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Progress on Aluminium Packaging Recycling in Europe – focus on beverage cans: deposit systems versus other collection schemes

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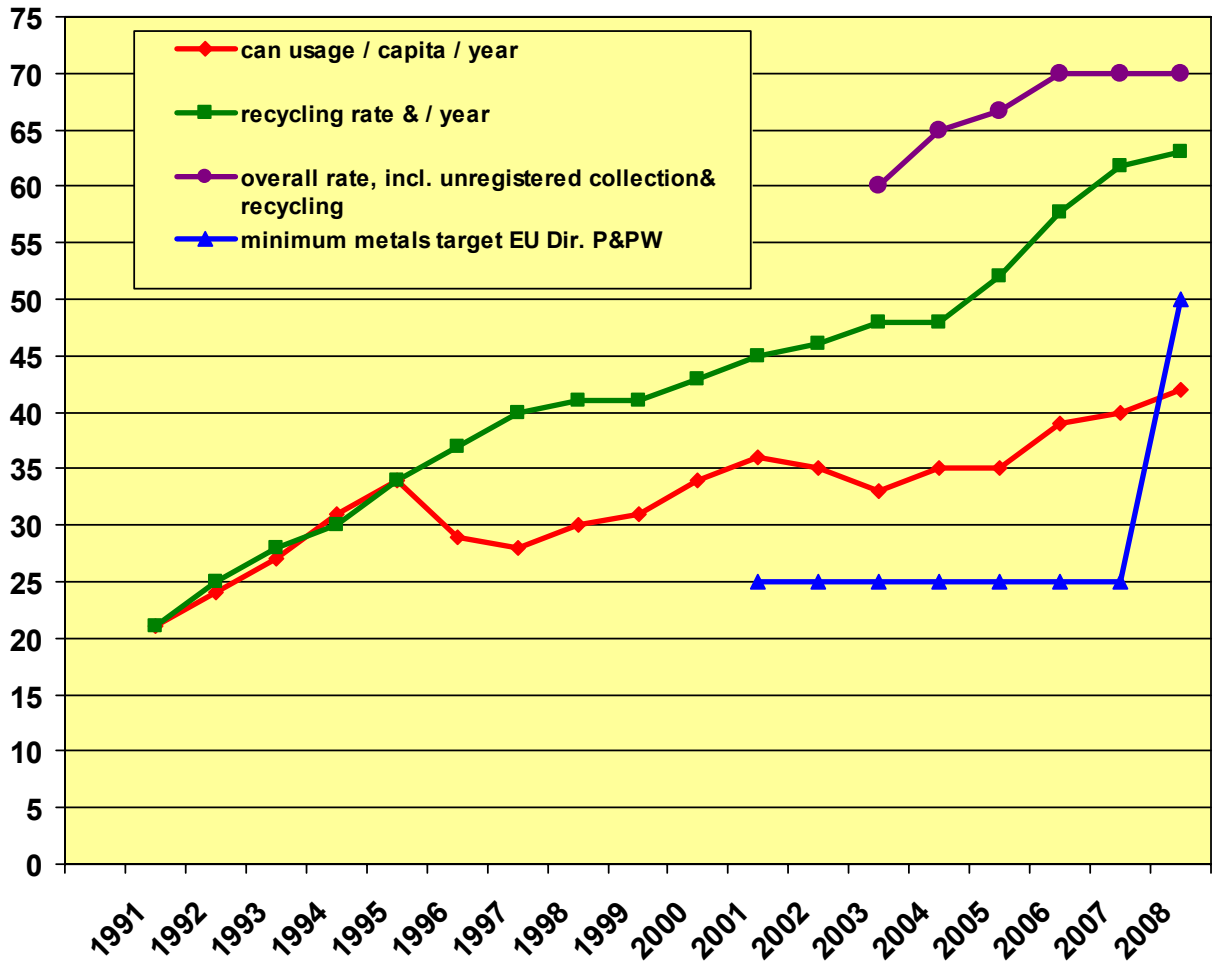
Aluminium beverage can usage and recycling rates in Western Europe (1991-2008)



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used aluminium packaging fits in all recovery routes

Mono-material / mono-packaging collection (e.g. can-to-can recycling)

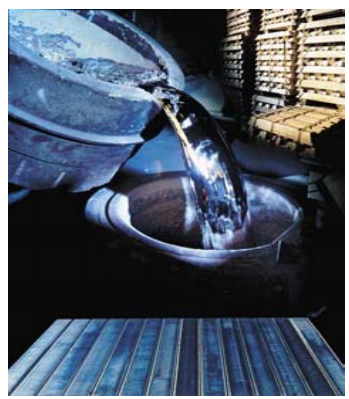
Within the mixed "light" (container) packaging fraction, additional collection + sorting needed

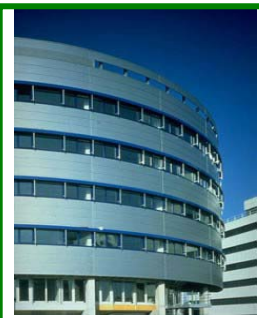
Incineration with energy recovery + aluminium extraction bottom ashes

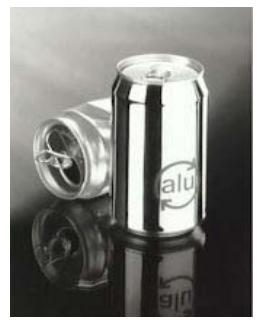
REMELTING

Closed Aluminium Product loop

Closed Aluminium Material loop







THE ALUMINIUM POOL: from an environmental / CO-2 point of view it doesn't matter whether used cans end up again in new cans or in a bicycle, a window frame or an engine block

