This project is co-funded by the European Union and the Republic of Türkiye

Technical Assistance for Assessment of Türkiye's Potential on Transition to Circular Economy

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Deposit Refund System (DRS) Applications in the EU Member States

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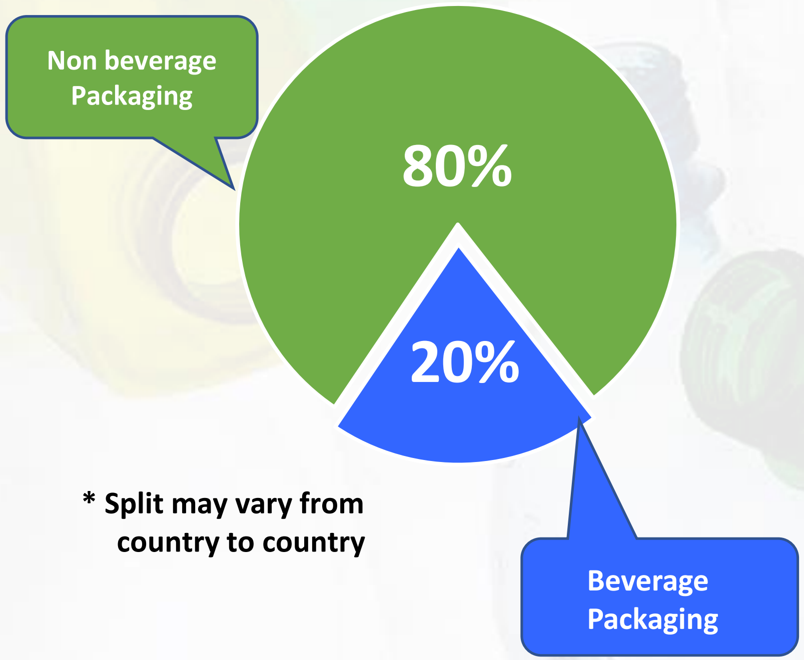
Ankara

DRS recovery has a major positive impact on total material recovery targets

Packaging Universe
“put on the market”



*** Split may vary from country to country**

CONSUMER PLASTIC PACKAGING

- Plastic EU recovery/recycling target in 2025 - 55%
- Beverage Packages represent about 20% of total consumer plastic packages
- DRS plastic recovery rate achieved 90% (20% share)
- Remaining of the consumer plastic packages (80% share) to recover 46,25%

CONSUMER ALUMINUM PACKAGING

- Aluminum EU recovery/recycling target in 2025 = 70%
- Beverage Packages represents about 15% of total aluminum consumer packages
- DRS aluminum recovery rate achieved 90% (15% share)
- Remaining of the consumer aluminum packages (85%) to recover 66,5%

Quality of Input Material Varies Between Recovery Systems

Kerbside / Household collection (e.g. Green Dot)	Consumer collection system (e.g. DRS)
	
195.6 gr · 81.0 gr · 52.3 gr 274% increase	2 – 4 gr Remains in the Package
Average collection: 20 - 60%	Average collection: 85 – 95%
Reporting by weight	Reporting by units
Contaminated material	Clean Specific material
Yield 25% – 55%, € 100 – 150/ton Clear PET	Yield 80% – 85%, € 400-450/ton Clear PET

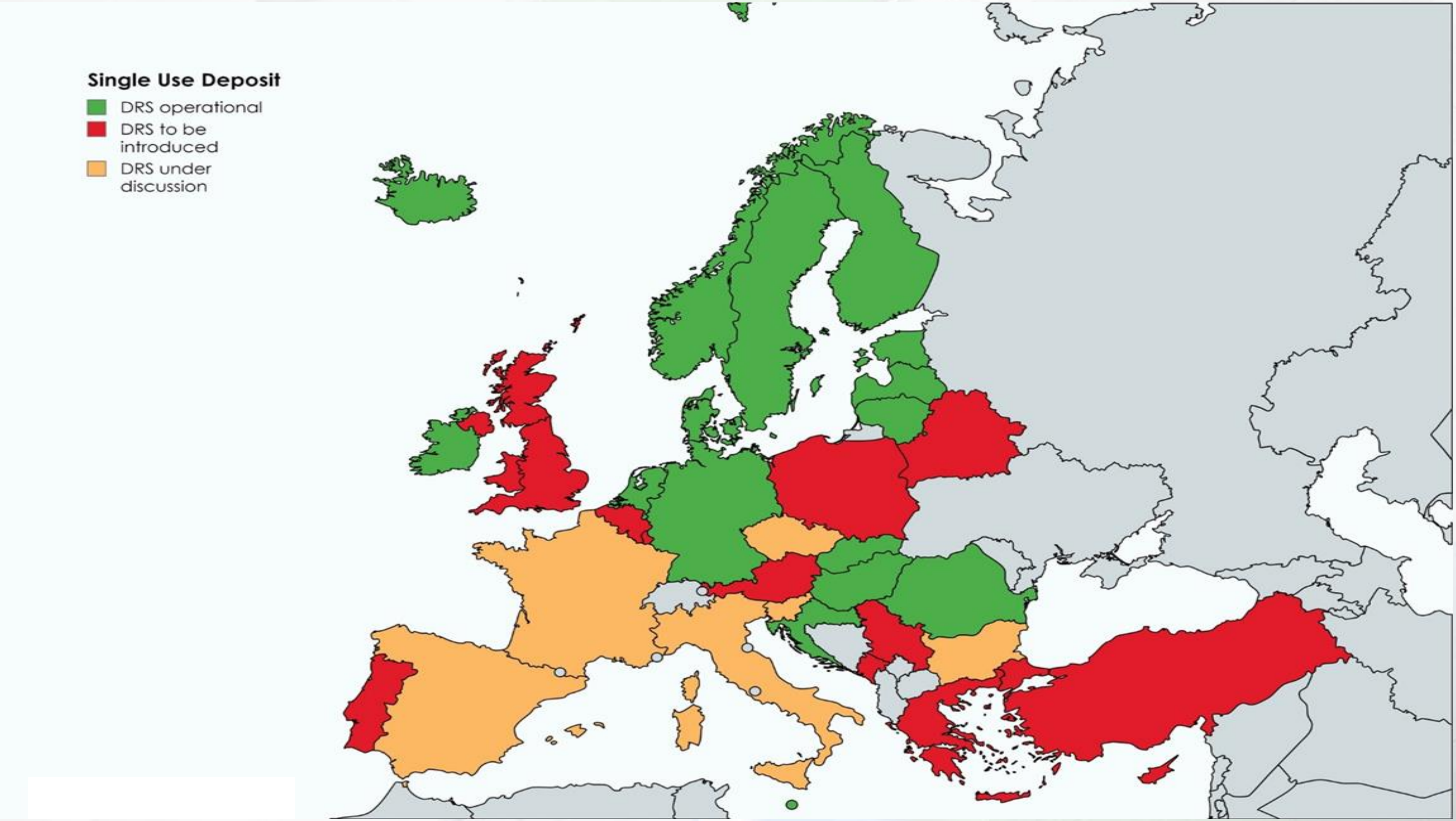
There are two ways to deal with the collection & recycling obligation
A detailed look

