



# Aluminum Cans Market Assessment

Improvement levers - Australia

May 2023





# List of abbreviations – selection

Abbreviation	Description
BCs	Beverage cartons
CAPEX	Capital expenditure
C2C	Can-to-can
DRS	Deposit return scheme
EPR	Extended producer responsibility
HH	Households
KSA	Kingdom of Saudi Arabia
MRF	Material recovery facility
PAYT	Pay as you throw
RVM	Reverse vending machine
SEA	South East Asia
UBC	Used beverage cans



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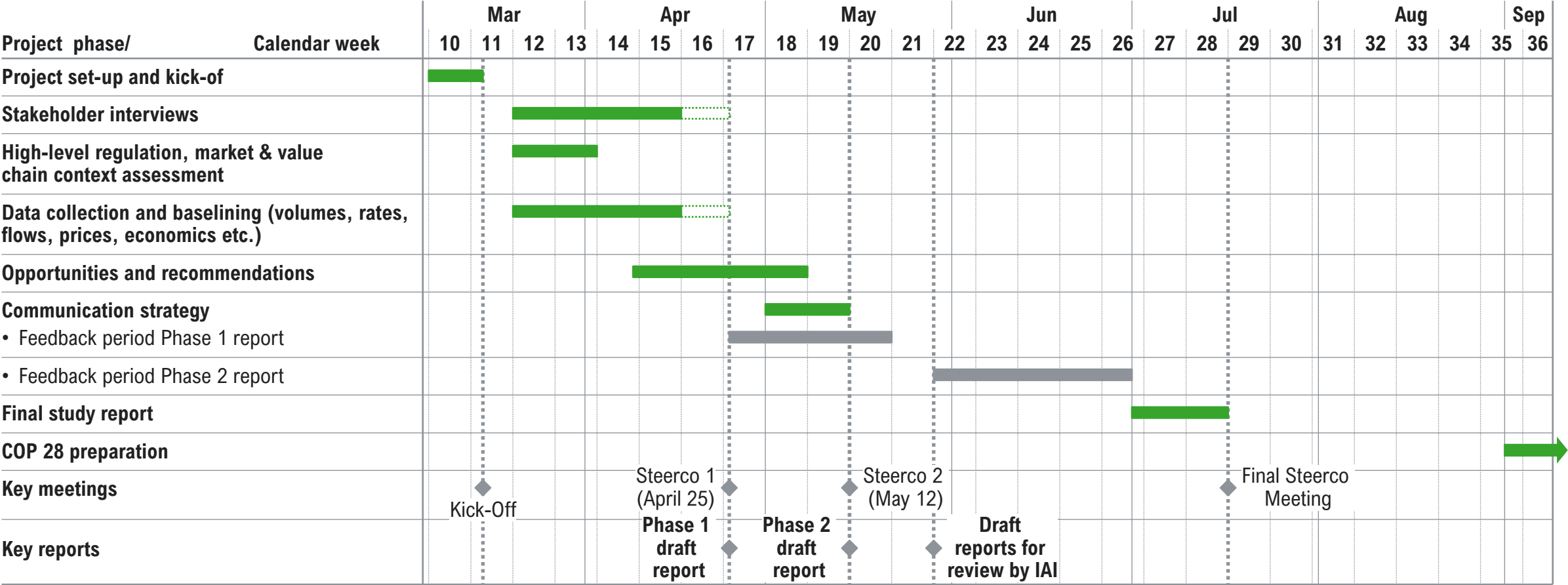


# **1. Alu can lifecycle – overview of strategic recommendations**



# The main project timeline spans 2.5 months, with the draft report of phase 2 delivered in mid-May, followed by a review by the IAI team

Project timeline





# The comprehensive review of the AS IS situation in the 6 countries in scope was used to develop levers and build a prioritized set of strategic recommendations

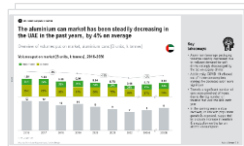
## Strategic recommendations development process



### 1 Current aluminium can market assessment

- Modelling of Put-On-Market volumes
- Review of waste management framework & regulation
- Modelling of the aluminium can lifecycle (from production to disposal or recycling)

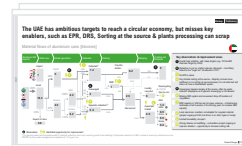
#### Put on market volumes



#### Waste management framework



#### Material flow analysis



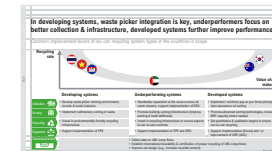
### 2 Improvement levers identification & consolidation

- Comprehensive list of improvement levers per country
- Consolidation on a cross-country level to identify synergies & common themes

#### Improvement levers per country



#### Common themes & cross-country synergies



### 3 Prioritized set of strategic recommendations

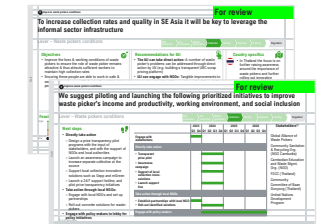


- Detailed one-pagers developed for each improvement lever
- In selected cases, more material has been provided to provide additional insights/inspiration/guidelines
- Recommendations were prioritized considering impact & feasibility

#### Prioritized levers per country



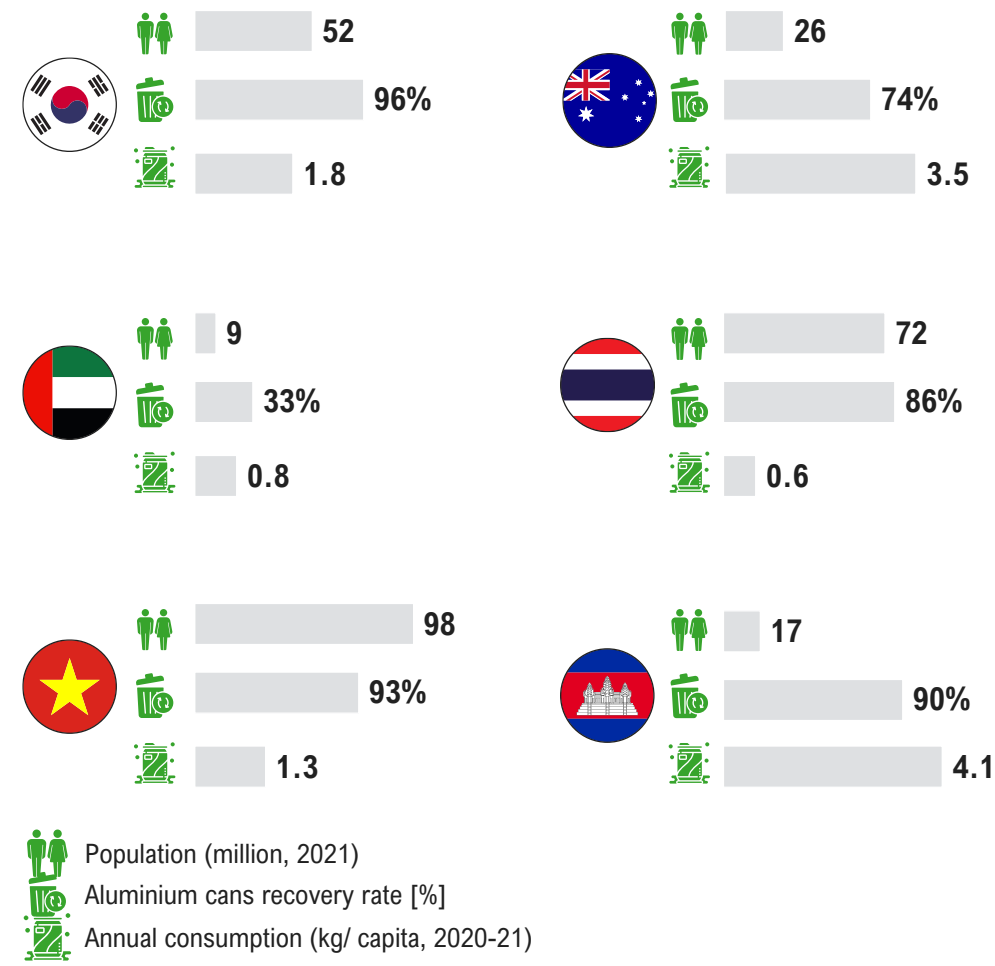
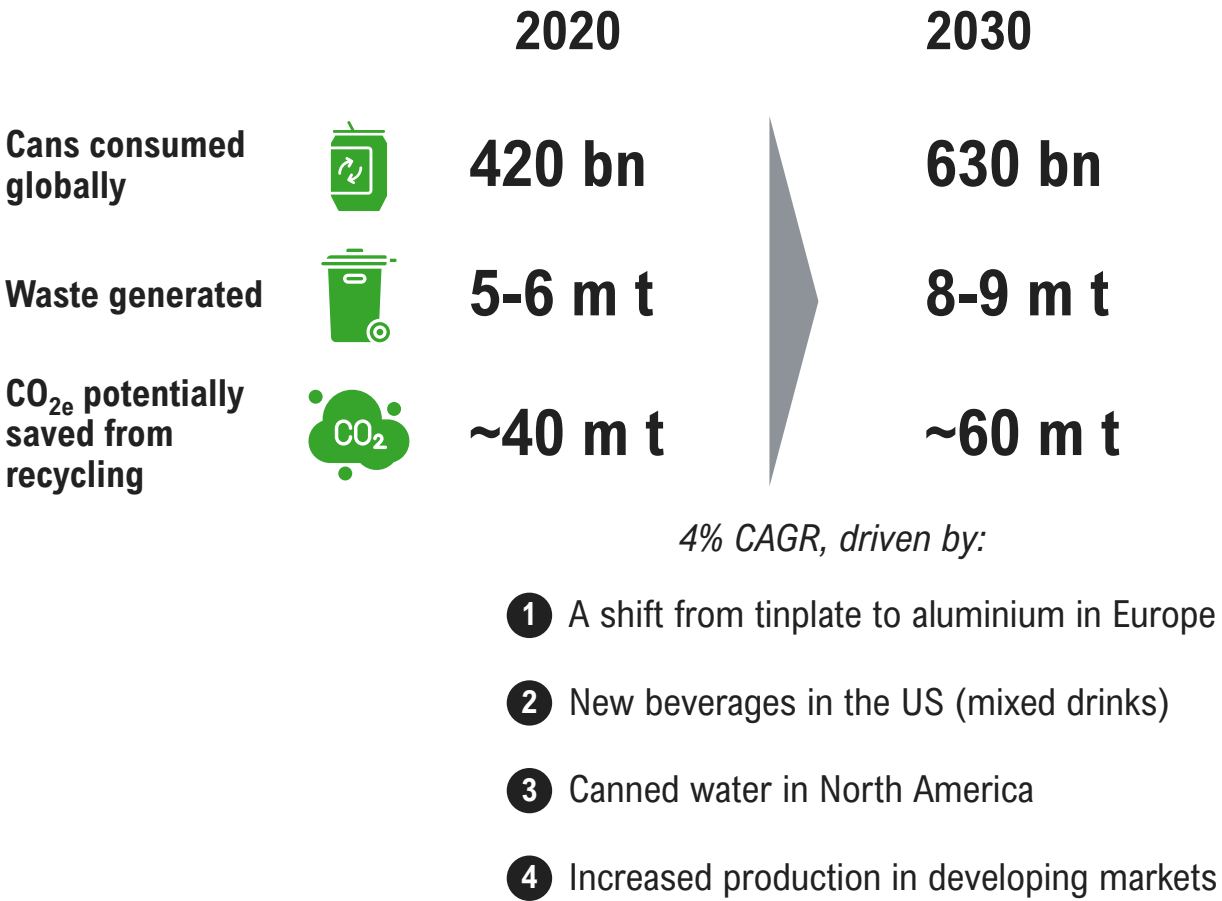
#### Detailed one-pagers & planning per lever





# Aluminium cans are the package of choice for alcoholic and soft drinks, increasing to >600 bn units consumed annually by 2030; Recycling them could save 60 m t CO<sub>2e</sub>

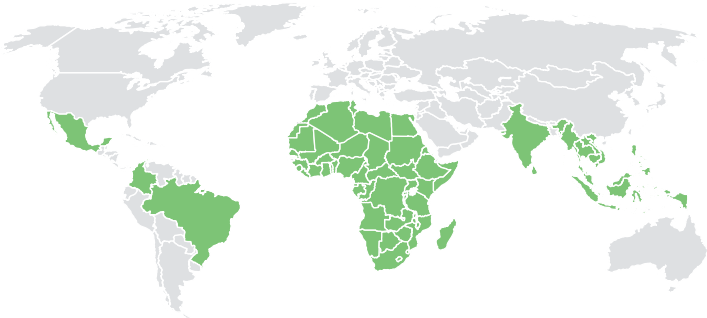
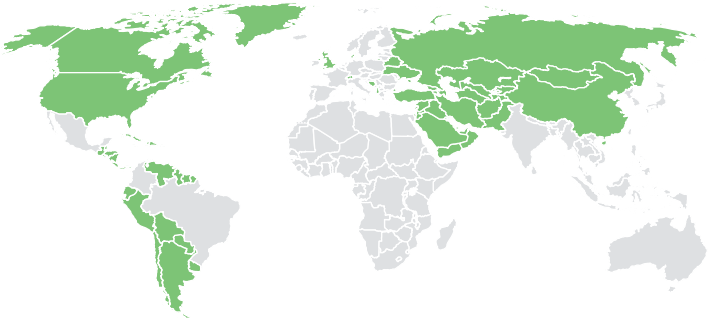
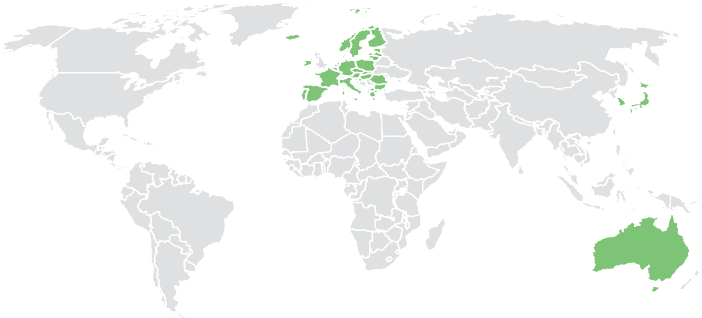




## Aluminium cans global overview





# Three groups of countries are identified based on the characteristics of their waste management systems

Global typical country characteristics by system type for UBC recycling

	Infrastructure light models	Transitioning systems	Infrastructure heavy systems
	 <p>Countries with high number of waste pickers<sup>1)</sup> High proportion of collection from informal economy</p>	 <p>Collection infrastructure largely to fully developed No mandatory/ well-functioning EPR, no DRS</p>	 <p>More complex waste management systems EPR enforced and/or DRS present</p>
Collection 	<ul style="list-style-type: none"> <li>Street pickers collect UBC for their value</li> <li>No source separation in formal system</li> </ul>	<ul style="list-style-type: none"> <li>Mostly single stream collection with some experiments into dual stream sorting, no DRS</li> </ul>	<ul style="list-style-type: none"> <li>Mature sorting at the source (with room for standardization / improvement); often with DRS</li> </ul>
Sorting 	<ul style="list-style-type: none"> <li>Junkshops trade scrap through aggregators</li> <li>Further sorting done mostly on landfill</li> </ul>	<ul style="list-style-type: none"> <li>Developing, but lacking sorting infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Mature sorting infrastructure (with room for further streamlining / automation)</li> </ul>
Recycling 	<ul style="list-style-type: none"> <li>Cans often downcycled (exception is Thailand) with bad impact on environment</li> </ul>	<ul style="list-style-type: none"> <li>Missing local recycling infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Generally well-established quantitative targets, no qualitative targets</li> </ul>
Regulation 	<ul style="list-style-type: none"> <li>EPR-talks mostly ongoing, in various stages of advancement</li> </ul>	<ul style="list-style-type: none"> <li>EPR typically absent or not enforced</li> <li>Lacking clear and ambitious targets</li> </ul>	<ul style="list-style-type: none"> <li>Well established EPR, with significant transparency on system performance</li> </ul>