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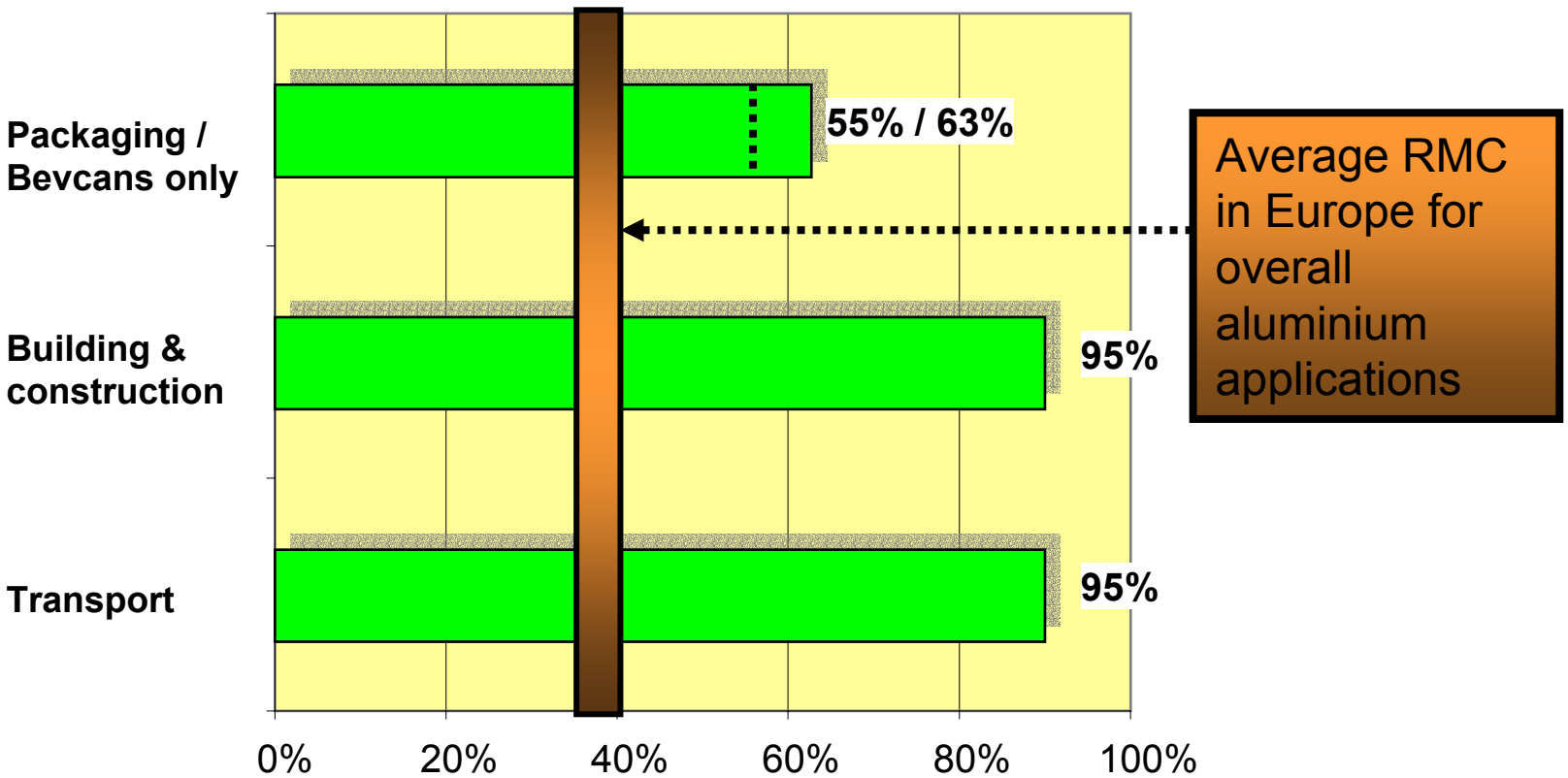
Aluminium End-of-Life Recycling Rates (Europe)



End-of-Life (EoL) 'credits' score always better than recycled metal content (RMC)