Package Recovery System (PRO) - Green Dot

- All types of (consumer) packaging (including secondary)
- Bring or collect System (Kerbside – household collection)
- Fees paid by obliged companies (licensing model) (typically on weight and units reported by material)
- Fees are typically material cross subsidized
- Difficult to achieve high return rates – lack of consumer incentives
- Post Consumer material quality limited – contaminations result in lower yield to obtain food grade recycled rPET
- Services are outsourced to commercial providers
- Challenging to obtain control and transparency – recycling rates are based on collected weight (including residuals)
- Difficult to balance recycling rate to amount put on the market – hard to audit total market
- Money/volume flow hard to audit

Deposit Refund System (DRS)

- Focused on **beverage containers**
- **Beverage industry/associations are main shareholder** due to EPR
- Ideally **not-for-profit**
- **Consumer incentivized** to return -> **high collection rates**
- All products in DRS system must be registered
- Fee paid per unit, no-cross subsidation
- Every article has a (unique) EAN code and unique DRS emblem
- **Comparing number of units sold with number of packaging redeemed** per SKU/producer – discrepancies will be detected
- Easy to audit material and cash flow – total and by producer - for internal and external auditors
- Mainly retail based redemption points or other redemption solutions (approved & controlled by DRS)
- Significantly **higher value of collected material** (e.g. PET, Al) – **minimal contamination**. higher yields, high food grade recyclate, higher supply of rPET