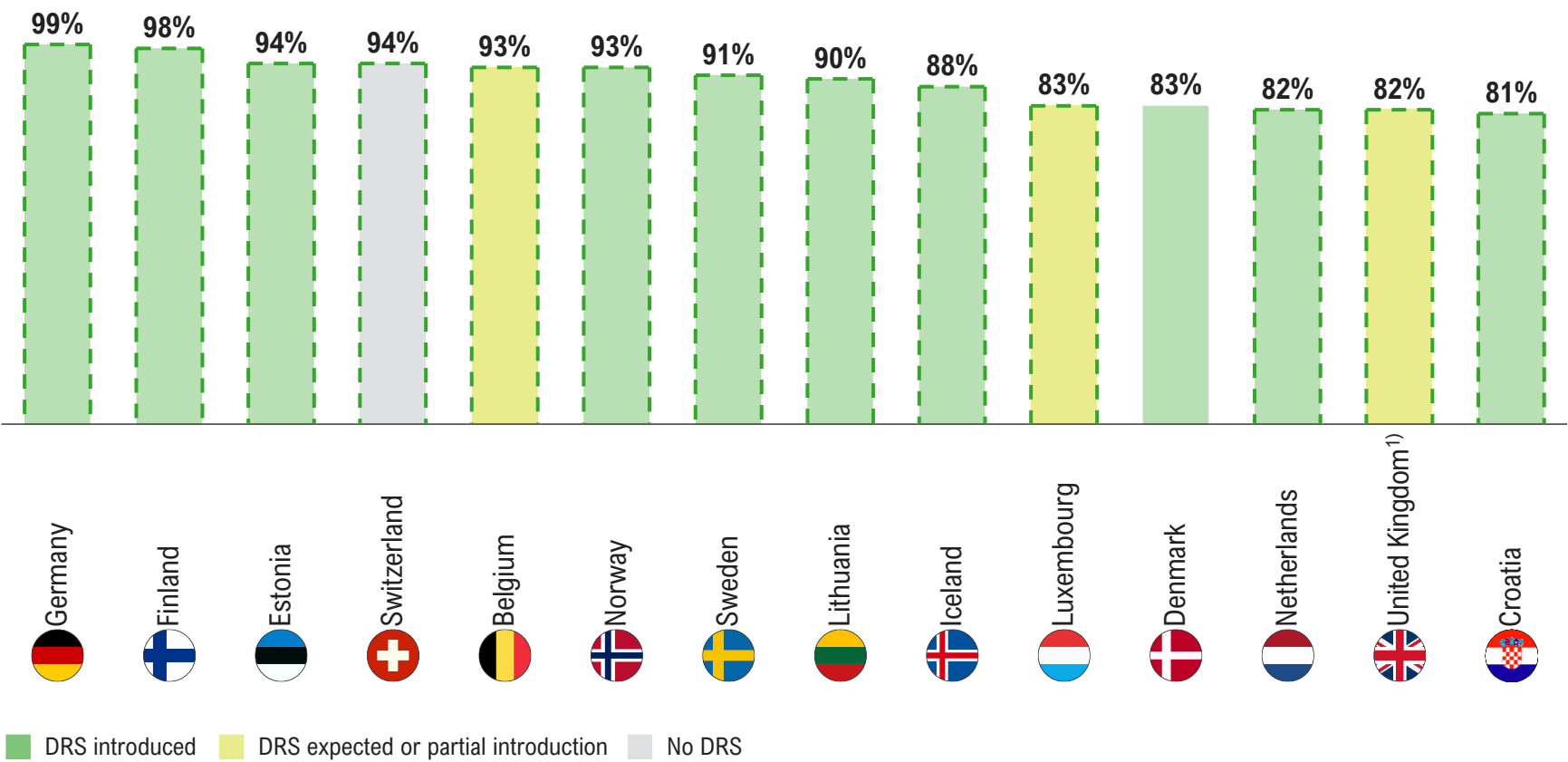
1) Roland Berger analysis



# Very high recycling rates are achievable, as seen in European countries, with the support of efficient EPR and DRS in place

Aluminium cans recycling rate, Europe [%, 2020]  
Subtitle

EU countries with >80% recycling rate of aluminium cans [%, 2020]



1) Phased implementation of EPR in the UK in 2023

## Key takeaways

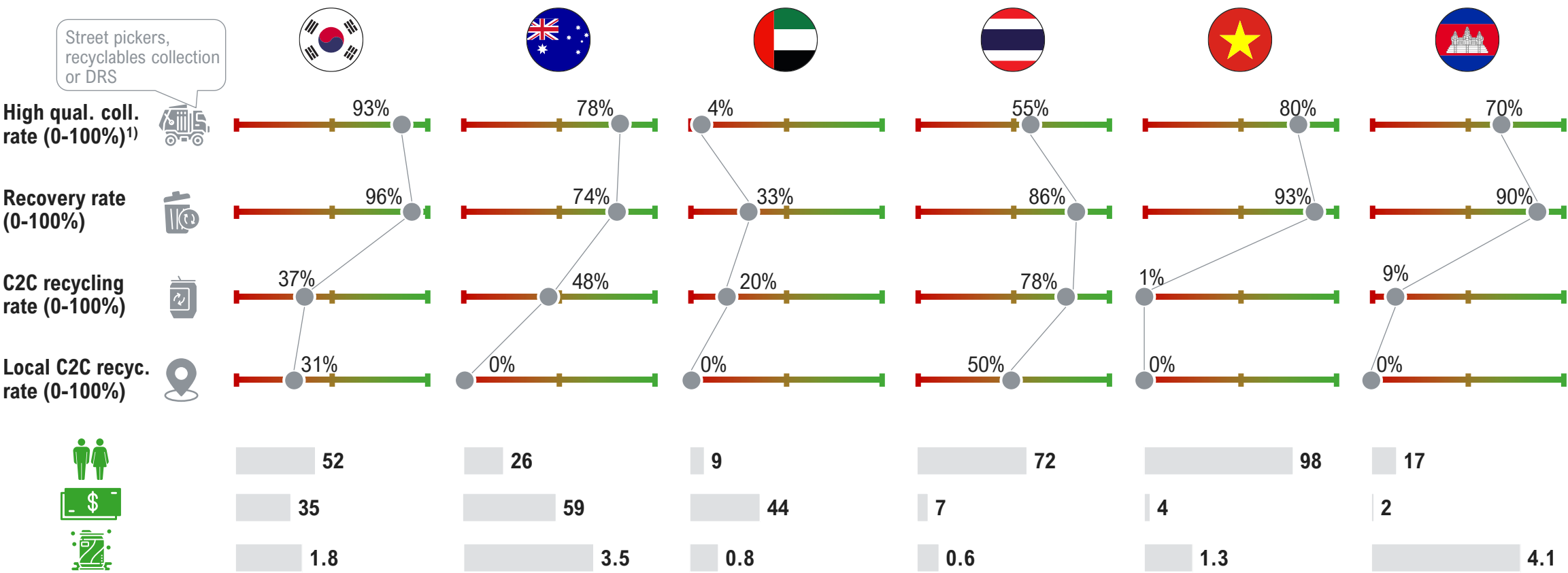


- Many European countries have >80% recycling rates of aluminium cans, mostly in the Western and Northern parts of the continent
- Denmark is the only EU country without an EPR for packaging, together with the UK as the other major European country (expected in both)
- DRS are in place in most high-performing countries
  - All EU countries are set to introduce DRS for aluminium cans and PET by 2029
  - The UK will possibly introduce DRS by 2026
  - Scotland already has a DRS system in place



# The performance of each country was analyzed in phase 1 of the project – particular challenges were identified at various stages and points of the value chain

Summary of aluminium can recycling performance for the countries in focus



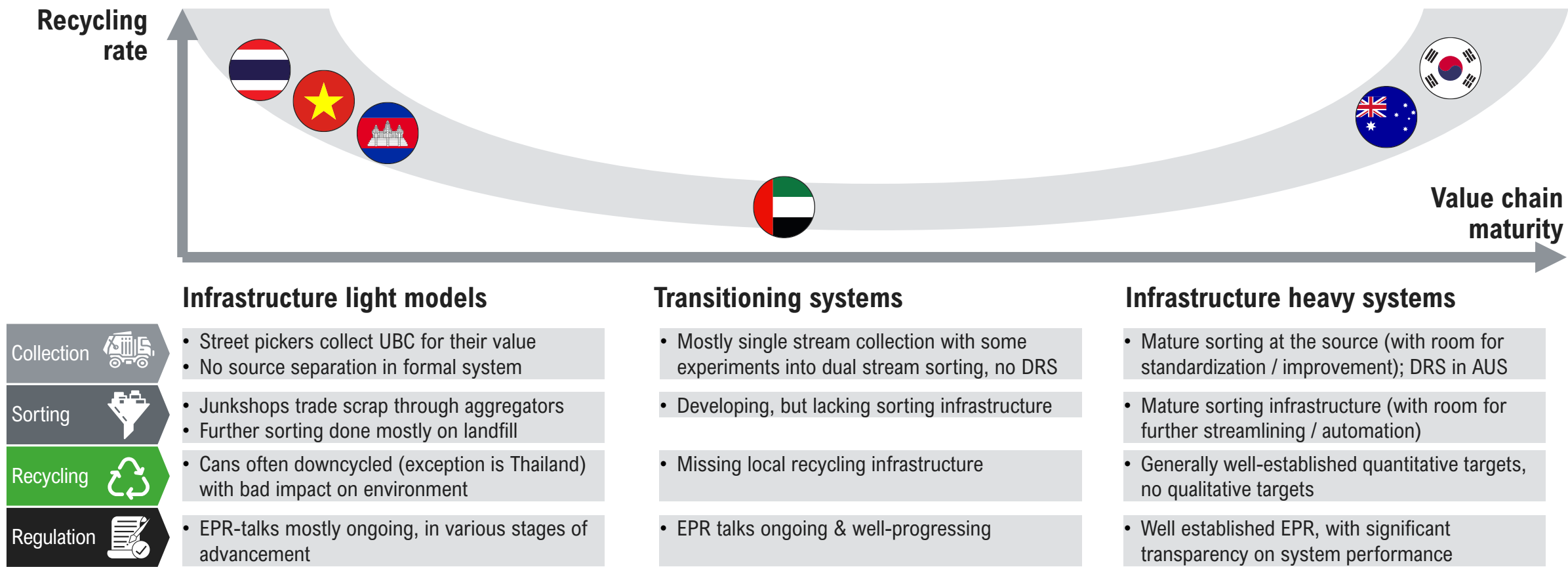
Population (million, 2021) GDP per capita (USD k/ capita, 2021) Annual consumption (kg/ capita, 2020-21)

1) High quality collection corresponds to collection done by street pickers, separate collection (e.g. curbside "recyclables stream") or DRS



# The collection-recycling systems of the countries in scope could be categorized into 3 broad categories, based on the common characteristics of the value chain

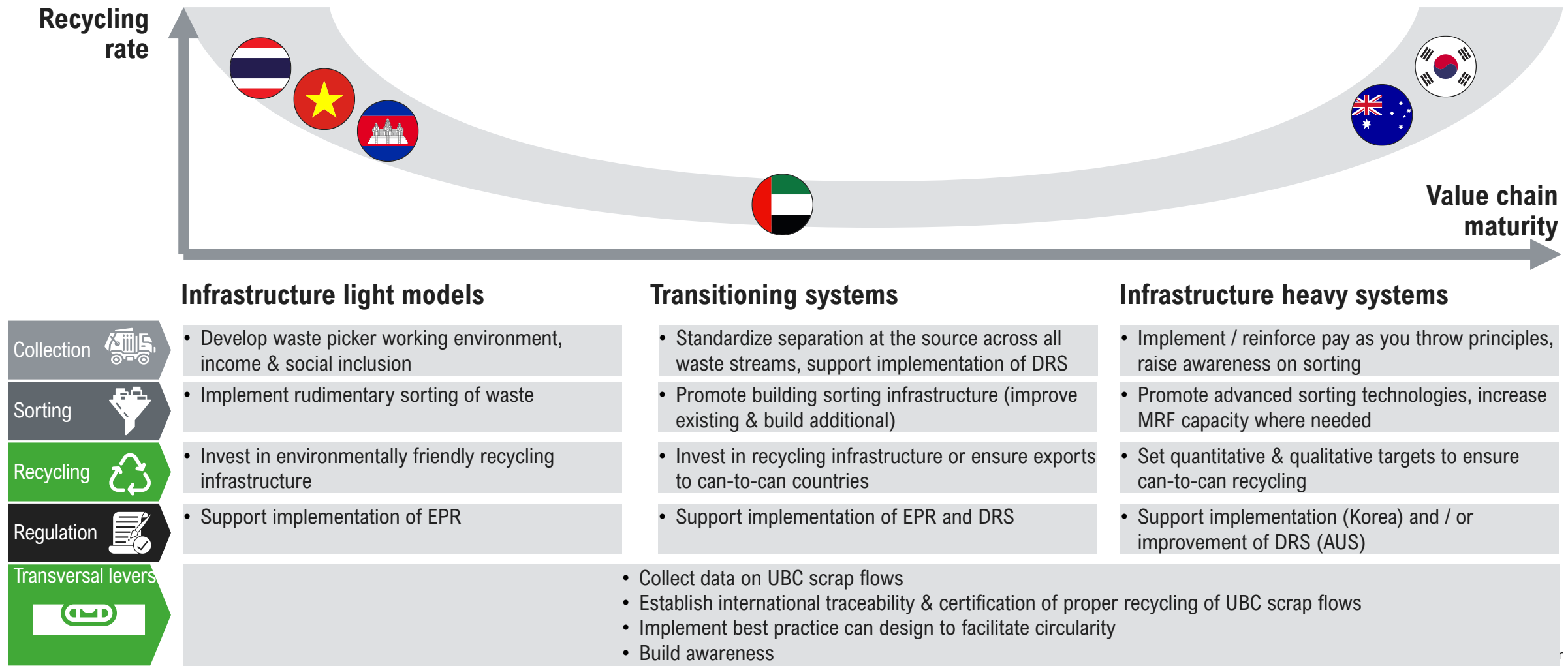
Performance of alu can recycling system types in the countries in scope





# In developing systems, waste picker integration is key, underperformers focus on better collection & infrastructure, developed systems further improve performance