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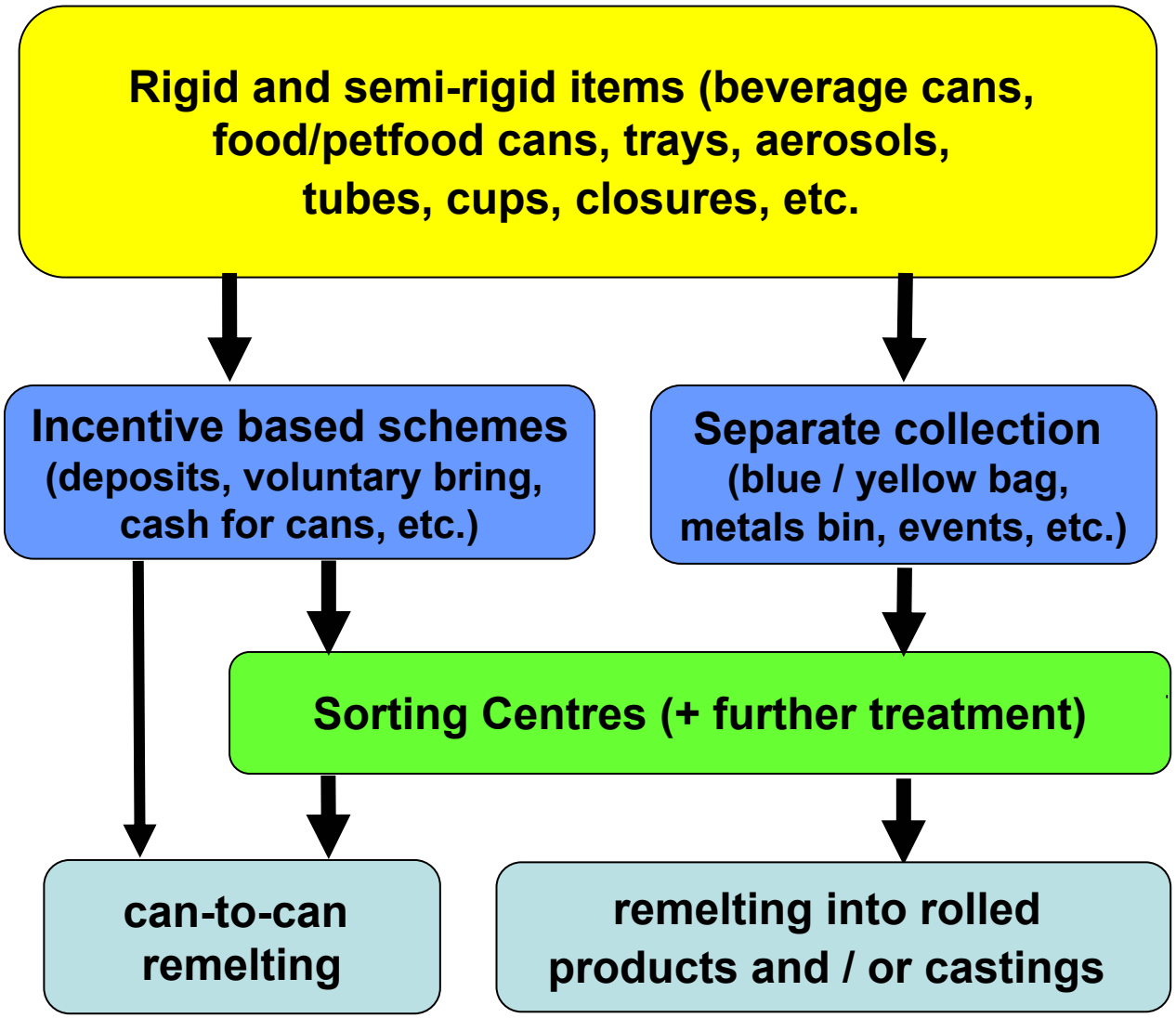

Preferred collection & sorting routes for used aluminium packaging and beverage cans in particular (separate and / or in combination with mixed systems)

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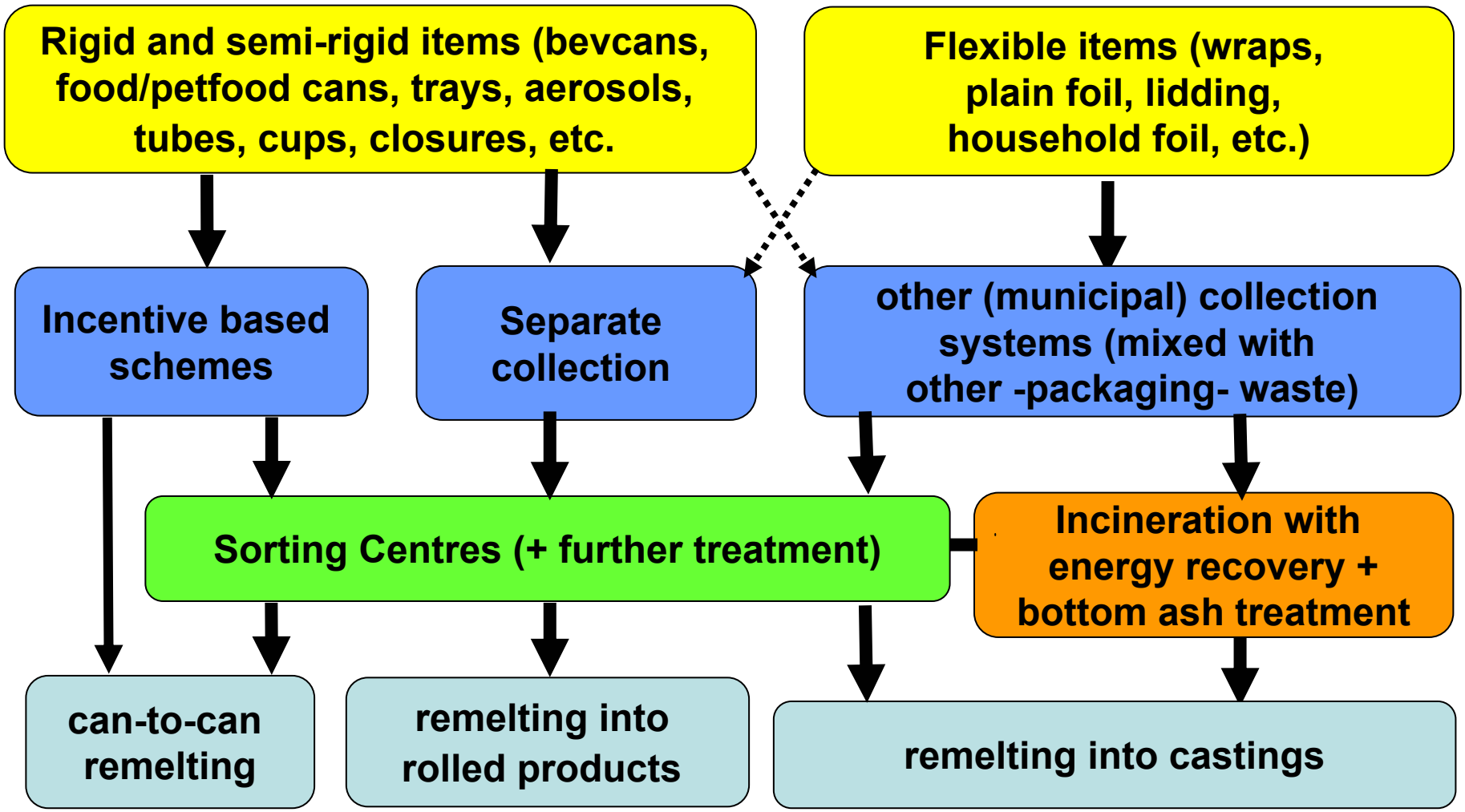
Collection & sorting routes for all used aluminium packaging (separate and / or in combination with mixed systems)