Single Use Deposit
DRS operational
DRS to be introduced
DRS under discussion

Local adaptation – No system is the same

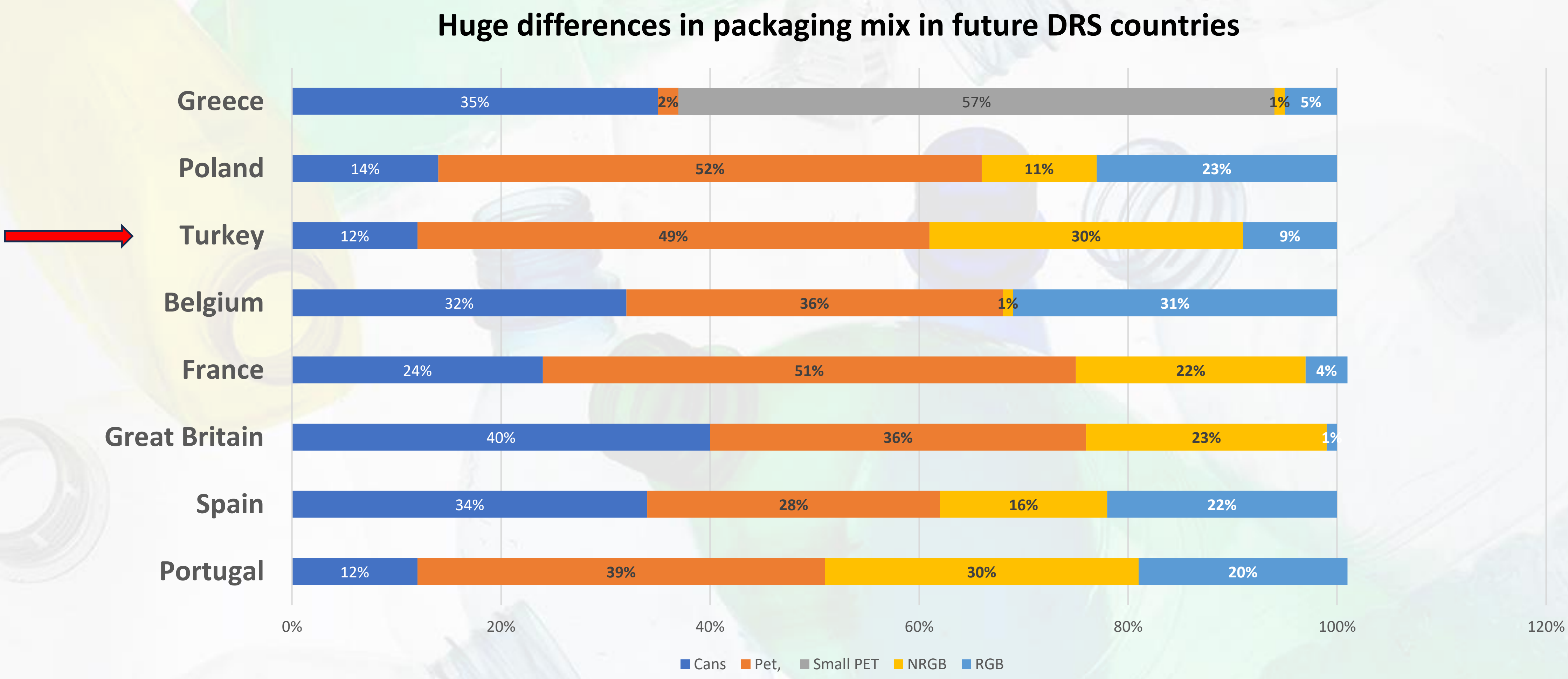
<u>Design can be affected by:</u>

- The market´s culture and business behaviour
- Governmental levers and legislation
- Retail mandatory take-back
- Consumer environmental awareness – incl tourism – language barriers & home habits
- Packages and products to be included in DRS, packaging share split
- Retail environment – modern trade, traditional trade/mom & pop stores, open markets, on-the-go volume share, scavengers/litter pickers

<u>Some examples of differences:</u>

- Return to retail (RVM and Manual) – Nordic, Australia
- Redemption points operated by DRS – Nordic, US, Canada
- Return to depot – Iceland, US, Canada, Australia
- Deposit charge higher than refund – Some Canadian provinces
- Ownership commercialised – Australia (excluding South Australia & Northern Territory)
- Highly dependent on scavengers/litter pickers – Some Eastern European RGB systems

Packaging mix (PET, metal, glass) and channel mix (HoReCa, Retail, …) are drivers for the DRS infrastructure



High return rates achieved by DRS contributing to achievements of the 2025 recycling targets, and beyond

Country	Deposit Levels	Total PET	Small PET	Large PET	Metal Cans	NR Glass
Croatia	€ 0.07	89%	N/A	N/A	79%	100%
Denmark (2021)	Cans - € 0.14 PET Small - € 0.20 PET Large - € 0.40 NRGB - € 0.14	93%	85%	97%	91%	90%
Estonia (2021)	€ 0.10	86%	80%	89%	97%	94%
Finland	Cans - € 0.15 PET Small - € 0.10/€ 0.20 PET Large - € 0.40 NRGB - € 0.10	90%	89%	94%	95%	87%
Germany	€ 0.25	97%	N/A	N/A	99%	90%
Iceland	€ 0.12	87%	84%	93%	88%	87%
Lithuania	€ 0.10	92%	N/A	N/A	93%	85%
Netherlands	€ 0.25	N/A	N/A	95%	N/A	N/A
Norway	Cans - € 0.22 (€ 0.11) PET Small - € 0.22 (€ 0.11) PET Large - € 0.32 (€ 0.21)	93%	89%	94%	92%	N/A
Sweden	Cans & PET € 0.10 NRGB € 0.20	88%	83%	91%	89%	N/A

Source: Available data from operations
Note: % of beverage container units– Achievements may be higher by weight

OLHC Eight fundamental pillars to establish a functional DRS system

1 industry control

Owned and operated by obliged beverage industry and retailers, funded by obliged beverage industry, non-profit, net-cost, full transparency, no material cross-subsidization, propose deposit level

2 environmental benefit

Reduction of land and marine litter, carbon reduction, increased availability of food grade recycled material (closed loop), facilitating reusable packaging

3 national coverage

Single scheme, mandatory industry participation, mandatory take back obligation for all sellers, efficient set-up, work in parallel with PRO / other compliances

4 packaging scope

Clearly defined beverages categories, packaging types and sizes, avoiding consumer confusion

No competitive advantage for any beverage category, retail or company

DRS

Aligned within the beverage industry

5 strong governance

Legal framework, fraud prevention, compliance and transparency, open book, Chinese walls to protect sensitive information, ownership of all data, deposit excluding VAT

6 revenue management

Material revenue and unredeemed deposits retained in DRS, calculated industry fee for each material based on activity based costing, right of first refusal for collected material