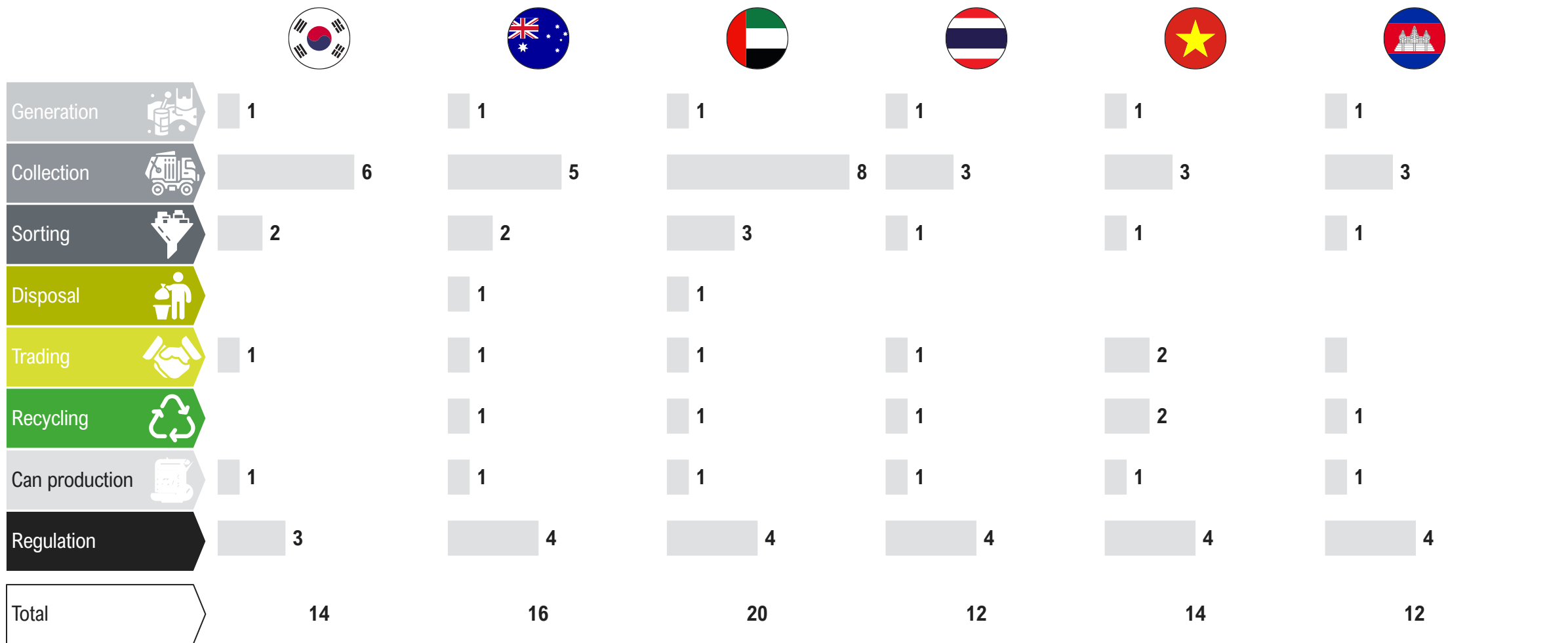
Common improvement levers of alu can recycling system types in the countries in scope





# For each of the 6 countries we have outlined a series of potential strategic levers to improve the aluminum can circularity

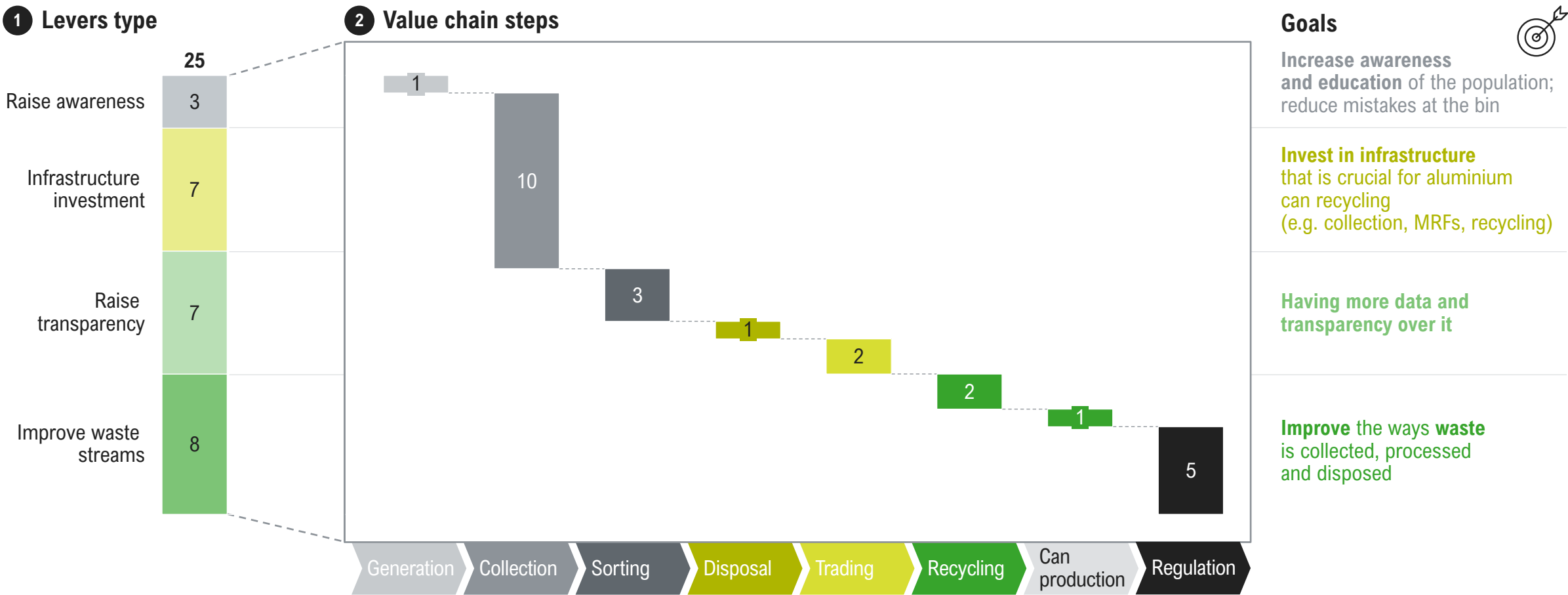
Potential strategic levers overview by value chain stage and country [# levers]





# The potential levers could target an increase in awareness, transparency in waste flows or investments in infrastructure along the value chain

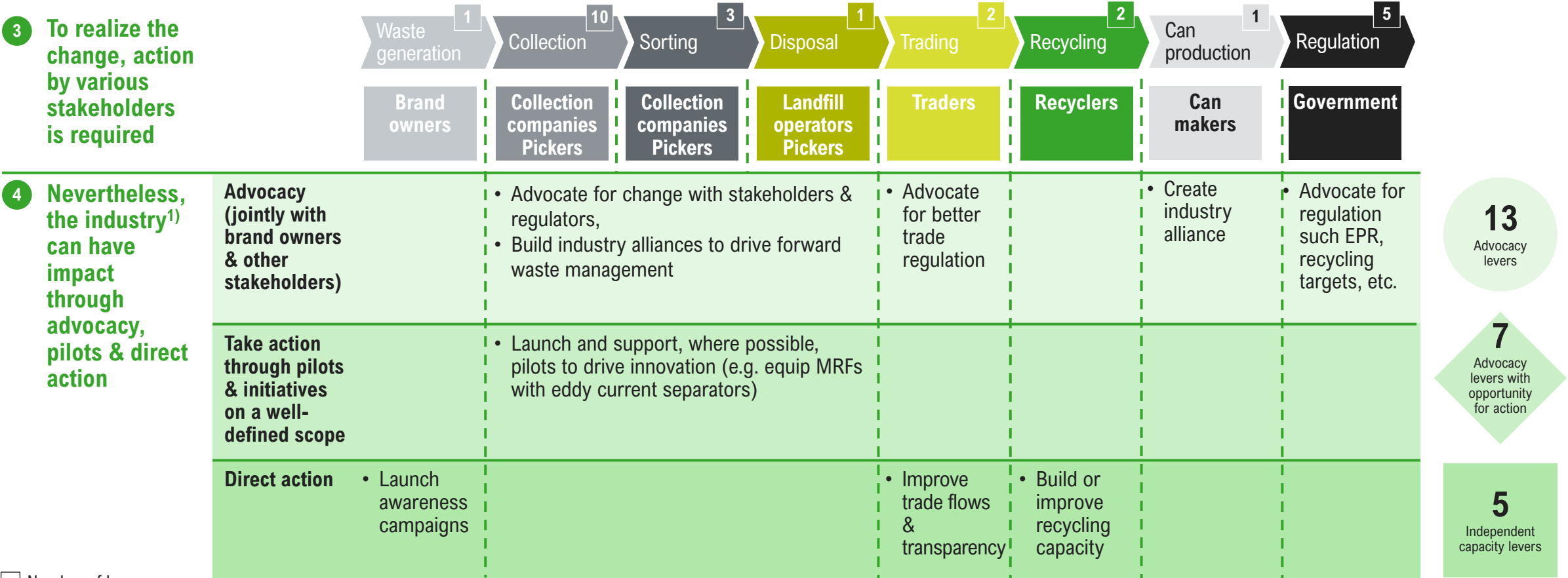
Potential strategic levers overview by value chain stage & category [# levers]





# For the implementation of the levers the alu industry needs to consider roles of key stakeholders in value chain; to contribute through direct action or advocacy

Potential strategic levers, by stakeholders and impact of the aluminium industry

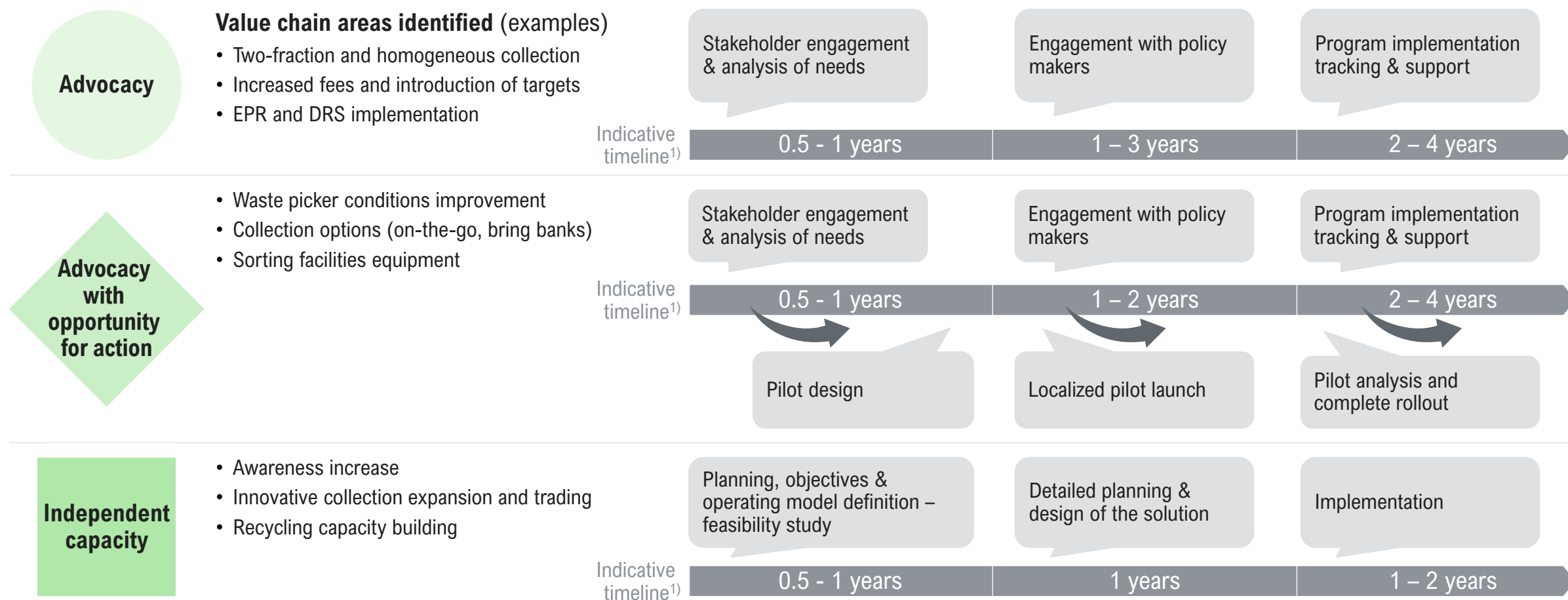


1) The industry refers to the primary aluminium producers as well as those companies involved in processing aluminium for can production



# Levers follow a structured timeline, with actions involving stakeholder engagement, pilot launch and full rollout – differences depending on industry involvement

Improvement levers typical general actions by aluminium industry impact category





1) Indicative timeline which may differ significantly for individual levers



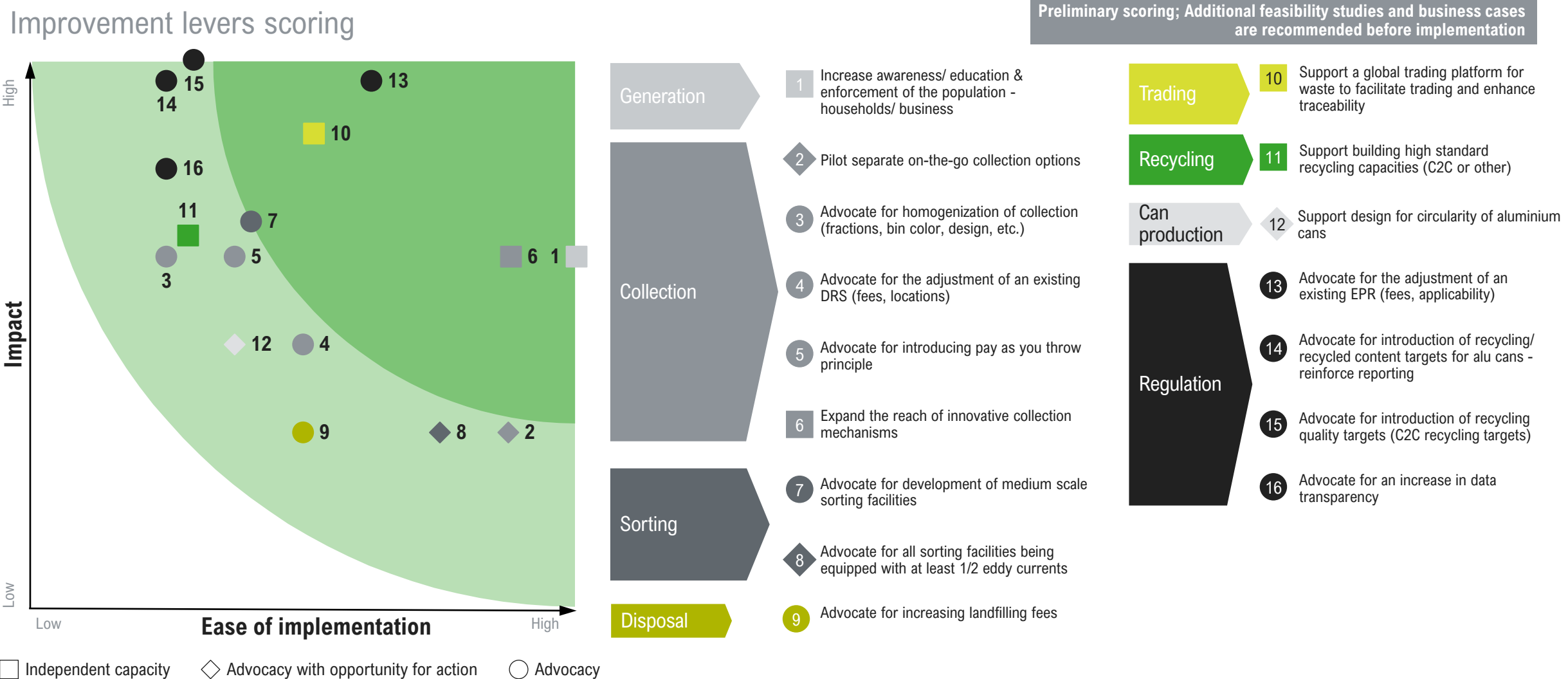
# The strategic levers were scored top-down based on 8 criteria related to feasibility & impact; additional (pre)feasibility studies and business cases may be required