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Beverage packaging, deposit systems and free movement of goods (Communication EU Commission, 8-5-2009)

- Mandatory deposit systems
  - ''….Member States are allowed to introduce mandatory systems if, on the basis of the individual Member State's discretion, this is considered necessary for environmental reasons''
  - ''….it must nevertheless observe certain requirements in order to ensure that a fair balance is struck between environmental objectives and internal market needs''
    - Sufficiently long transitional period
    - Design of the system must be fair, open and transparent (best practice solutions regarding labelling, clearing system, exemptions for small businesses, easy import / export)
- Voluntary systems:
  - ''From an internal market viewpoint, such systems do not amount to barriers to trade. Member States may nevertheless set certain parameters with a view to ensuring interoperability, access and consumer protection''

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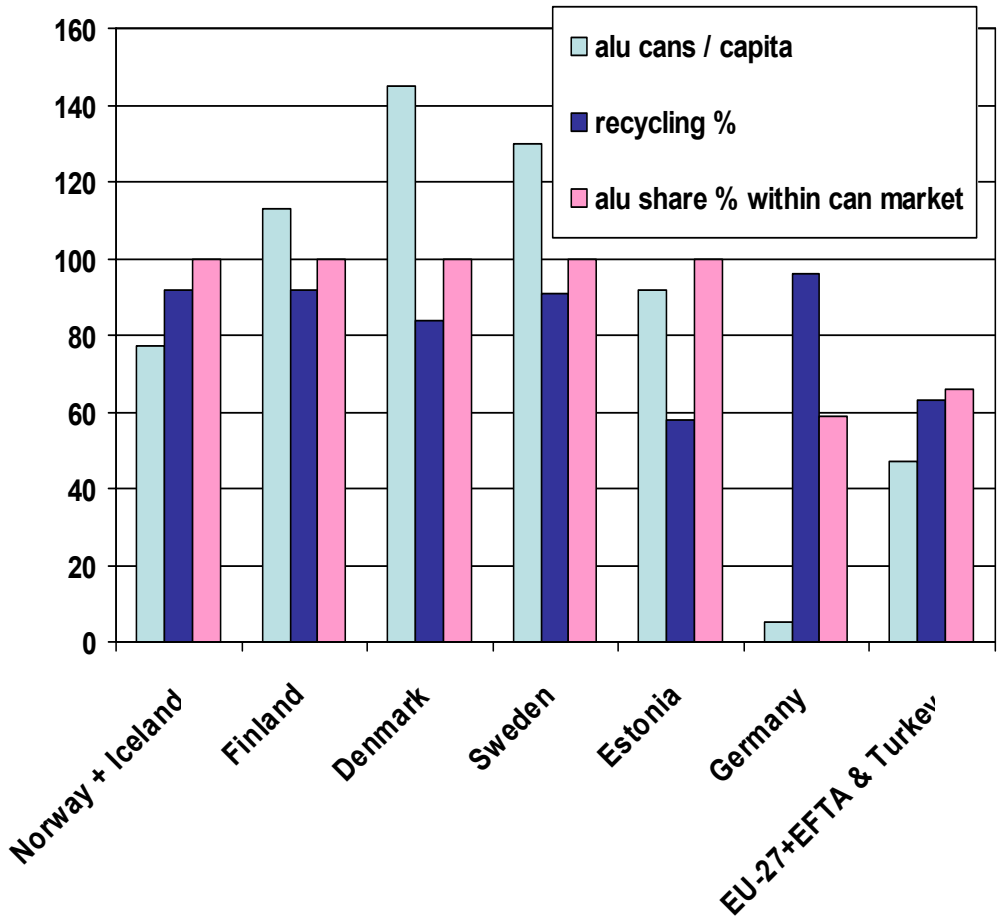
Recycling rates in countries with voluntary and mandatory deposit systems (Europe, 2008)



In countries with well balanced deposit systems (voluntary, organised by industry) aluminium has been able to
- achieve high recycling rates
- maintain high can market shares
- high consumption levels for both beer and carbonated soft drinks.