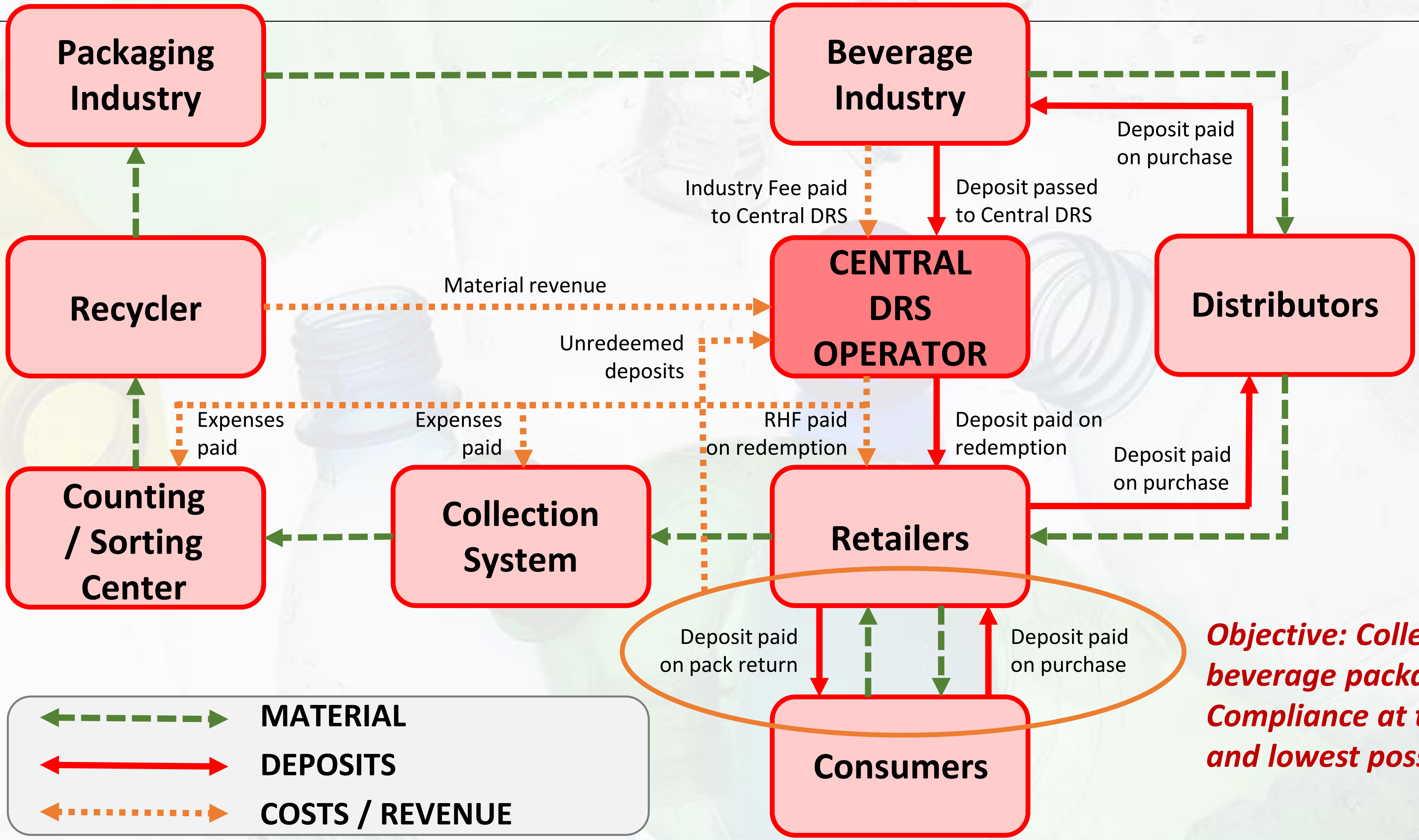
7 strong cost control

Efficiency and transparency, lowest industry fee through control of operational cost drivers such as Retail Handling Fee, RVM's, transport services, clearing and sorting

8 consumer focused

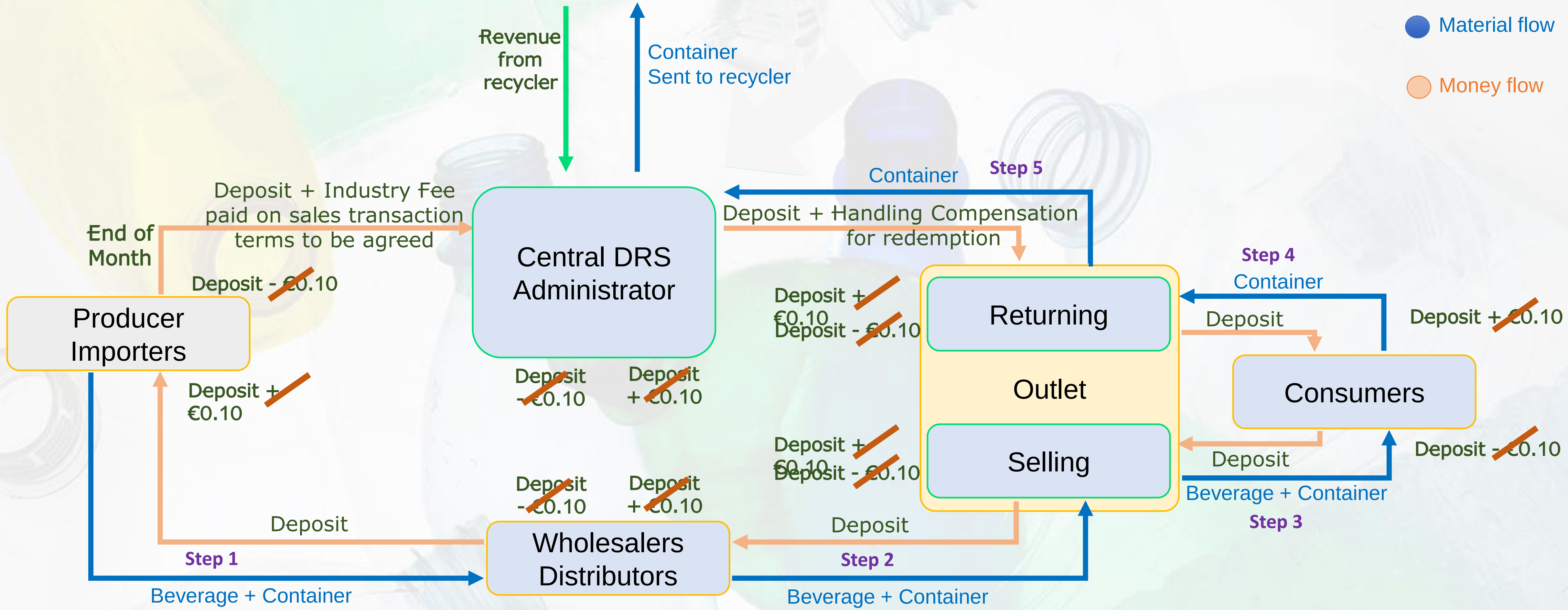
Wide availability / accessibility of redemption points, clear labeling, deposit logo, product price + deposit, strong consumer comms, open for scavengers and charities

Material and cash flow of a typical DRS



Objective: Collect post-consumer beverage packaging to fulfill EPR Compliance at the highest value and lowest possible cost

DRS Operation and Money Flow



Financials of a (Nordic) DRS

Revenue

Deposits for all sales -/- deposits paid for redeemed =

Unredeemed deposit

Material Income

Other Income:

Other fees, Interest

Expenses

Handling Fees

Logistics

Counting/sorting Center

Marketing & communication

Administration

DRS Fee

Deficit →

DRS Fee

After charging fees the theoretical result should be zero

(not for profit)

Redemption should be as simple as possible with different options

1

Deposit your bottles

2a

Print a receipt for cash out, lottery entry, or a voucher for discount.