Potential strategic levers, assessment criteria

	Criteria	Description	Scoring				
			Low		Medium		High
<b>Ease of implementation</b> 	<b>Cost of implementation</b>	Approximate cost of implementation of lever (feasibility studies, pilots, investment)	High cost (USD 100s m)		Medium cost (USD m)		Low cost (<USD 1 m)
	<b>Timeline</b>	Time from the initiation of lever until full implementation and rollout	Long term (>=10 years)		Medium term (3-10 years)		Short term (<3 years)
	<b>Stakeholder alignment</b>	Number of key stakeholders involved in the initial discussions and throughout the process	Multiple stakeholders involved (>5)		A few stakeholders involved (3-5)		1-2 stakeholders involved
	<b>Leverage of aluminium industry</b>	Extent to which the aluminium industry can take action independently from other stakeholders & with limited regulatory constraints	Low industry leverage		Medium industry leverage		High industry leverage
<b>Impact</b> 	<b>Recovery rate</b>	Expected impact on the country's aluminium cans recovery rate after full implementation	Low/ no impact on recovery rate (<2%)		Medium impact on recovery rate (2-5%)		High impact on recovery rate (>5%)
	<b>Quality of recovery</b>	Expected effect on the quality of the aluminium cans recovered after full implementation	No impact on quality of recovery		Limited impact on quality of recovery		Some impact on quality of recovery
	<b>ESG</b>	Expected ESG impact (e.g. social inclusion, emission reduction) after full implementation	No social impact		Limited social impact		Some social impact
	<b>Cost impact in value chain</b>	Influence on the cost of UBC or recycling process after full implementation	Negative impact on cost		Limited impact on cost		Positive impact on cost



# Recommendations have been mapped based on feasibility and impact assessment, recommendations with high impact & feasibility can be tackled first





# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

## Improvement levers list and applicability



1	Increase awareness/ education & enforcement of the population - households/ business	Generation
2	Pilot separate on-the-go collection options	Collection
3	Advocate for homogenization of collection (fractions, bin color, design, etc.)	Collection
4	Advocate for the adjustment of an existing DRS (fees, locations)	Collection
5	Advocate for introducing pay as you throw principle	Collection
6	Expand the reach of innovative collection mechanisms	Collection
7	Advocate for development of medium scale sorting facilities	Sorting
8	Advocate for all sorting facilities being equipped with at least 1/2 eddy currents	Sorting
9	Advocate for increasing landfilling fees	Disposal
10	Support a global trading platform for waste to facilitate trading and enhance traceability	Trading
✓ 11	Support building high standard recycling capacities (C2C or other)	Recycling
12	Support design for circularity of aluminium cans	Can production
13	Advocate for the adjustment of an existing EPR (fees, applicability)	Regulation
14	Advocate for introduction of recycling/ recycled content targets for alu cans - reinforce reporting	Regulation
15	Advocate for introduction of recycling quality targets (C2C recycling targets)	Regulation
16	Advocate for an increase in data transparency	Regulation



# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

Overview of strategic levers – Generation



#	Generation lever	Aluminium industry action	Ease of implementation	Impact
1	Increase awareness/ education & enforcement of the population - households/ business	<ul style="list-style-type: none"> <li>Develop and promote educational resources that help the broader public understand the importance of UBC recycling</li> <li>Design and launch advertising campaigns (led by the industry or supported by a wider consortium of value chain players)</li> </ul>	<div>low high</div>	<div>low high</div>



# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

## Overview of strategic levers – Collection



#	Collection lever	Aluminium industry action	Ease of implementation	Impact
2	Pilot separate on-the-go collection options	<ul style="list-style-type: none"> <li>Advocate for the widespread installation of separate on-the-go collection systems in public spaces</li> <li>Establish on-the-go initiatives in selected context (e.g. concerts, festivals, shopping malls, airports, etc.) in close collaboration with relevant parties</li> </ul>	low high	low high
3	Advocate for homogenization of collection (fractions, bin color, design, etc.)	<ul style="list-style-type: none"> <li>Advocate for standardized collection fractions and bin characteristics</li> <li>Advocate for / get involved with pilot projects by contributing to pilot projects partnering with collection companies, municipalities, brand owners and HoReCa players</li> </ul>	low high	low high
4	Advocate for the adjustment of an existing DRS (fees, locations)	<ul style="list-style-type: none"> <li>Advocate for the implementation of best practices leveraging other countries' experience</li> </ul>	low high	low high
5	Advocate for introducing pay as you throw principle	<ul style="list-style-type: none"> <li>Perform feasibility study on the introduction of PAYT</li> <li>Advocate to policy makers to implement PAYT</li> <li>Support the launch awareness campaigns to educate people of the benefits and functionalities of the system</li> </ul>	low high	low high
6	Expand the reach of innovative collection mechanisms	<ul style="list-style-type: none"> <li>Support initiatives that propose innovative solutions for UBC collection</li> <li>Launch ideation initiatives (e.g. "hackathon")</li> </ul>	low high	low high

□ Independent capacity

◇ Advocacy with opportunity for action

○ Advocacy

✓ Partially applicable for the selected country



# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

## Overview of strategic levers – Sorting, Disposal and Trading



# Sorting lever	Aluminium industry action	Ease of implementation	Impact
7 Advocate for development of medium scale sorting facilities	<ul style="list-style-type: none"> <li>Collaborate with MRF operators to further improve their operation wrt. UBC (provide technical expertise, ensure all sorting facilities are equipped with eddy current separators)</li> <li>Engage with collection &amp; waste management companies to advocate for building relevant sorting facilities (e.g. transfer stations equipped with conveyer belts, material recovery facilities in UAE, etc.)</li> </ul>	low high	low high
8 Advocate for all sorting facilities being equipped with at least 1/2 eddy currents		low high	low high
# Disposal lever	Aluminium industry action	Ease of implementation	Impact
9 Advocate for increasing landfilling fees	<ul style="list-style-type: none"> <li>Advocate to local authorities and landfill managers for an increase in fees</li> </ul>	low high	low high
# Trading lever	Aluminium industry action	Ease of implementation	Impact
10 Support a global trading platform for waste to facilitate trading and enhance traceability	<ul style="list-style-type: none"> <li>Partner with relevant stakeholders to create an international UBC scrap trading platform that increases transparency</li> </ul>	low high	low high



# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

## Overview of strategic levers – Recycling



# Recycling lever	Aluminium industry action	Ease of implementation	Impact
✓ 11 Support building high standard recycling capacities (C2C or other)	<ul style="list-style-type: none"> <li>Perform feasibility studies on the opportunity of installing additional or upgrading existing recycling capacity</li> <li>Assess the impact of such projects on adjacent markets that use recycled UBCs as feedstock</li> </ul>	low high	low high
# Can production lever	Aluminium industry action	Ease of implementation	Impact
12 Support design for circularity of aluminium cans	<ul style="list-style-type: none"> <li>Continuously engage with players across the value chain to encourage all players across the value chain to always opt for the best possible design choices</li> <li>Continue ongoing research into can design (aim for unialloy cans, pursue further light weighting of cans, etc.)</li> </ul>	low high	low high



# While some levers are internationally applicable, some topics of investigation are selectively relevant and were identified for Australia

## Overview of strategic levers – Regulation

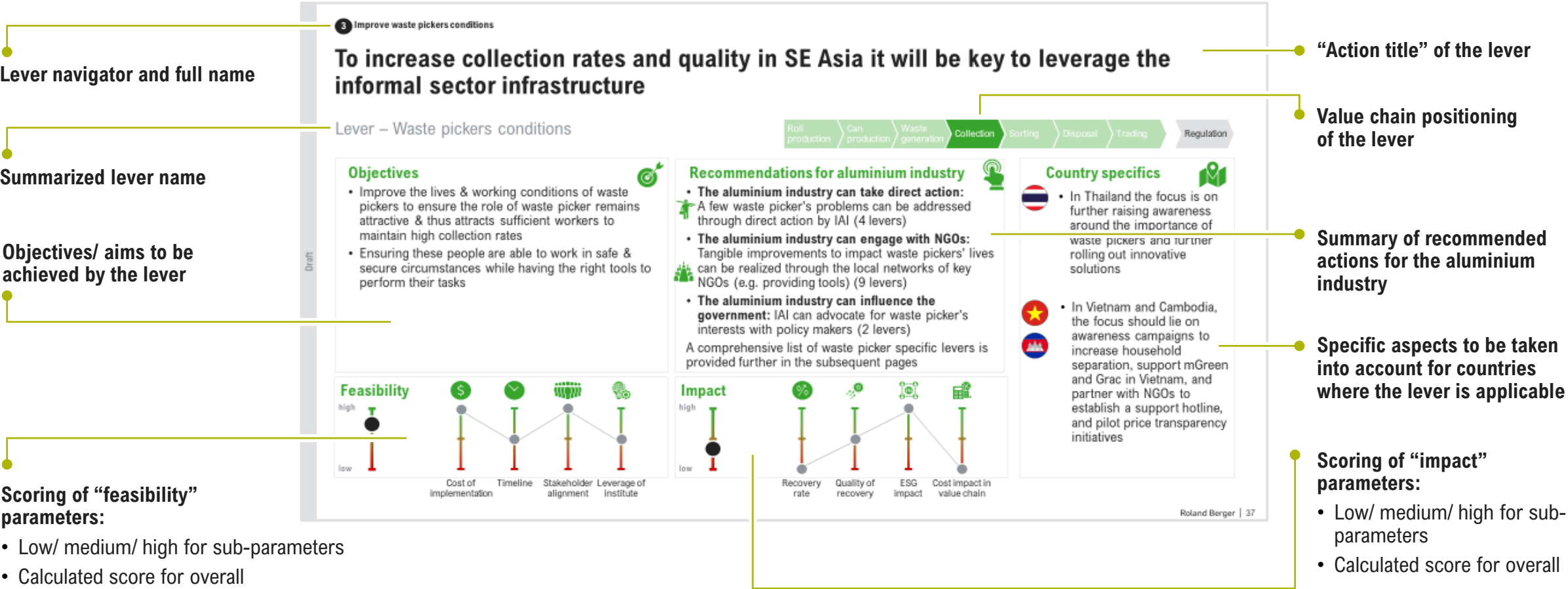


#	Recycling lever	Aluminium industry action	Ease of implementation	Impact
13	Advocate for the adjustment of an existing EPR (fees, applicability)	<ul style="list-style-type: none"> <li>Analyze existing waste management frameworks, engage with stakeholders to encourage alignment on EPR, and provide inputs to policy makers</li> <li>Advocate for the implementation of functioning EPR</li> </ul>	low high	low high
14	Advocate for introduction of recycling/ recycled content targets for alu cans - reinforce reporting	<ul style="list-style-type: none"> <li>Advocate for policies that support the introduction of recycling and recycled content targets</li> <li>Advocate for transparent reporting of progress</li> <li>Encourage research and development of innovative recycling technologies</li> </ul>	low high	low high
15	Advocate for introduction of recycling quality targets (C2C recycling targets)	<ul style="list-style-type: none"> <li>Advocate for policies that support the introduction of C2C recycling and C2C recycled content targets</li> <li>Advocate for transparent reporting of progress</li> </ul>	low high	low high
16	Advocate for an increase in data transparency	<ul style="list-style-type: none"> <li>Advocate for a legislative framework that requires mandatory recycling reporting</li> <li>Partner with relevant stakeholders and provide support to local policy makers in the designing of a centralized data sharing tool across the value chain</li> </ul>	low high	low high



# Each lever has been summarized in one-pagers, following a similar structure – for each lever an indicative planning is provided, subject to industry commitment