The exception is Germany with an imposed and unbalanced mandatory deposit system, resulting into a collapse of the canmarket in 2002. Aluminium gained some market share but consumption levels remain very low

NB! The Nordic European market is relatively small and there is a wide acceptance of deposits among the population. This might not be the case in other EU countries

NB! The relatively low recycling rate for Estonia is due to the 'leaking' of cheap Estonian beer cans into Finland

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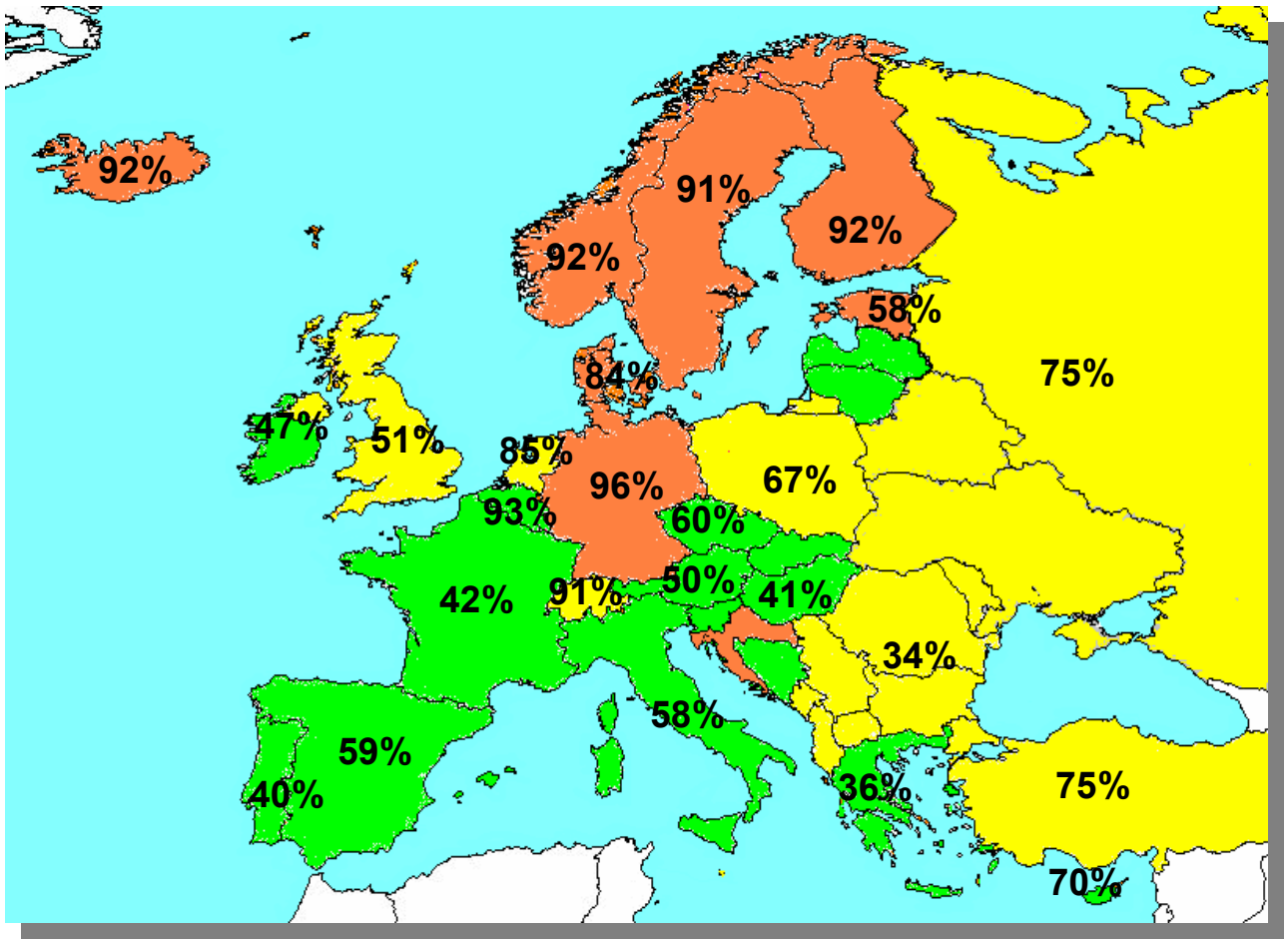
Recycling performance of the aluminium beverage can within the various collection systems in Europe (2008)



Deposit systems for cans (and other containers)

Cans within (kind of) Green Dot systems

Mixed (in C&E Europe mainly scrap value based) systems

NB: Switzerland: levies based system, Netherlands: cans in household waste fraction, UK: more than 400 different county based collection systems, Hungary: mix of scrap value and voluntary deposits based collection

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EAA position on deposit systems

- The conditions for deposit systems differ from country to country and their usefulness depends on the packaging mix, local traditions (use of refillable packaging), the various recovery systems in place, the collection and recycling targets and the overall waste management policy.
- In general, deposit systems can be a helpful instrument to:
  - Achieve high collection rates of used packaging at reasonable costs;
  - Further optimise the eco-efficiency of (existing) packaging recovery schemes;
  - Obtain a high scrap quality (and thus value) of the collected material;
  - Reduce the littering problem (in addition to other measures aiming at improved consumer behaviour);
  - Stimulate direct participation of consumers in waste management solutions.

