1% (85,6%)	85%
CAN return	89,0% (97,4%)	50%
OWG return	88,5% (92,2%)	85%

A total of over **4.0 billion deposit packages collected** and recycled/reused (as of 02.2020)

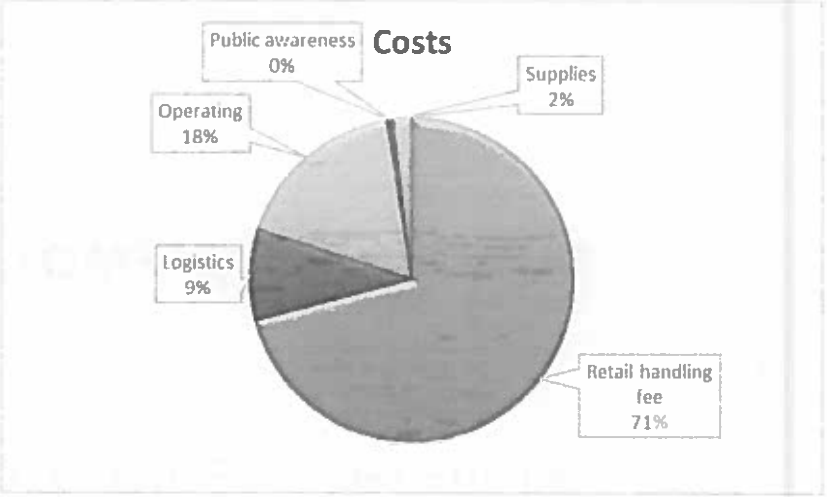
Financial model (Estonia)

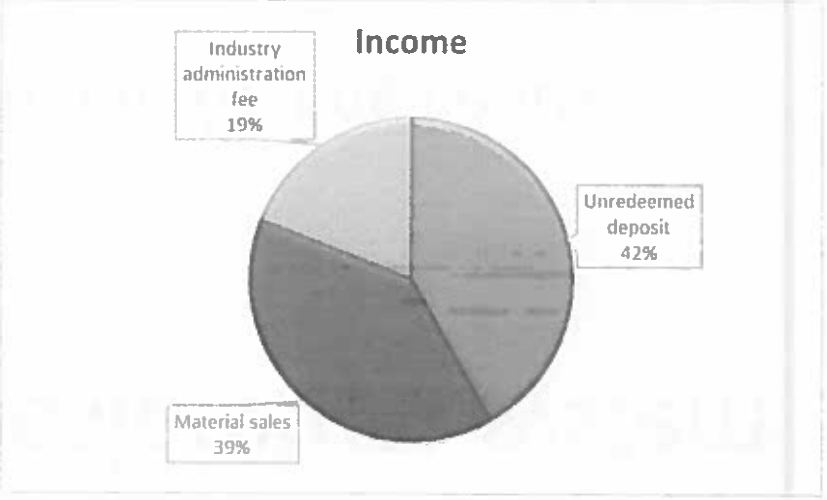
Costs

- Retail handling fee
- Logistics
- Operating (handling center and administration)
- Public awareness
- Supplies

Income

- Unredeemed deposit
- Material sales
- Industry administration fee





Keys to a successful deposit return system

- **Non-profit principle**
- **Correct initial setup** – law, handling/baling centres, logistics, etc
- **Stakeholders involvement** – producers, retailers
- **Controlling**
- **Constant awareness building** towards public and stakeholders

Have a beautiful tomorrow!

Mr. Kaupo Karba
kaupo@eestipandipakend.ee