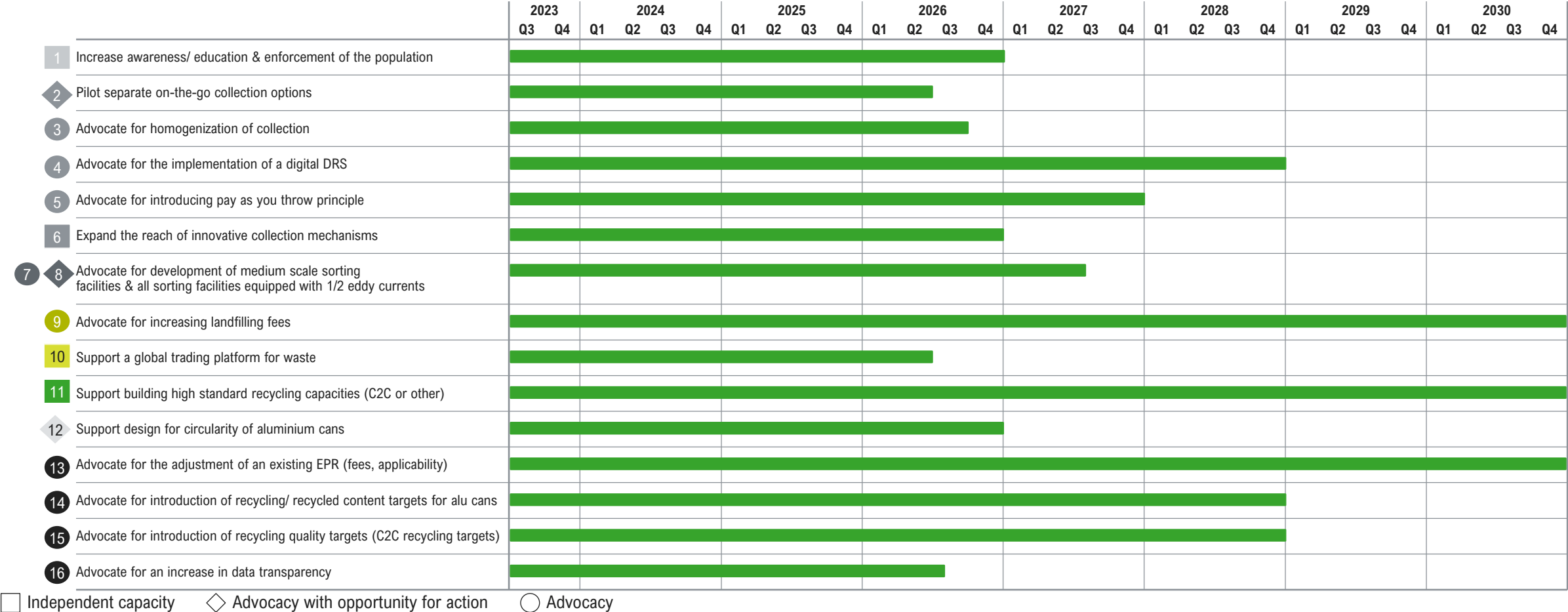
## Structure of the lever summary pages





# The suggested levers can be implemented in a timeline that spans across 4-7 years

Strategic levers implementation timeline

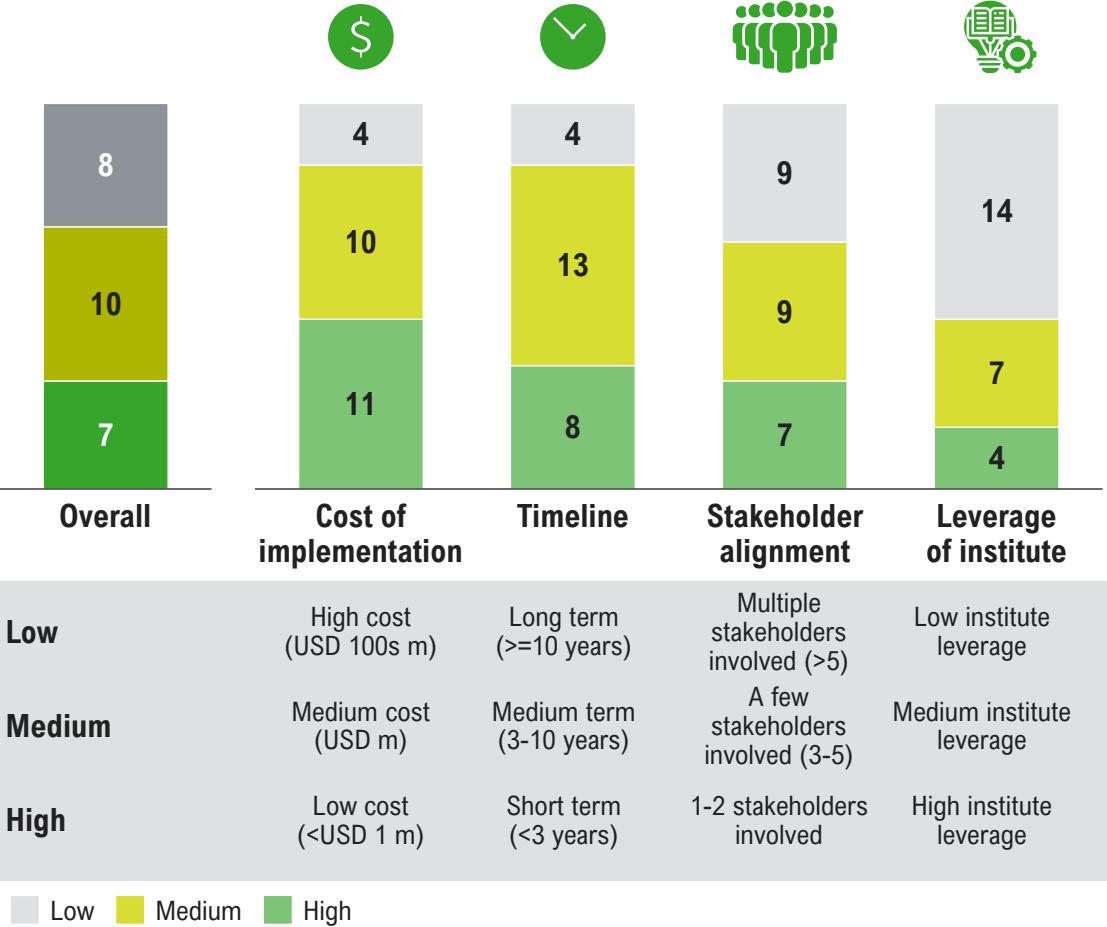




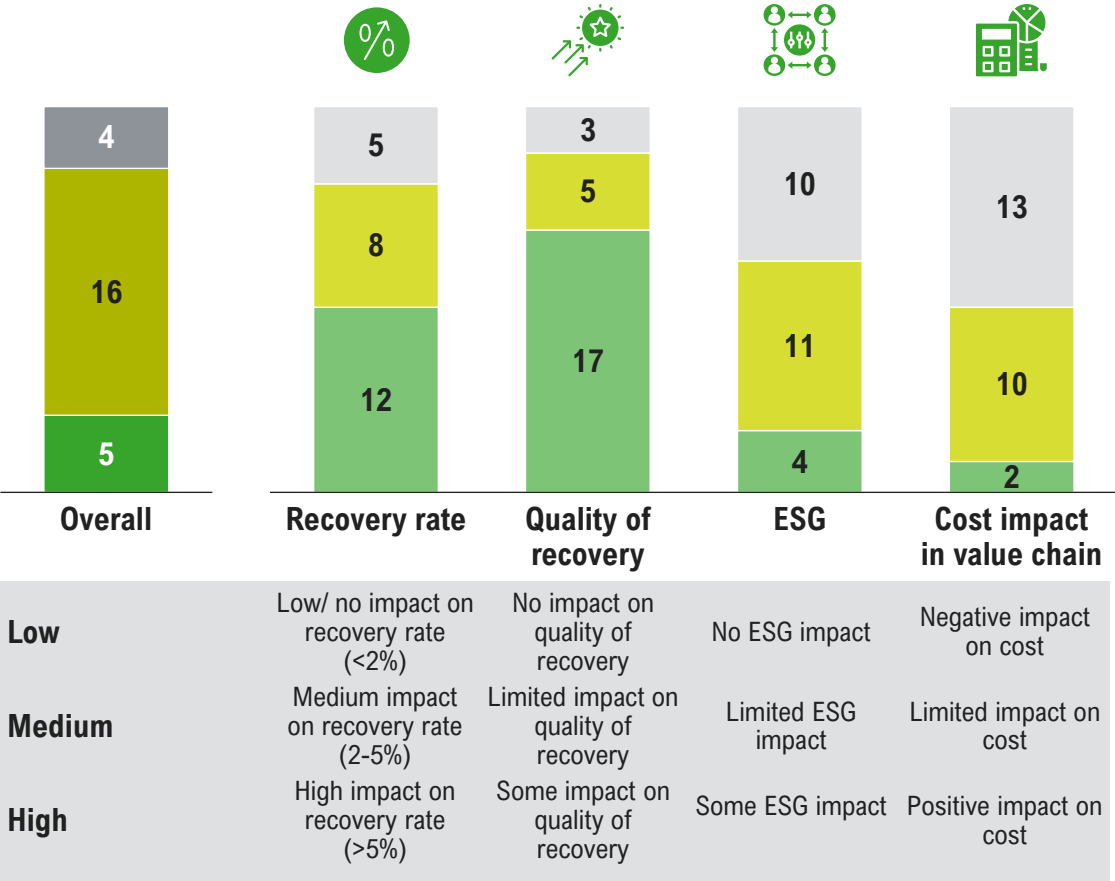
# Prioritization will be key as some levers will require significant investment, time, alignment & effort; high-impact/ low complexity levers can be tackled first

Criteria used for evaluating strategic levers [# levers]

## Feasibility



## Impact



Preliminary scoring; Additional feasibility studies and business cases are recommended before implementation





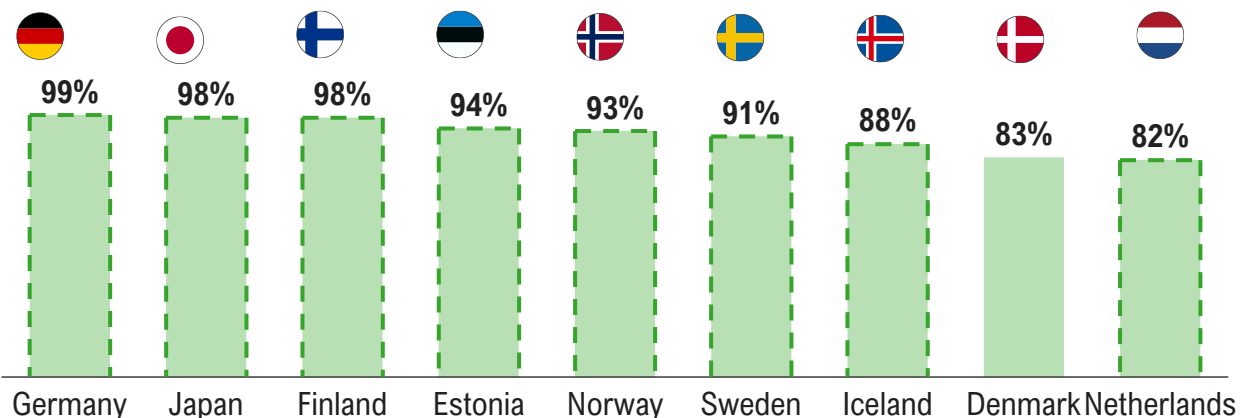
## **2. Ambition setting, short term action plan and expected benefits**



# The experience of various countries around the world shows that >90% recycling rates are achievable – 2 models of successful countries can be identified





Type 1 – Infrastructure heavy models, comprehensive waste management





Type 2 – Infrastructure light models, relying on pickers



~100%  
recycling rate



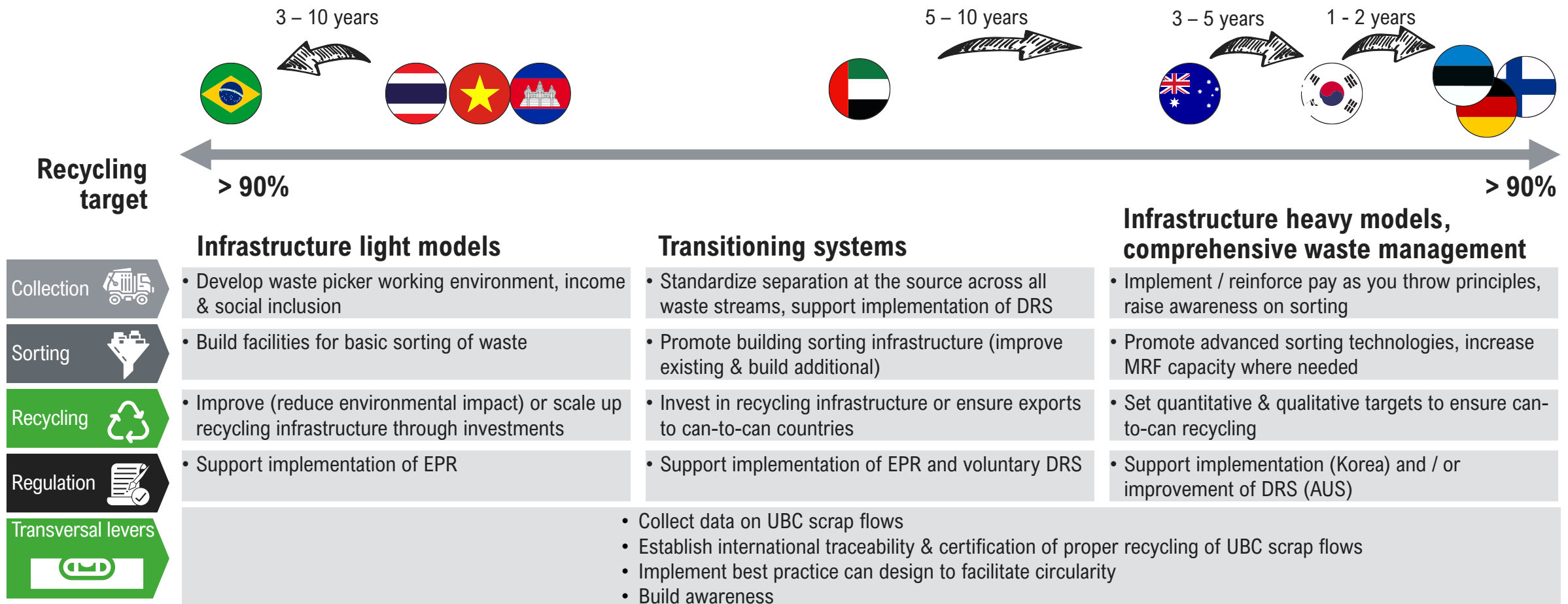
Collection 	<ul style="list-style-type: none"> <li>Widespread separation at the source (with room for standardization / improvement)</li> <li>Deposit return schemes in place in most mature countries</li> </ul>
Sorting 	<ul style="list-style-type: none"> <li>Established sorting infrastructure (with room for further streamlining / automation)</li> </ul>
Recycling 	<ul style="list-style-type: none"> <li>Well established quantitative targets; sufficient access to nearby can-to-can recycling facilities</li> </ul>
Regulation 	<ul style="list-style-type: none"> <li>Well established EPR, with significant transparency on system performance and EPR fees reflecting the real cost of collection-sorting-recycling</li> </ul>

Collection 	<ul style="list-style-type: none"> <li>High population awareness</li> <li>Waste picker networks that benefit from the secondary value of aluminium cans</li> </ul>
Sorting 	<ul style="list-style-type: none"> <li>Well developed network of "junkshops" to collect &amp; process cans across the country</li> </ul>
Recycling 	<ul style="list-style-type: none"> <li>Well established recycling infrastructure across all regions of the country</li> </ul>
Regulation 	<ul style="list-style-type: none"> <li>Established voluntary EPR</li> </ul>



# To reach 90 % recycling rate and beyond, countries can follow one of the two models – Australia can make improvements inspired by successful European & Korean model

Relevant alu can recycling targets per country





# Driving forward all 16 levers will be key for success – to focus efforts, at the short term, the industry can focus on below 4 levers

## Short term action plan



# Lever	Aluminium industry action	Ease of implementation	Impact	Key benefits	Rationale
1	Increase awareness/ education & enforcement of the population - households/ business <ul style="list-style-type: none"> <li>Develop and promote educational resources that help the broader public understand the importance of UBC recycling</li> <li>Design and launch advertising campaigns (led by the industry or supported by a wider consortium of value chain players)</li> </ul>				<ul style="list-style-type: none"> <li>Awareness campaigns can be launched at short notice and reach a large audience – they contribute to making impact at scale</li> </ul>
6	Expand the reach of innovative collection mechanisms <ul style="list-style-type: none"> <li>Support initiatives that propose innovative solutions for UBC collection</li> <li>Launch ideation initiatives (e.g. "hackathon")</li> </ul>				<ul style="list-style-type: none"> <li>Proposing new collection practices, digital and with gamification, can contribute to additional stream of clean UBC</li> </ul>
10	Support a global trading platform for waste to facilitate trading and enhance traceability <ul style="list-style-type: none"> <li>Partner with relevant stakeholders to create an international UBC scrap trading platform that increases transparency</li> </ul>				<ul style="list-style-type: none"> <li>Many countries depend on exports to reach high levels of can-to-can recycling – establishing transparent flows is key to secure feedstock</li> </ul>
13	Advocate for the adjustment of an existing EPR (fees, applicability) <ul style="list-style-type: none"> <li>Analyze existing waste management frameworks, engage with stakeholders to encourage alignment on EPR, and provide inputs to policy makers</li> <li>Advocate for the implementation of functioning EPR</li> </ul>				<ul style="list-style-type: none"> <li>EPR is a key enabler as it ensures clear roles &amp; responsibilities, funding for investment and transparent reporting</li> </ul>



Recovery rate



Quality of recovery



ESG impact



Cost impact in the value chain

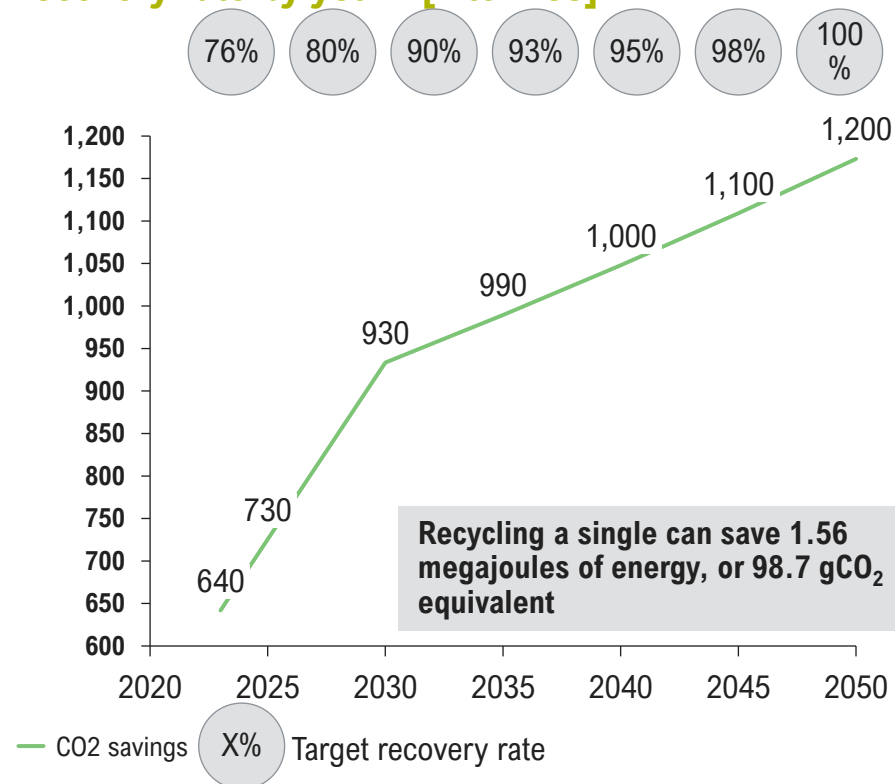


# Progressing on top priority levers will put Australia on the path to 80% recovery rate by 2030 and ~100% recovery rate by 2050 yielding significant reductions in CO<sub>2</sub> emissions