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Deposits - risk of detrimental market effects

- Deposit systems can provoke detrimental market effects for the aluminium beverage can if the following aspects are not properly addressed:
  - Other packaging (e.g. glass or PET bottles) are often exempted from mandatory deposits and can therefore obtain a market advantage as “easy to get rid of used packaging”
  - The deposit fee on cans is usually (too) high and therefore prohibitive, resulting in an unfair competitive advantage for other packaging systems, e.g. refillable containers (f.e. the German deposit system);
  - Deposit rules are sometimes shaped by authorities as a penalty against the beverage can in order to stimulate a shift in consumption patterns towards refillable bottles;
  - Risk that the scrap value of the returned aluminium cans is not (fully) allocated to cover the collection costs of the UBC’s but is used instead to finance (cross-subsidise) the higher costs of collection of other packaging materials.
  - Aluminium cans need a sufficient degree of market penetration in order to be able to set up a workable and cost-efficient recovery system, otherwise stakeholders might prefer a mono-material solution (e.g. in PET);
  - Fillers and retailers might have different market interests and could stick to refillable systems if the margins are high enough (e.g. on beer in refillable glass bottles.

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Key conditions for a successful deposit system

- Any deposit system should be an integral part of an overall waste management strategy and should be implemented as a cost-efficient solution, without any negative impact on consumption levels and on other well established packaging recovery routes;
- A deposit system should always be supported by the packaging chain (customers and consumers) and should preferably be established on a voluntary basis (instead of an imposed, legal requirement or as a penalty aiming at steering retailer or consumer preferences);
- Following the ruling of the EU Court of Justice on the implementation of the deposit rules in Germany, the implementation measures should comply with the EU internal market rules and should not result into market distortions or the collapse of complete market segments;
- If any, additional eco-taxes should be related to the collection levels and should be reduced to zero once the optimum collection level has been achieved;
- Deposit fees should not be prohibitive nor discriminating between the various packaging materials and / or products involved, to ensure fair competition between recyclable containers and refillable bottles;
- Sufficient preparation time and a legal frame to implement a clearing house as basic requirements for a comprehensive take back system, using state of the art equipment (RVMs);
- Sufficient degree of competition between operators and/or packaging solutions and materials.

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Main management principles for a successful deposit system

- If organised as a centralized solution including deposit clearing and management of material flows the following principles have to be applied:
  - economic evaluation and accounting principles have to be fully transparent and are important tools for further optimising the functioning of the system;
  - collection costs and handling fees should be calculated and applied for each packaging application;
  - The scrap value of the returned packaging should be used exclusively for the corresponding material and / or packaging - no cross-subsidies between packaging systems and / or materials!;
  - Unredeemed deposits should be used exclusively to finance the scheme and should be allocated per material / packaging.

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Mixed packaging waste (Green Dot-based system, example: DSD - Germany)

Sorting Centre:

Opening yellow sack

Separation by size

Transport belt

Separation by eddy current

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Recycling routes mixed aluminium packaging

Eddy Current

Re-melting

''Mono'' alu material

Mechanical Separation

Laminated (foil) packs

Pyrolysis

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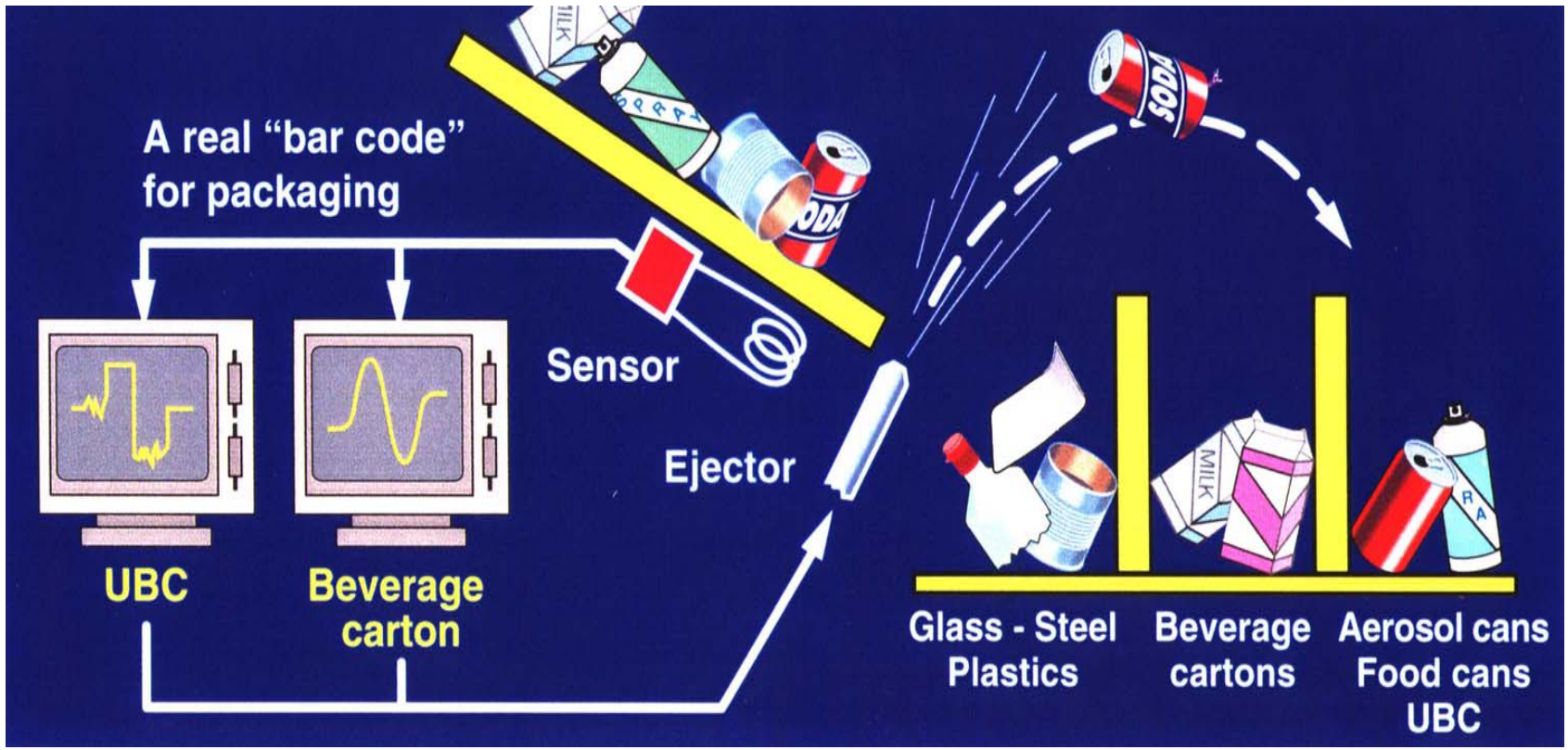
Mixed light packaging: automated sorting (e.g. with detector- ejectors in sorting centres)