2b

Donate the value to charity

2c

Cash or register your credits

3a

Redeem voucher instore

3b

Buy a new bottle/can. Paying with your credits.

3c

Cash out your credits in a computer game...
...or any other membership loyalty reward..... or directly on your bank account

Manual redemption point return process

- Consumer returns container to the outlet employee
- Outlet employee verifies the DRS and deposits in bag
- Refunds the consumer in full either by crediting against shopping or payment of cash

- Full bags are stored ready for pickup by the DRS
- Prearranged pickup at a time/day each week or the outlet contacts DRS via website, app, telephone for collection or upon delivery of new products
- Bags collected by the DRS free of charge

- Containers counted at the Clearing Centre and materials separated
- Outlet is credited number of legitimate containers returned and agreed handling compensation

Key comparisons between European operated DRS

Country	Ownership	Legal structure	VAT on Deposit/ unredeemed	Unredeemed and material income	Packaging
Croatia	State owned	Mandatory	YES	State	PET, metal, NRGB
Denmark	100% Individual producers	Mandatory	25%	Off-set DRS cost	PET, metal, NRGB, RGB
Estonia	75% Producers´ and 25% retailers´ associations	Mandatory	NO	Off-set DRS cost	PET, metal, NRGB, RGB
Finland	50/50% ownership producers and retailers Lidl with separate DRS	Mandatory	24%	Off-set DRS cost	PET, metal, NRGB
Germany	50/50% Producers´ and retailers associations Decentralized clearing	Mandatory	19%	Producers and retailers	PET, metal, NRGB, RGB
Iceland	40% producers/importers, 38% retailers (state liquor shops), operators 22%	Mandatory	11%	Off-set DRS cost	PET, metal, NRGB
Lithuania	67% beverage producers and 33% retail associations	Mandatory	NO	Off-set DRS cost	PET, metal, NRGB, RGB
Netherlands	50% producer 50% retail through associations	Mandatory	NO	Producers/DRS	PET, metal
Norway	50/50% producers´ and retailers´ associations	Mandatory	NO	Off-set DRS cost	PET, metal
Sweden	50/50% producers´ and retailers´ associations	Mandatory	12%/25%	Off-set DRS cost	PET, metal

The Environment

- **The DRS will achieve high collection rates which will assist the beverage industry in**
  - Meet the country´s beverage recovery and recycling targets by material, rPET of 35% content in 2030 (EU). DRS is providing clean high yield food grade recycled rPET, with low cross contamination
  - Significantly reduce landfill and household waste collection costs
- **Strong reduction in litter and litter costs**
  - Norway and Germany: approximately 1% of the units littered
  - Netherlands: reduction of 70-90% of bottles and cans in litter
  - Reduce post-consumer packaging landfilled
- **Significant reduction of CO2 (closing the loop)**
  - Consumer packaging is representing between 45-60% of beverage companies CO2 footprint
  - rPET production is lower in CO2 than the manufacture of virgin material, 80% rPET reduces CO2 by 75%
  - Poland would be self-sufficient to meet rPET 2025 and 2030 requirements, and future aluminium

(1) Eunomia, Litter in Mediterranean, 2020

Clear DRS product and packaging base or scope

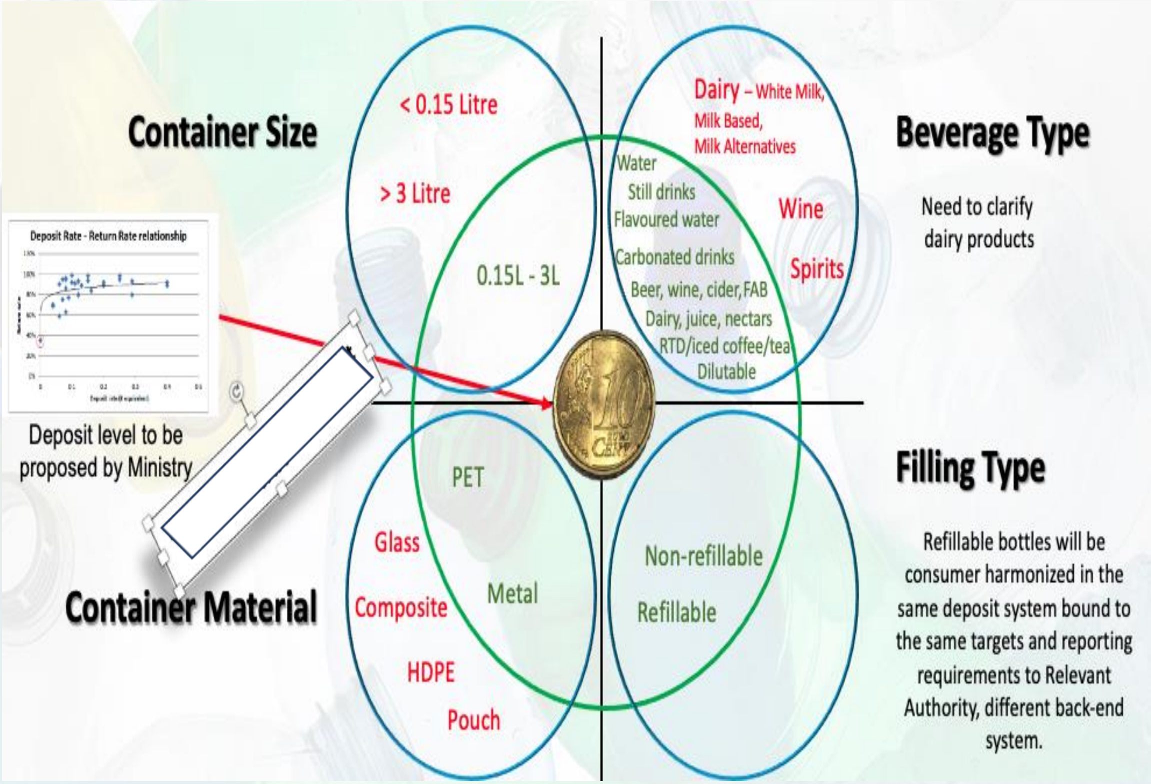
- **Clearly defined categories included**
  - Non-Alcoholic Ready to Drink – CSDs, Water, Iced Tea, Iced Coffee, sports, energy, juices/nectars (all EU markets)
  - Beer, cider (all EU markets)
  - Wine and Spirits (Finland & Iceland)