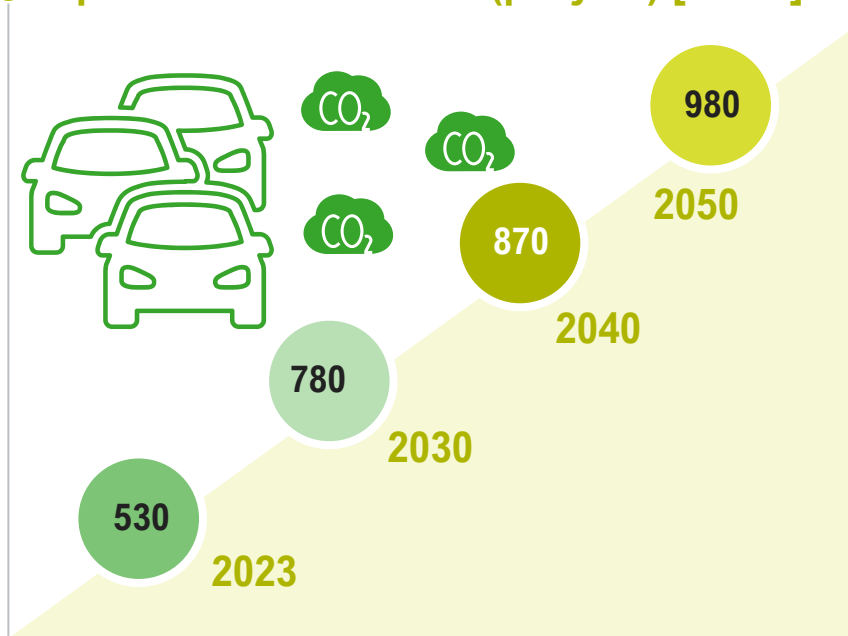
Environmental impact, CO<sub>2</sub>e reduction derived from simulated collection rates



## Annual CO<sub>2</sub>e emissions reductions versus target recovery rate by year<sup>1)</sup> [k tonnes]



## Equivalent car emissions (per year) [k cars]



### Methodology:

- EEA car emissions 2020: 108 g CO<sub>2</sub>e/ km
- Estimated vehicle-km/ year: 11,300 km
- Vehicle emissions/ year: 1.2 tons CO<sub>2</sub>e



## Key Takeaways

- It is estimated that, at its current recovery rate, Australia already saves around **640 kilotonnes of CO<sub>2</sub>** as a result of ongoing collection & recycling efforts, which is the equivalent of removing **~530,000 cars** from the roads
- Considering expected growth in put-on-market volumes and achieving ~90% recovery rate by 2030, around **930 kilotonnes of CO<sub>2</sub>** can be saved, equivalent to the emissions of **~780,000 cars**
- By 2050, **1,200 kilotonnes of CO<sub>2</sub>** would be saved if ~100% of expected volumes is recovered, corresponding to the equivalent of **~980,000 cars**

1) Considering current and expected put on market volumes as presented in Phase 1 of the project; assuming continuous growth of put on market volumes of 1% per year after 2030 (in line with expected population growth from 2030 to 2050)





### **3. Improvement levers**





## 3.1. Generation



# The action of citizens and waste pickers is essential to improving recovery rates; proper awareness and education are needed to improve their participation

## Lever – Awareness and education



### Objectives

- Make the general population more aware about the importance of aluminium can recycling and the pivotal role each individual plays in recycling
- Increased awareness brings the following expected benefits:
  - Increase separation at the source, both via DRS/CDS and municipal collection
  - Reduce sorting mistakes in the population
  - Assuring that waste pickers acknowledge the value of aluminium cans and prioritize their collection accordingly



### Recommendations for aluminium industry

- The aluminium industry can develop and promote educational resources and tools, such as "alucycle", that help people understand the importance of recycling and how to do it properly
- The aluminium industry can design and launch advertising campaigns to deliver the message on the importance of recycling
- As awareness is a continuous effort, it would be relevant to plan a yearly awareness campaign with the relevant target audiences



### Country specifics



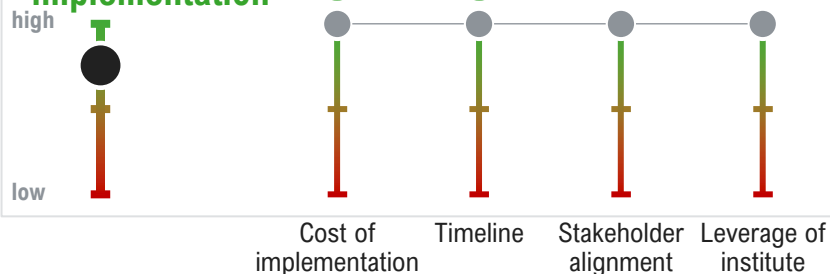
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 • Aluminium UBCs source separation highly depends on the action of citizens; therefore, awareness creation should be targeted towards citizens understanding the importance of recycling
- 

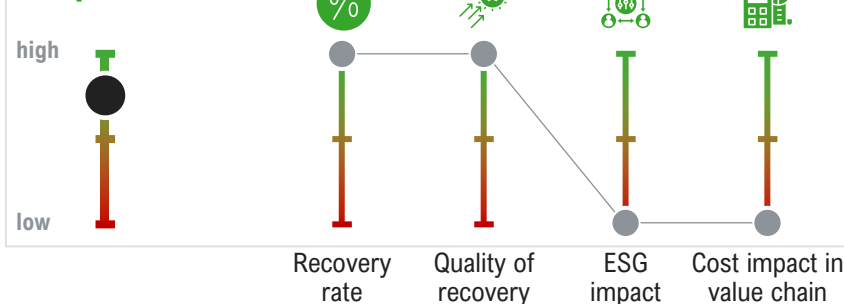


 • Aluminium UBCs are collected by waste pickers, who are mostly aware of the value of aluminium cans
- Awareness creation should be targeted towards the proper collection by waste pickers

### Ease of implementation



### Impact





# The industry can leverage previous awareness campaigns to create awareness about separation at the source and the value of aluminium cans

## Lever – Awareness and education



### Next steps



- Define the objective to convey with the campaign:
  - Sustainability of aluminium beverage cans if properly recycled
  - Ways of improving aluminium beverage can recycling
  - Aluminium beverage cans are the most valuable recyclable
- Define the target audience:
  - Policy makers
  - Brand owners
  - Broader public
- Develop the material and engage with key stakeholders
- Launch the campaign and monitor the results
- Organize repeat campaigns

	2023		2024				2025				2026				2027	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Campaign design</b>																
Define the objective	■															
Define the target audience		■														
<b>Campaign creation</b>																
Develop the messaging and materials		■														
Engage with key stakeholders																
<b>Campaign launch</b>																
Launch campaign		■														
<b>Launch repeat campaign</b>																
Prepare campaign			■				■				■					
Deliver campaign				■				■				■				
Measure results					■				■				■			

### Key stakeholders

Brand owners (soft drink manufacturers, beer producers, etc.)

Policy makers

Can manufacturers

Waste pickers

Public institutions such as schools, businesses, community groups



# Awareness and education on waste separation and recycling is essential for long term results

Separate collection at source in EU



## Key pillars of communication and education

**Communication campaigns** on main-stream media (TV, radio, online) financed by:

- Government
- Municipalities
- PROs
- Waste collector

**Clear disposal guidelines:** digital & print

**Organization/ financing of events:**

- Music, sport events, city event
- School events
- Clean-up campaigns etc.

**Education:**

- Campaigns in schools, pre-school etc.
- Embedding topic in school curricula (class)
- Academic path/ career on circular economy (universities)

## Enforcement

### Positive incentives

- Pay-as-you-throw principle (paying only per weight of the residual stream)
- Competition, discounts for waste generators
- Gamification (digital) to track waste journey after disposal
- Etc.

### Punitive measures

- Waste management/ collection as a stand-alone utility (bill), with unsubsidized pricing
- Penalties for waste generators (HH and businesses) for not respecting disposal guidelines, littering, collection infrastructure damage/ lack etc.
- Strict enforcement/ control

## Key take-aways

- Awareness and education have the **highest marginal impact** on recycling rates increase beyond 50% and littering reduction (up to 70%)
- Complex process with long-term results needing **good collaboration and alignment of all stakeholders:**
  - PRO
  - Municipalities
  - Brand owners
  - Waste collectors
- Additional **challenge in countries with high amount of tourism** – communication needs to reach tourists as well





## 3.2. Collection



# Even in countries where separate collection is highly adopted in households, littering and one-stream collection are prevalent in public spaces

## Lever – Pilot separate on-the-go collection system



### Objectives

- Increase separate collection rates of recyclable waste generated in public places, in particular in places with high consumption
- Prevent littering that takes place due to the absence of convenient bins
- Increase awareness about recycling by displaying the bins and encouraging recycling in public spaces



### Recommendations for aluminium industry

- Advocate to municipalities and policy-makers for the widespread adoption of separate on-the-go collection in public spaces
- The aluminium industry can act directly and kick-start the roll-out by actively executing / contributing to pilot projects in particular in well-defined contexts such temporary events (concerts, festivals, etc.) or in well-defined places (e.g. airports, shopping malls, etc.)



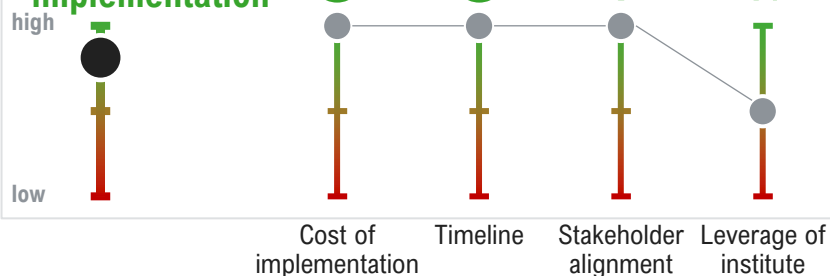
### Country specifics



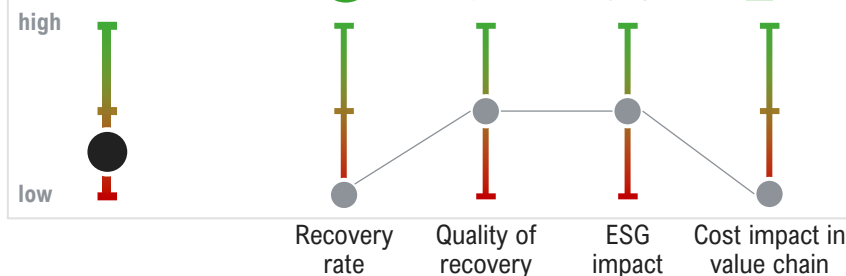
- In countries where a formal and comprehensive collection system is already in place, implementing separate on-the-go collection systems can aid in capturing the aluminium cans that are consumed outside of home environments and for which organizing comprehensive source separation is sometimes complex
- Some streams are not sorted at the source



### Ease of implementation



### Impact





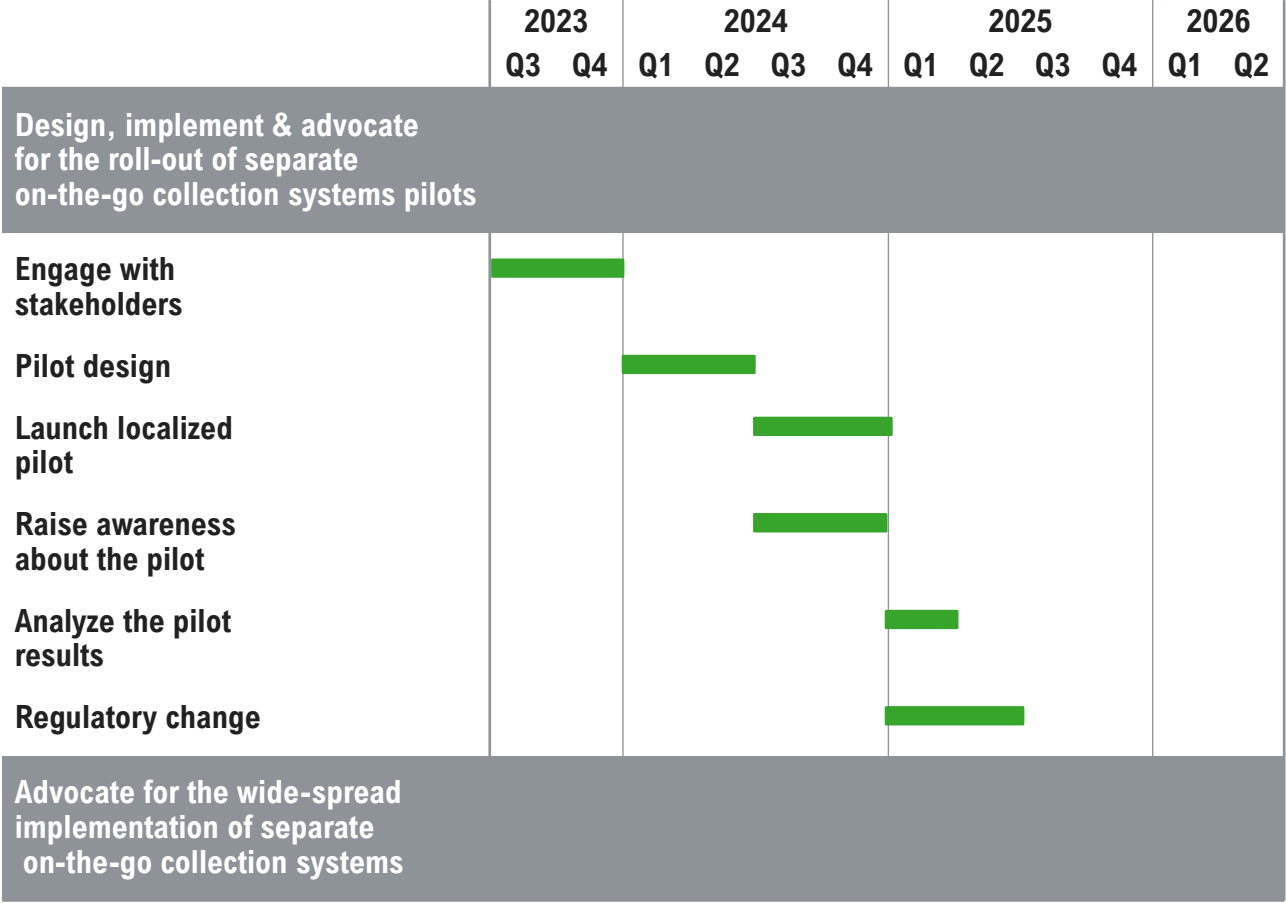
# The industry can play a role in promoting the implementation of separate on-the-go collection systems by supporting the launch of localized pilot projects

Lever – Pilot separate on-the-go collection system



Next steps

- Set up relevant pilot projects and on-the-go collection systems in well-defined contexts:
  - Design the pilot defining the duration and the place, and engaging with other associations and brand owners
  - Launch the pilot and execute a targeted awareness campaign to promote its visibility and ensure that the local community is aware of its implementation
  - Analyze the pilot results and share them with local authorities to advocate for regulatory change and their engagement
- Advocate to municipalities and policy-makers for the widespread adoption of separate on-the-go collection in public spaces



Key stakeholders

Municipalities

Municipalities

Municipalities



# The homogenization of collection would enable citizens to better understand how to recycle and facilitate higher collection rates

## Lever – Advocate for homogenization of collection



### Objectives

- Increase sorting at source rates by implementing standardized measures that improve the user experience and facilitate waste separation
- Enhance the sorting capacity of the MRF by elevating the aluminum can content in the MRF and primarily supplying the facility with valuable materials
- Reduce can contamination by organic waste
- Increase general public awareness around UBC recycling by presenting them with a consistent "user experience" when considering UBC recycling



### Recommendations for aluminium industry

- Advocate for the government to implement regulations that establish standardized minimum requirements for waste fractions, as well as consistent color schemes and designs for waste bins across different regions in the country & across different waste streams
- Participate in relevant marketing and awareness campaigns to increase public knowledge and understanding of the agreed standards