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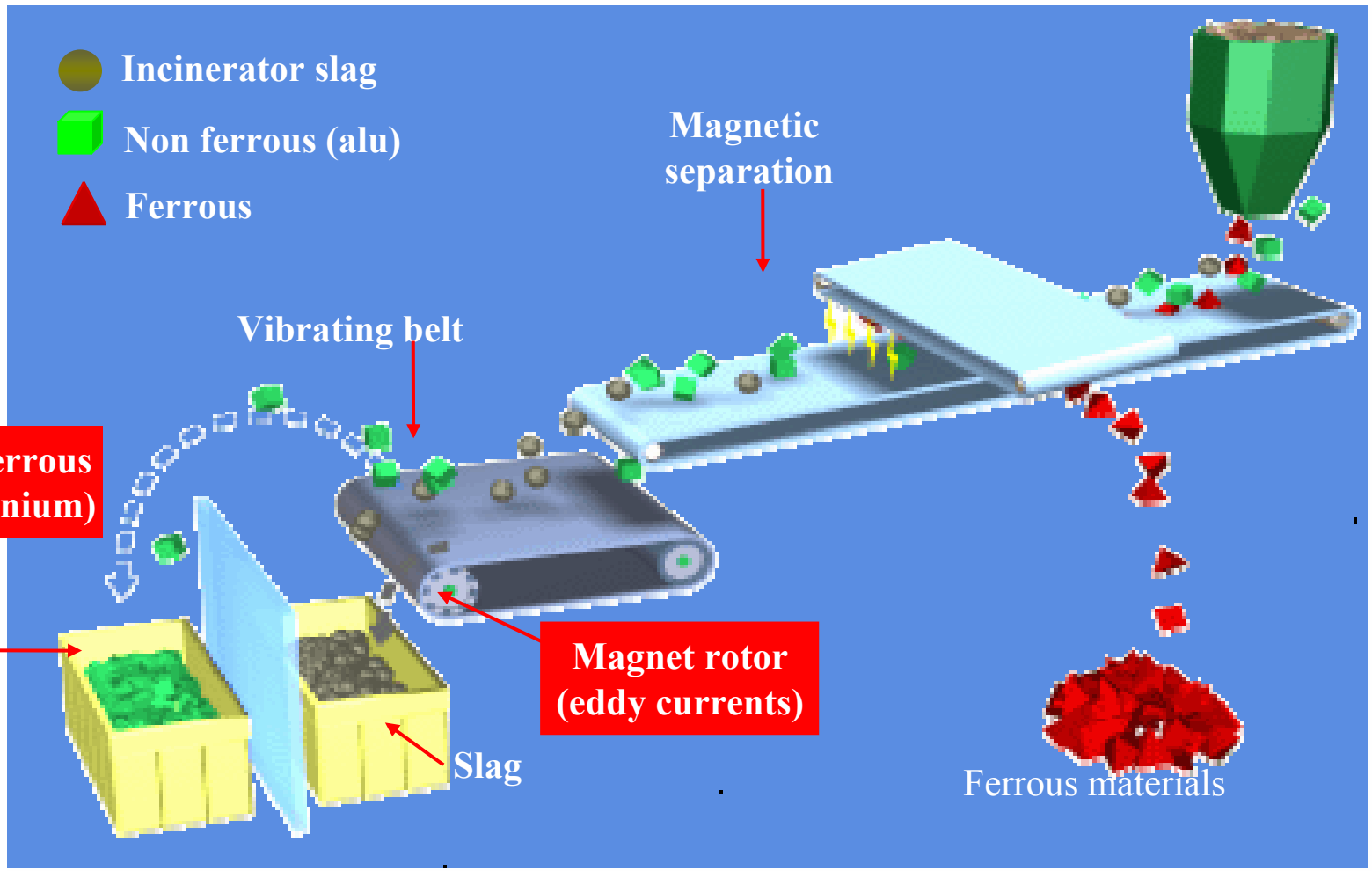
Aluminium recovery by eddy current (e.g. collecting aluminium from incinerator bottom ashes