- **Material types included in different markets**
  - PET and Cans – All EU markets
  - Non-Refillable Glass – Croatia, Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Germany, Malta
  - Reuse packaging Estonia, Latvia, Lithuania, Germany, Slovakia, Malta

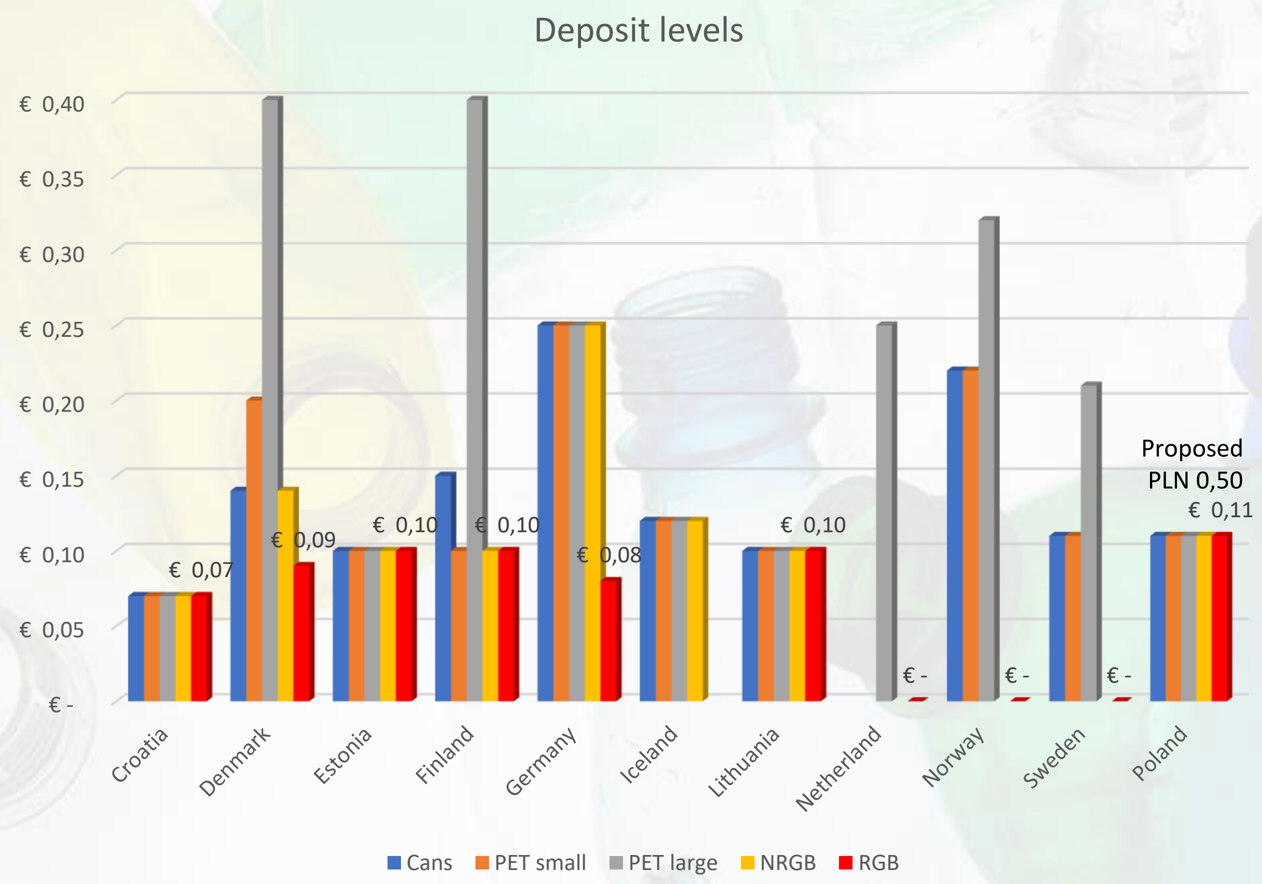
- **Avoid consumer confusion, increase understanding, trust in the DRS improving return rates**