### Country specifics

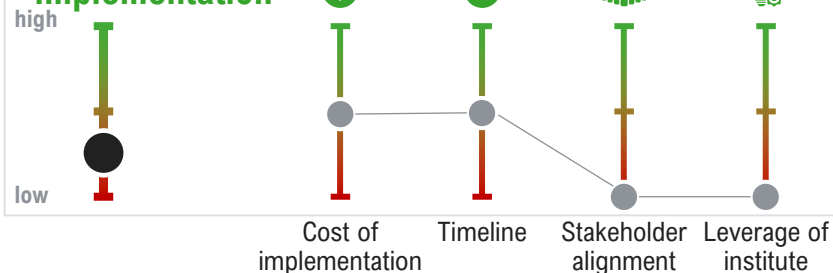


- Establish standardized specifications for the minimum fraction requirements and the colors and designs of waste bins
- Discuss with building managers and operators to reach a consensus on the financing of the proposed changes

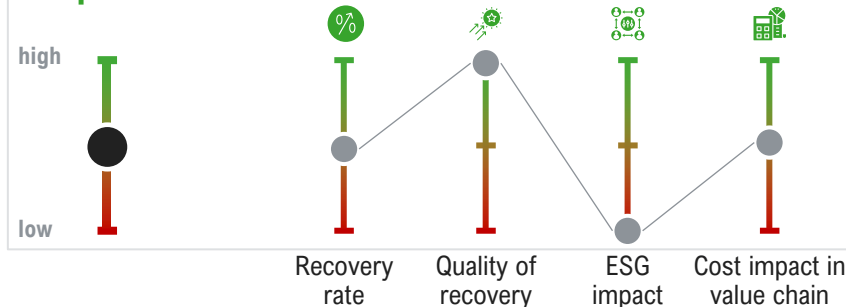


- Separate collection in commercial streams (HoReCa, office buildings, industrial sites) is largely absent due to lack of regulation

### Ease of implementation



### Impact





# The AI industry could support property owners and the different Emirates' authorities in reaching a consensus on the collection bin requirements

Lever – Advocate for homogenization of collection



## Next steps

- The aluminium industry members can **engage with relevant stakeholders** to align on the fraction minimum requirements and standardize the colors and designs of the bins: by presenting these stakeholders with the benefits of thorough source separation
- The industry can **support the local policy makers** in designing and implementing policies that enforce:
  - That all newly installed bins comply with the regulatory requirements
  - That building owners and operators, and municipalities, change their bins to the new standards within 1 year
- The industry can **advocate for regulations that enforce standardized collection systems**



	2023		2024				2025				2026			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Stakeholder engagement														
Engage with property owners and operators	■													
Engage with policy makers		■												
Roll-out														
Policy design				■										
Policy implementation and awareness					■									
Grace period											■			

## Stakeholders<sup>1)</sup>



1) Non-exhaustive



# We propose implementing a DRS in Korea to become the clean collection stream, improving the existing systems in Australia and analyzing the UAE context

## Lever – DRS



### Objectives

- A DRS (deposit return scheme) is putting a deposit value on eligible containers (including aluminium cans), redeemable at return points, typically in countries with a developed waste management infrastructure, also with a mature EPR
- It aims to establish a stream of clean and separately collected cans
- When implemented, it can increase recovery rates to high levels of >50%, and even >90% in ideal circumstances



### Recommendations for aluminium industry

- The aluminium industry members support the implementation of DRS in countries with an appropriate EPR and a developed waste management system
- The industry advocates for the implementation of best practices and key success factors as observed in other countries such as:
  - High deposit values combined with a convenient return system
  - Industry led system with a separate operator & administrator
  - Inclusion of all container sizes
- To drive adoption, alu industry can **1/ bring together industry stakeholders & understanding best-in class systems, 2/ advocate for and support organization of pilot projects & 3/ support roll-out through policy maker engagement**



### Country specifics



- Advocate for the implementation of a DRS to automate collection and strengthen the aluminium cans recovery rates

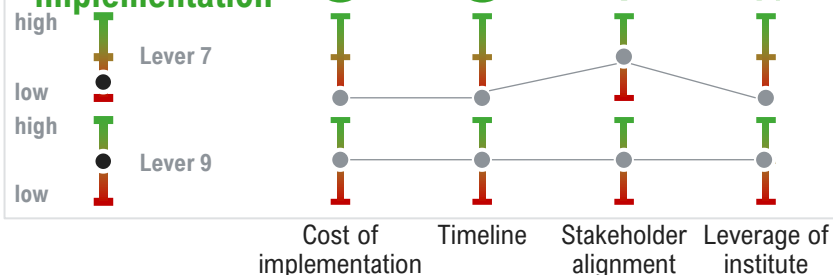


- Ensure alternative revenue streams for waste pickers
- Advocate for the increase in the current deposit value
- Increase the number and convenience of return points (especially in highly populated areas)

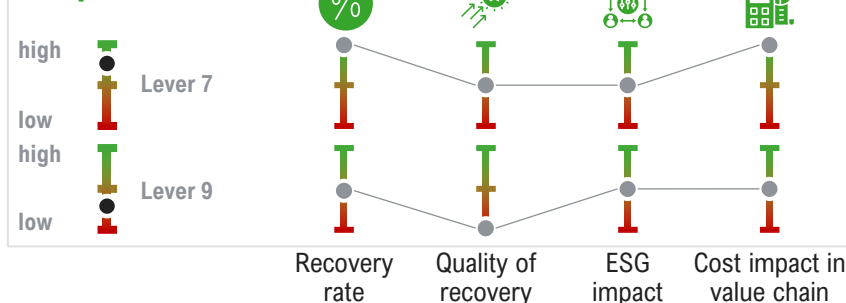


- Advocate for implementation of DRS in the next years, in parallel with an EPR and ensuring appropriate timing

### Ease of implementation



### Impact



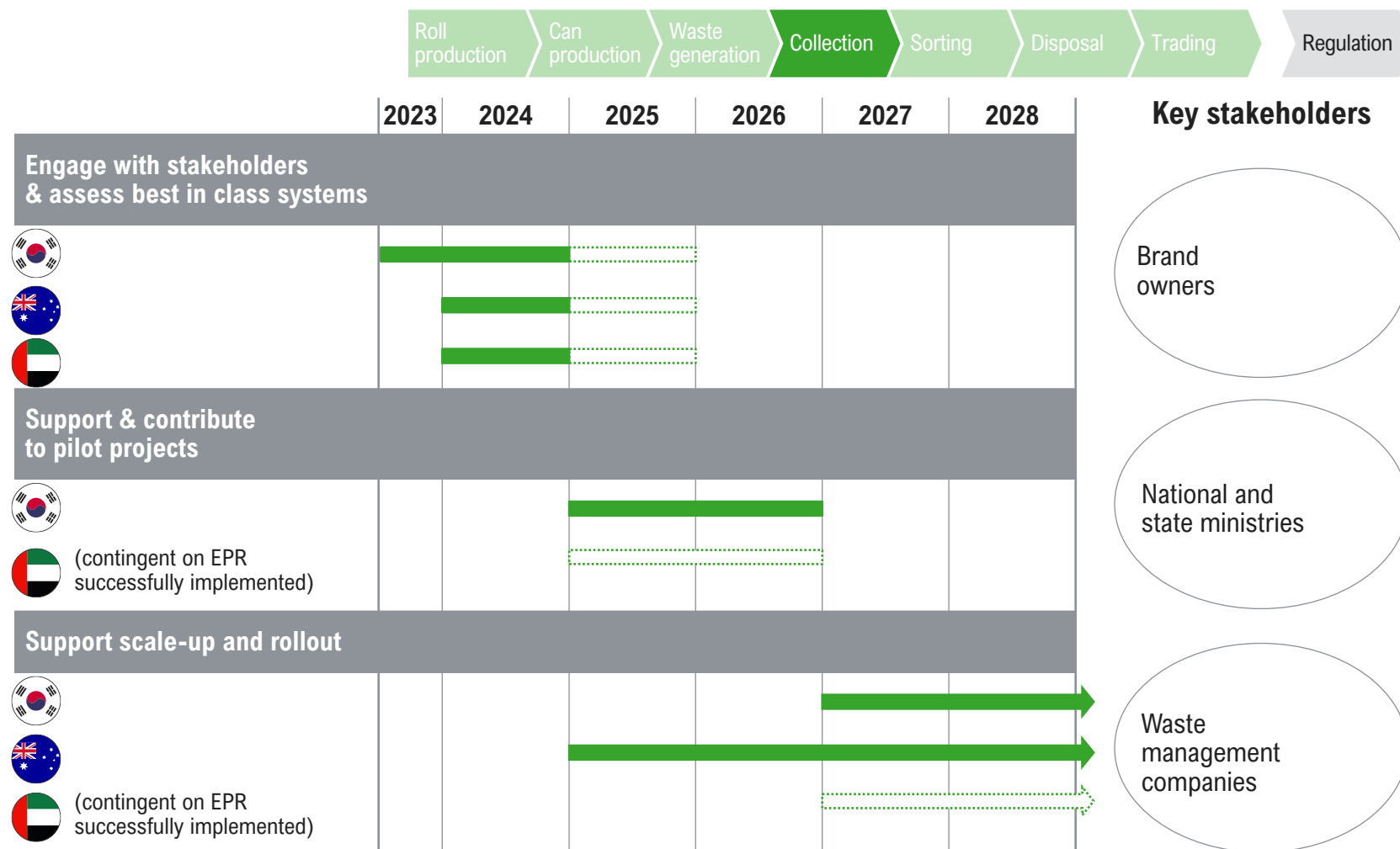


# We suggest engaging with the relevant stakeholders and analyzing existing systems before initiating pilots and further deciding on scaling up

## Lever – DRS

### Next steps






- The AI industry can be a driving force by **engaging with stakeholders & assessing best in class systems**:
  - Initiate discussions with key stakeholders in the 3 countries where applicable (Korea, Australia and the UAE) to assess the feasibility
  - Assess the existing systems (e.g. in the EU, Australia, Canada) and other countries' case studies
- The industry supports the establishment of pilot programs and makes its expertise available to policy makers to understand and assess the impacts of the program
- Beyond pilot projects, the aluminium industry **engage with policy makers to support roll-out of a successful DRS**





# While there is some structural variation in DRS systems across the globe, a set of key success factors can be identified

















## Key success factors

-  **DRS Governance**
  - DRS are usually **industry-led**, with a System Operator & Administrator intermediating the deposit flow and retaining material ownership
  - DRS are typically funded through **unredeemed deposits and material revenues**; resulting net costs covered by operator (funded by the industry)
-  **Material type**
  - **PET and aluminum cans are included in every DRS** system, thanks to a higher material value, coupled with lower logistics costs (e.g., relative to glass)
  - **Glass** typically included in the **systems to cover also alcoholic products** (beer, wine spirits, etc.)
  - Successful **inclusion of other packaging is generally seen in systems with manual** or mostly manual **redemption** (often in collection centers rather than in retail)
-  **Product category**
  - **Focus on non-alcoholic beverages and beer**, sometimes also spirits included; dairy products tend to be excluded from DRS as they pose issues related to odor, potential material contamination
  - Sometimes juice is also excluded to **avoid consumer confusion** regarding materials in the scheme
  - Most systems include some size restriction – generally between **0.1 and 3.0 L**
-  **Take-back strategy**
  - **Return-to-retail, return-to-collection center** and a mix of the two are all options seen in successful DRS systems
  - For return to retail, smaller stores are often exempt from the system or can opt for manual take-back instead of automatic (RVM); RVMs usually fit for super- and hypermarkets
  - While automated take-back is considered to be more efficient, **manual take-back is less expensive**
  - Network density in performant European system typically ~1-2 return points for 1,000 people
-  **Deposit value**
  - Deposits usually have a single, monetary value between EUR 0.05-0.25
  - Some DRS include deposits which vary depending on size and material, but this is generally regarded as confusing for consumers
  - Return rates are highly correlated with deposit value



# Industry-owned system operator is the most frequent governance model – industry consensus and higher efficiency as differentiator

## Options for DRS system governance models

Governance	Countries	Ownership structure	Key differentiators
<b>1</b> <b>State-owned SOA</b>	 HR	 <b>FOND ZA ZAŠTITU OKOLIŠA I ENERGETSKU UČINKOVITOST</b>  Government of Croatia <b>Example</b>	<ul style="list-style-type: none"> <li>Wide scope of state-owned fund (incl. packaging recovery systems, municipal waste mgmt.) may lead to cross-subsidization of waste management initiatives at country-level</li> <li>Direct influence over achievement of collection and recycling targets for one-way beverage containers</li> </ul>
<b>2</b> <b>Industry-owned SOA</b>	 DK <sup>2)</sup>  DE  SE  CA  EE  FI  NO  LT  AU	 <b>Example</b>	<ul style="list-style-type: none"> <li>Joint industry-level decision-making process – SOA control belonging to key stakeholder industry groups directly impacted by DRS</li> <li>Usually not-for-profit – incentive to reduce packaging recovery fees/ burden on producers depending on system results</li> </ul> <b>Recommended</b>
<b>3</b> <b>State- &amp; industry-owned SOA</b>	 IS  NL <sup>1)</sup>	 <b>Example</b>	<ul style="list-style-type: none"> <li>Platform to streamline consultation process on packaging waste between industry, central and local authorities</li> <li>Input to packaging waste legislation based on direct insight from DRS system</li> </ul>

1) Members may include municipalities and/ or industry players



# PET bottles and aluminum cans represent typical material types included across global mandatory deposit schemes

Overview of typical DRS material types and product categories

## One-way glass bottles



- Shows **limited profitability**<sup>1)</sup> due to low secondary material value
- **Cannot be compacted without breaking** into shards which contaminate other packaging & raise maintenance costs
- Is **very heavy** compared to other types of beverage packaging (in relationship to volumetric content)
- **Separate sortation mechanism required for RVMs**, increasing CAPEX

## PET bottles



- Shows **some profitability**<sup>1)</sup>, especially in the past year where secondary material value has almost doubled
- **Easy to reduce volume** through compacting without damaging structure
- Can be mixed with aluminum cans before sortation

## Aluminum cans



- Shows **good profitability**<sup>1)</sup> as a result of high secondary material value
- **Easy to reduce volume** through compacting
- **Good candidate for DRS** systems as otherwise can be binned/ littered due to small volumetric contents

## Beverage cartons



- Shows **limited profitability**<sup>1)</sup> due to low secondary material value
- Can pose **certain hygiene risks** (e.g., smell, risk of spillage & contamination) especially if compacted
- Only certain RVM machines offer the capability to process BCs – Typically in the premium segment

## Product category

### Non-alcoholic drinks

- Drinks (except juice)
- Juice

### Alcoholic drinks

- Beer
- Spirits & other drinks

## Dimensions

Between 0.1 and 3 liters **volume content**

## Key comments

- **PET bottles and aluminum cans** are typical materials for existing mandatory DRS as a result of their higher intrinsic material value and low volumes
- **One-way glass** is included in certain DRS systems both in mandatory ones across the global landscape and in local Russian private deposit schemes
- **BCs** are typically excluded from automated take-back DRS systems due to collection challenges and low secondary material value

1) Compared to other beverage packaging; 2) Especially in Europe



# Appropriate take-back infrastructure needs to be put in place, with sufficient locations (preferable in retail) and appropriate level of automation

## Take-back strategy

### Redemption locations



#### Grocery retail

- All grocery retail
- Selected grocery retail chains
  - Based on size
  - Based on format
    - Modern retail<sup>1)</sup>
    - Traditional retailers

#### Collection centers

- Commercial/ industrial locations

#### Others (e.g., schools)

Preferred due to convenience

Ensure sufficient density  
(~1 per 1,000 people as indicative benchmark)

### Take-back methods



#### Automated take-back

- Through RVMs (various segments available, varying cost/ functionalities)