Performance of other collection systems

- **General (household) waste collection systems** makes packaging less suitable for recycling (mixed with other waste, contamination), is bulky and costly.
- **Kerbside collection** is relatively cheap and is convenient for households but it doesn't cover consumption away from home. Material sorting is not always optimal, additional sorting required
- **Bring systems** (igloos, can banks) are cheaper but little ease or incentive for consumers, the emptying and transporting part is sub-optimal (no flattening) and could result in overflowing bins and litter
- **Multi-material ('Green Dot') systems** are usually cheap and can be efficient but might have some serious drawbacks:
  - Performances vary across Europe, depending on their day-to-day management (risk of focusing only on large fractions and 'overlooking' of individual items like cans)
  - Distortions caused by differences in fees and inaccurate data
  - Risk of cross-subsidies not covering the real costs per material
  - Might result in monopolies with a limited number of waste management operators subcontracted
  - Limited consumer incentives, resulting in relatively low recovery rates for less performing systems

Advantages / disadvantages of the various collection schemes in place

- General household / packaging waste collection, kerbside, bring and other multi-material collection systems have mixed results, depending on the ‘pollution’ levels
- Separate and incentive based collection schemes (voluntary bring, cash-for-cans, etc.) have a few drawbacks but also some serious advantages, in particular for the aluminium beverage can > high scrap

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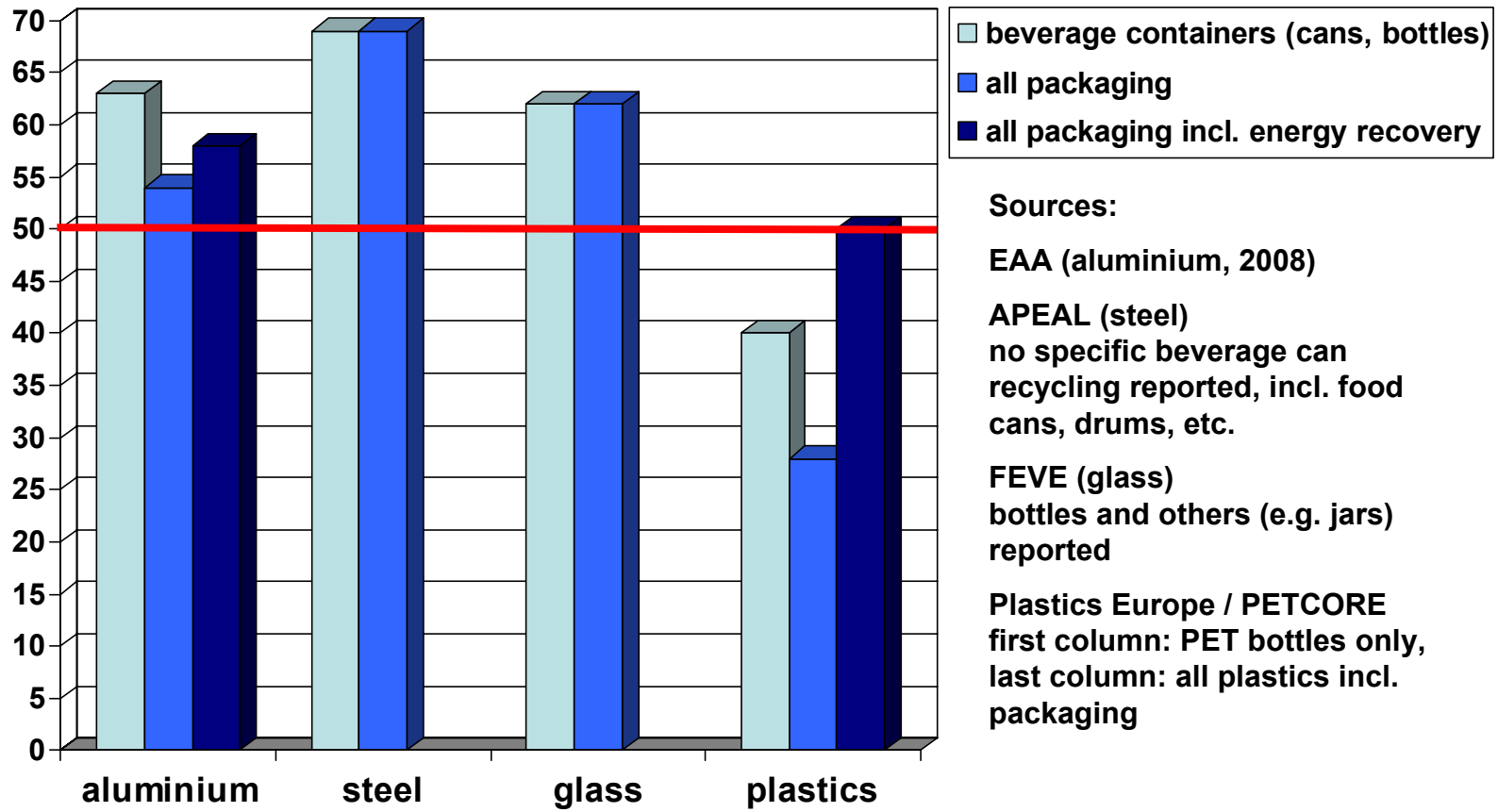
Recycling & recovery rates all packaging materials (Europe / EU 27+, 2007/08)



Sources:

EAA (aluminium, 2008)

APEAL (steel)
no specific beverage can recycling reported, incl. food cans, drums, etc.

FEVE (glass)
bottles and others (e.g. jars) reported

Plastics Europe / PETCORE
first column: PET bottles only, last column: all plastics incl. packaging

Conclusions

- The adequacy of a deposit system depends on its economic impact, the packaging recovery / recycling schemes in place and the underlying ambitions and objectives, local traditions and market conditions.
- Therefore, the market success of the aluminium beverage can under a deposit regime highly depends on whether its potential advantages can be made relevant and visible within a cost efficient and convenient system.