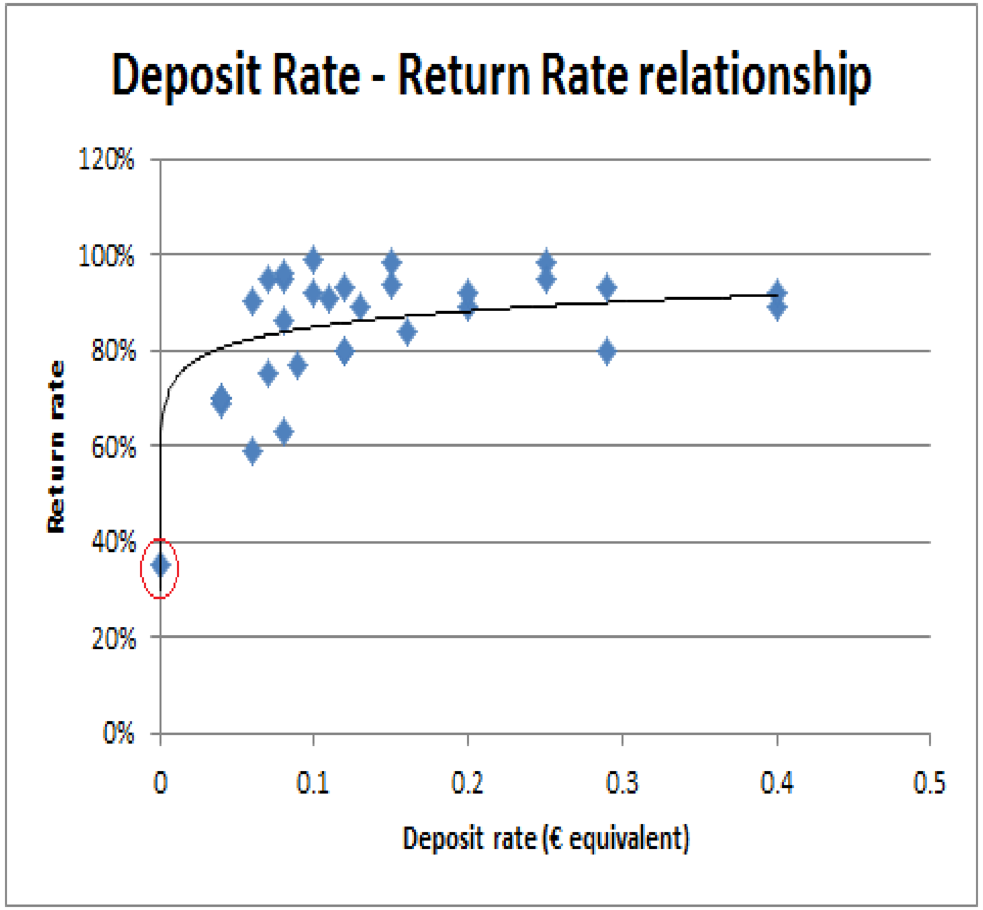
- **Reduced changes in consumer shopping behaviours (reduction of switching etc.)**

- **Packaging excluded from DRS: Bag-in-box, pouches, plastic bags, and paper cartons**



Deposit level – fixed or differentiated by material or NR/RGB





Deposit to be set to incentivize to meeting set targets and not to change consumer shopping behaviour

Thorough consumer research is required

- **All DRS beverage packaging must have a clear country DRS logo on all DRS beverage packaging**
  - Assist consumers in recognizing DRS system packaging
  - Guiding the personal in manual redemption point to only refund DRS beverage packaging (refer strong governance)
- **High collection and recycling rates are achieved through consumer acceptance and convenience**
  - Heavy DRS communication investments 6 months prior to DRS introduction to build system and consumer awareness. On-going DRS marketing through promotions, activities, sponsorships etc. to build system understanding and trust, for the first years of system built up
  - High consumer availability and accessibility for redemption points, including eCommerce/home delivery (refer mandatory takeback obligations)
  - DRS operated redemption points at events, high traffic locations, public areas, tourist areas, beaches to maximize redemption point penetration
  - Special activities for tourist areas – communication in multi languages
- **Product price + deposit on all price communication to avoid consumer perception that deposit is a price increase**
- **The deposit paid shall be refunded in full**
  - Reduce consumer perception that deposit is a price increase
- **Conduct continuous consumer research to ensure system satisfaction, obtain information how to communicate the DRS benefits, deposit level, etc.**

Consumer behaviour

Sales & Marketing	Note

Sales & Marketing

- Extensive communication and education of consumers is key for adaptation of DRS, for the necessary change in behaviour and for the results (return rate) – both from DRS administrator and integrated in your communication
- Towards the start of DRS, a large, national campaign is needed both DRS and individual producers
- After the start, DRS communication campaigns will still be needed to keep consumer awareness, knowledge and right behaviour
- Keep a close eye on any change in any consumer shopping behaviour.
- Customer research will help understanding consumers needs. Depending on the deposit amount, behaviour might vary for different consumer groups and for different products

Note

- Introduction of DRS means a substantial impact on consumer behavior – used containers need to be returned to the store in their original state & uncompressed.
- DRS might shift consumer preferences towards other types of packaging
- Cans must be intact, not compacted or severely dented when consumer brings back empty cans.
- All price communication should state product price + deposit
- Continuous consumer research recommended

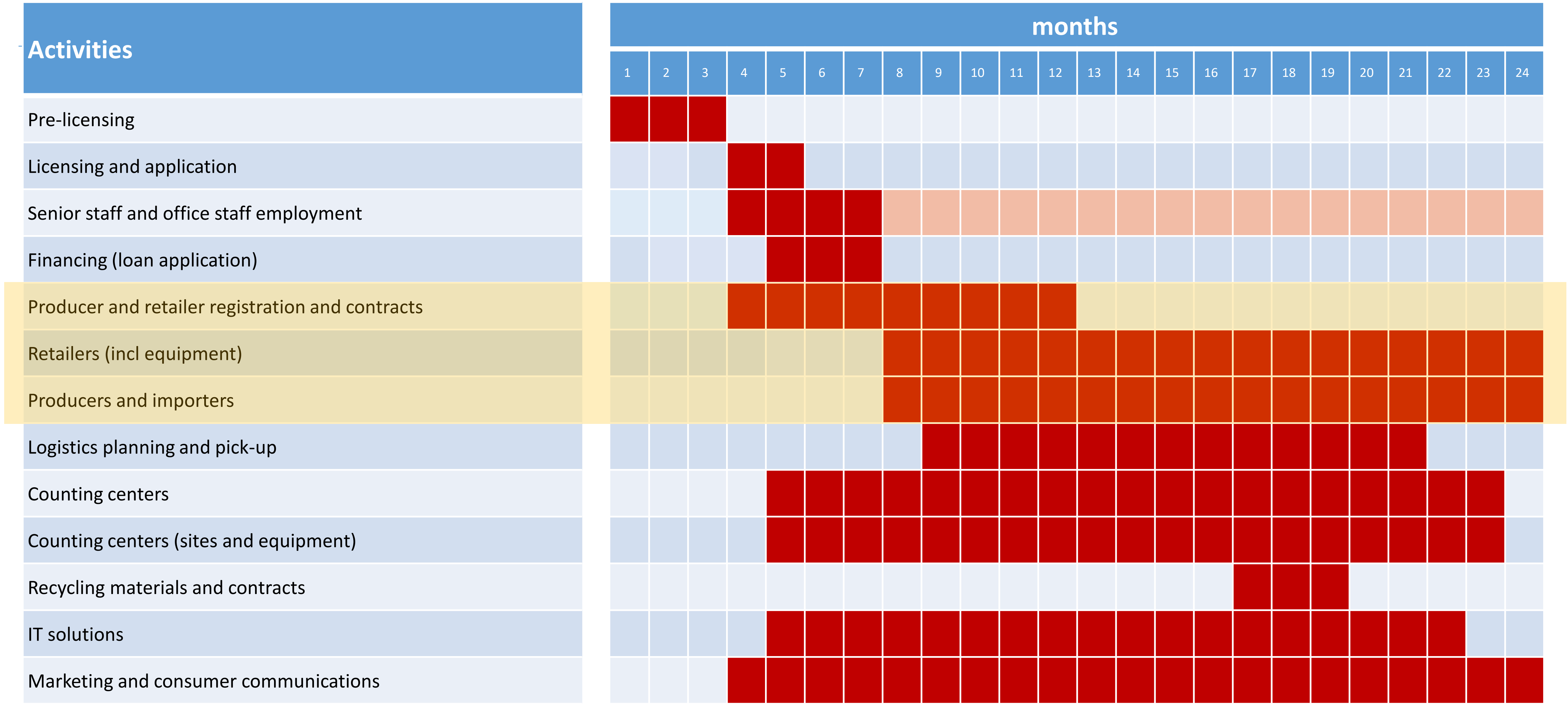
Benchmarks to key DRS markets

	Denmark	Estonia	Finland	Norway	Sweden
Structure / Ownership	Individual Beverage Industry participants. Retailers have no ownership but 50% Board Representation	25% Association of Soft Drinks 25% Association of Importers 25% Association of Brewers 25% Retailers Association.	Individual Beverage Industry participants. 50% Beverage Industry 50% Retailers Industry includes the Governmental Alko shops – state wine and liquor monopoly shops	50% Beverage Associations 50% Retailers Associations Shared responsibility	50% Beverage Association 50% Retailers Associations
Deposit Level	Cans = €0.13 PET up to 1L = €0.20 PET over 1L = €0.40 NRGB = €0.13	All €0.10	Cans = €0.15 PET to 500ml = €0.10 PET 500 to 1L = €0.20 PET over 1L = €0.40 NRGB = €0.10	Cans = €0.21 PET up to 1L = €0.21 PET over 1L = €0.31	Cans = €0.10 PET up to 1L = €0.10 PET over 1L = €0.20
Net deposit value	Cans = €0.104 PET up to 1L = €0.16 PET over 1L = €0.32 NRGB = €0.104	€ 0,10	Cans = €0.121 PET to 500ml = €0.081 PET 500 to 1L = €0.16 PET over 1L = €0.32 NRGB = €0.081	Cans = €0.21 PET up to 1L = €0.21 PET over 1L = €0.31	NARTD/Beer Cans = €0.089/0,08 PET up to 1L = €0,089/0,08 PET over 1L = €0,18/0,16
VAT on Deposit	Yes (25%)	No	Yes (24%)	No	Yes (NARTD 12%, beer 25%)
Materials included	NRGB, PET, Cans	NRGB, PET, Cans	NRGB, PET, Cans	PET, Cans	PET, Cans

Benchmarks to key DRS markets

	Denmark	Estonia	Finland	Norway	Sweden
Categories Included	NARTD, Beer, Cider, Alcopops	NARTD, Beer, Cider, Alcopops	NARTD, Beer, Cider, Alcopops, Wine, Spirit	NARTD, Beer, Cider, Alcopops	NARTD, Beer, Cider, Alcopops (juice only if over 50%)
Urban vs. Rural population	88%/12%	69%/31%	85%/15%	82%/18%	87%/13%
Recovery rate PET	93%	86%	91%	90%	86%
Retail Handling Comp RVMs	NRGB = €0.085 PET = €0.002 Cans = €0.0012 **NOTE: DRS does not pay for space and has a cost for the compactors**	NRGB = €0.025 PET = €0.033 Cans = €0.033	NRGB = €0.020 PET = €0.035 Cans = €0.030	PET = €0.026 Cans = €0.021	PET = €0.041 Cans = €0.019
RVM Penetration	1 per 2,000 persons	1 per 2,000 persons	1 per 2,000 persons	1 per 1,500 persons	1 per 2,500 persons
Industry fee	NRGB Small = €0.039 NRGB Large = €0. 53 PET (Small) = €0.012 PET (Large) = €0.013 Cans = €0.003	NRGB Small = €0.020 NRGB Large = €0.025 PET (Small) = €0.011 PET (Large) = €0.020 Cans = €0.001	NRGB Small = €0.073 NRGB Large = €0.122 Clear PET (Small) = €0.011 Clear PET (Large) = €0.021 Colour PET (Small) = €0.0167 Colour PET (Large) = €0.0268 Cans = €0.007	PET = €0.016 Cans = (€0.003)	PET (Small) = €0.02 PET (Large) = €0.05 Cans = €0.00
RVM collection	83%	94%	90%	93%	96%

Timeline for an orderly implementation of DRS



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