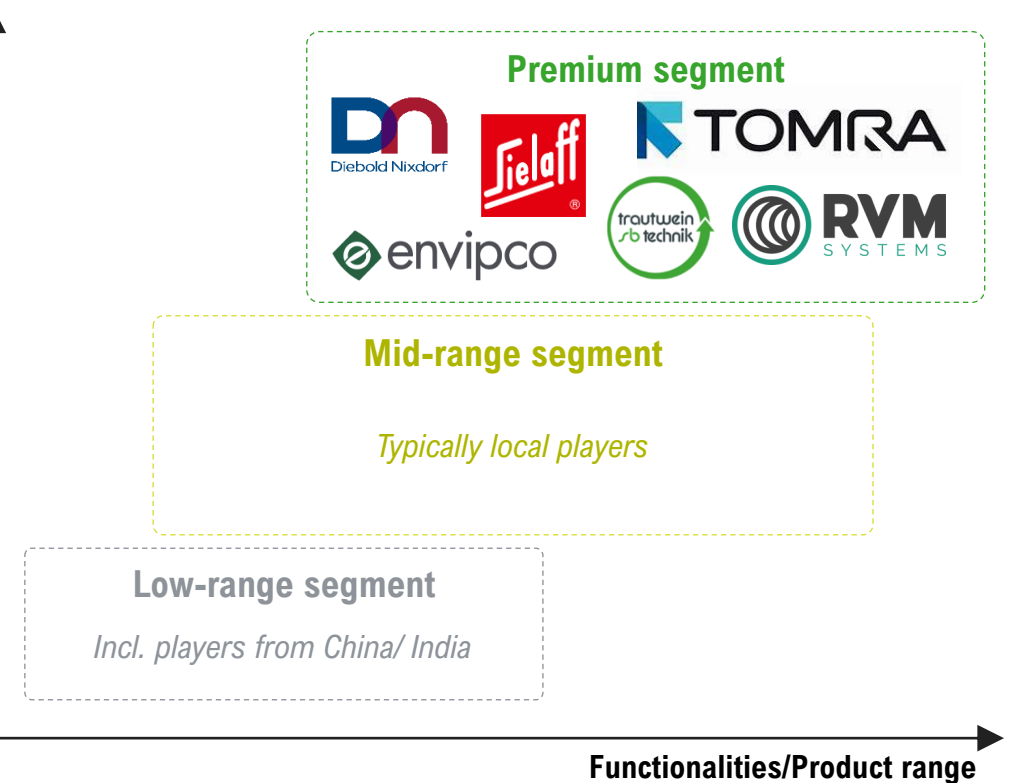
#### Manual take-back

- Manual handling of received used packaging in stores

More efficient

Less expensive

Avg. pricing [EUR/ unit]

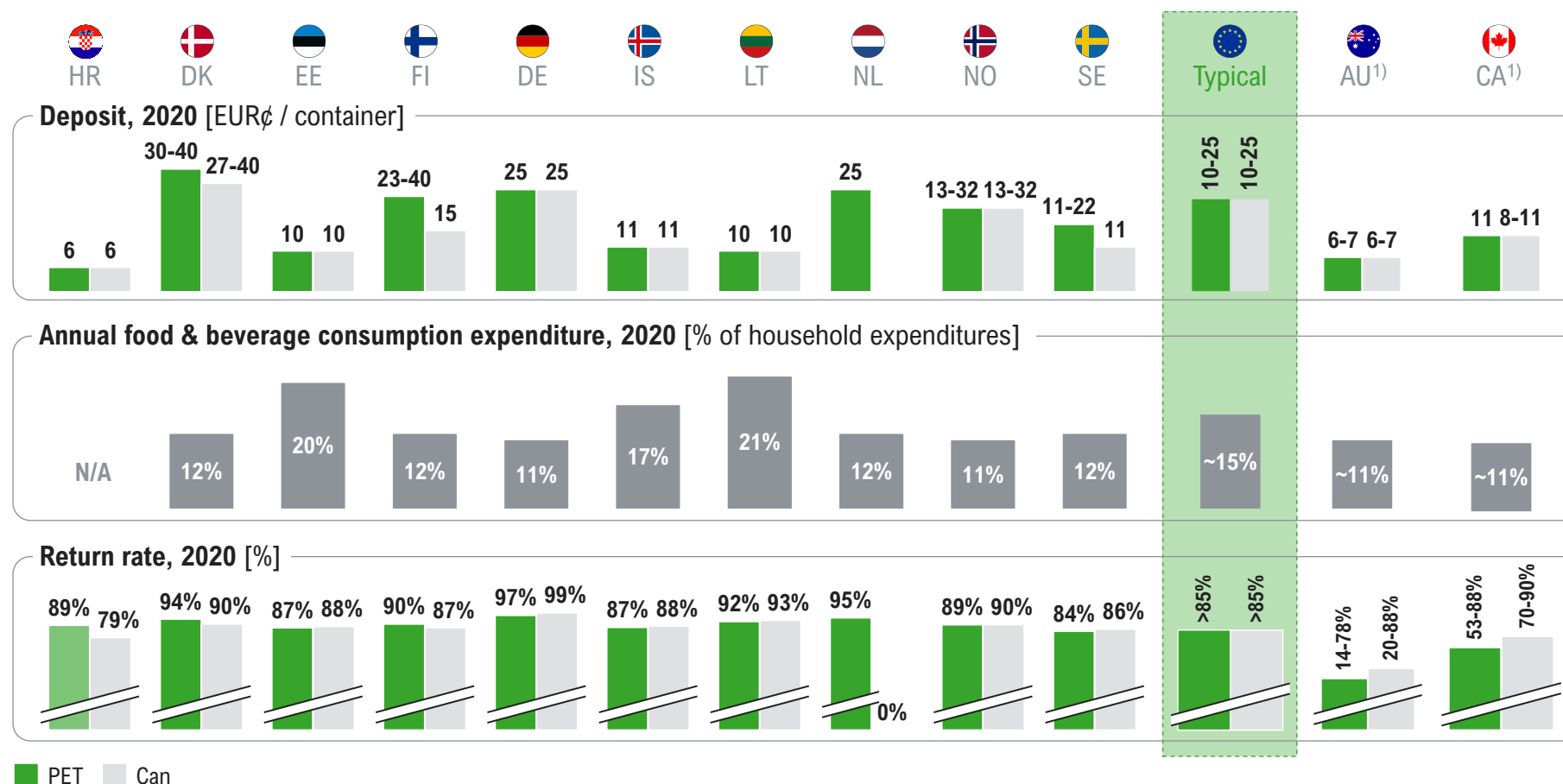


1) Hypermarkets, supermarkets, convenience stores, etc.



# Deposit fees range largely between EUR¢ 10-25, with high return rates of >85% typically achieved for PET & cans

## Deposit fees and system performance



## Key takeaways



- **Higher deposit fees** (above 15-20 EUR¢ threshold) are typically **associated with higher return rates and recommended**
- Deposits are **balanced with the retail spending power** on food and beverage of consumers in each individual country
- Apart from deposit value and consumer spending power, other country specific factors (e.g., availability of retail locations) play an important role as well









1) Return rate depending on region



# Global best practices are recommended in the new DRS schemes and adjusting the existing ones in Australia to better fit the current context

## System characteristics recommendation

### System characteristic

			
<b>Governance</b> 	Industry-led	Keep existing models, industry-led for the new DRS	Industry-led
<b>Material type</b> 	PET, aluminium can, glass (with exceptions)	PET, aluminium can, glass (with exceptions)	PET, aluminium can, glass (with exceptions)
<b>Product category</b> 	Non-alcoholic and beer/ exemption for dairy	Non-alcoholic and beer/ exemption for dairy	Non-alcoholic and beer/ exemption for dairy
<b>Takeback strategy</b> 	Focus on return to retail and RVMs	Increase density of return points, focus on retail	Start with collection centers, focus on return to retail
<b>Deposit value</b> 	KRW 300-500 (USD 0.2-0.4 equivalent)	Increase to AUD 0.3 (USD 0.2 equivalent)	AED 0.7-1.0 (USD 0.2-0.3 equivalent)



# In systems with established source separation, the nudging effect of the PAYT principle can reduce the share of cans in general waste

## Lever – Pay as you throw principle (PAYT)



### Objectives

- The objective of the PAYT principle is to nudge people to correctly sort recyclables (including UBC) which results in the following expected benefits:
  - Increase source separation – typically helping to reduce the share of UBC that ends up in the general waste in a context where source separation is already well-established and functioning
  - Increase awareness around the role of each individual
  - Reduce landfill diversion & capacity requirements of sorting infrastructure






### Recommendations for aluminium industry

- Advocate with policy makers to create the conditions for establishing the PAYT**
  - Document lessons-learned from those countries who have implemented this principle
  - Demonstrate that – in principle – the waste management cost for individual households doesn't increase
  - Advocate with policy makers to establish pilot projects
  - Advocate with policy makers to enable the roll-out of PAYT principles

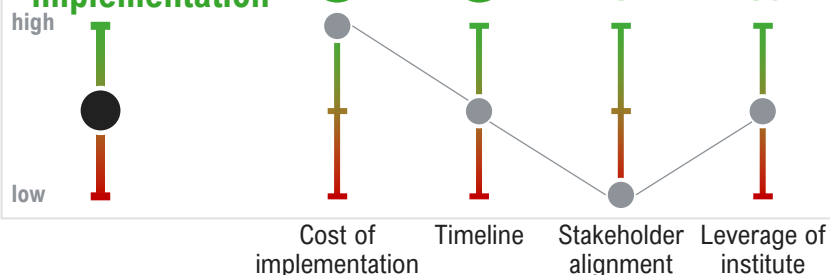


### Country specifics

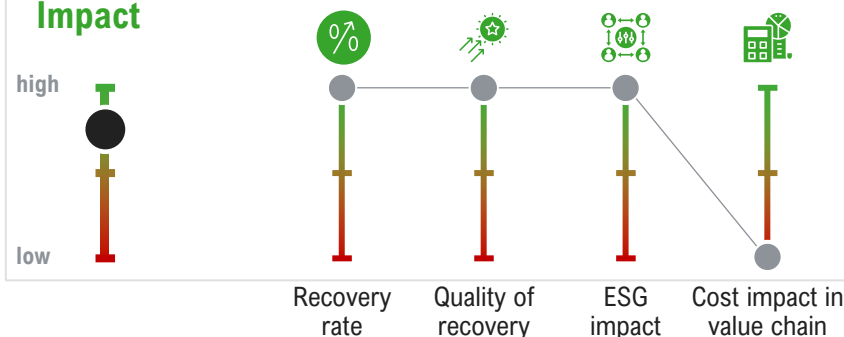
-  The pay-as-you throw principle is relevant in mature waste management systems as a mechanism to maximize recovery rates, in particular by avoiding UBC to be wrongly sorted
-  The pay-as-you throw principle is relevant in mature waste management systems as a mechanism to maximize recovery rates, in particular by avoiding UBC to be wrongly sorted
-  In the UAE the PAYT principle can be applied after roll-out of source separation



### Ease of implementation



### Impact





# In countries with mature waste management systems the PAYT can be considered – diligent feasibility & impact assessment is a key success factor

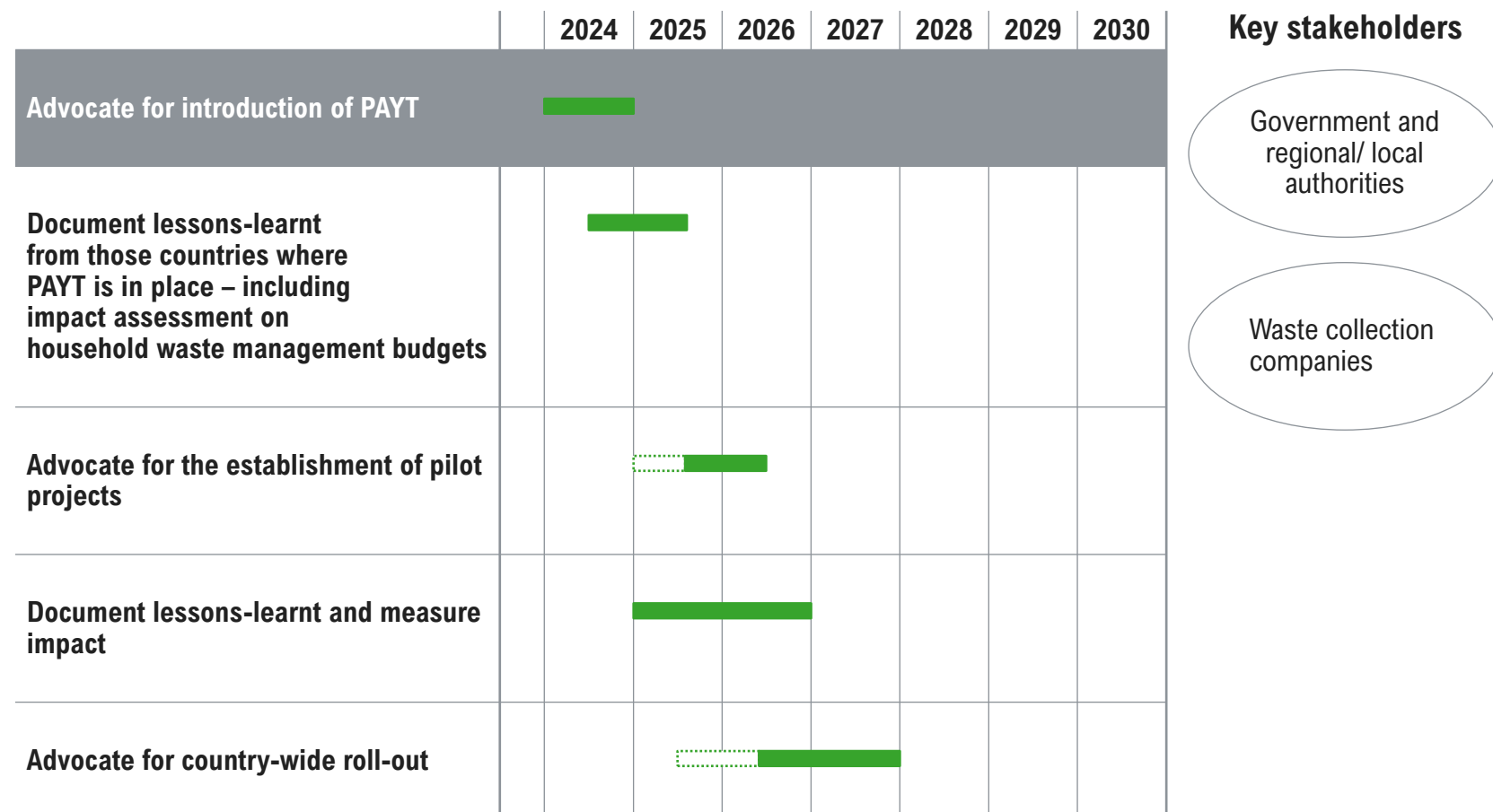
## Lever – Pay as you throw principle



### Next steps



- **Advocate with policy makers to create the conditions for establishing the PAYT**
  - Document lessons-learnt from those countries who have implement this principles
  - Demonstrate that – in principle – the waste management cost for individual households doesn't increase
  - Advocate with policy makers to establish pilot projects
  - Perform feasibility study on the introduction of PAYT (assess expected impact, cost & potential side effects)





# Innovative collection mechanisms could help provide for a dedicated stream of high-quality UBC

Lever – Expand the reach of innovative collection mechanisms



## Objectives

- Enhance the collection rates and quality of aluminium beverage cans by utilizing existing technologies and expertise
- Establish convenient and user-friendly methods to improve the separate collection rates of used beverage cans
- Improve the traceability of the collected UBCs
- Generate awareness around the importance of UBC recycling & establish the collection process as a fun & innovative activity which is appealing to a large section of the population



## Recommendations for aluminium industry

- The industry can foster the development of innovative solutions that enable innovative approaches to collection for households and businesses
- To successfully implement the initiative, the industry can:
  - Identify relevant players that own existing solutions or have the capability to develop them
  - Study, learn from & leverage ongoing innovative approaches in various countries
  - Provide support and guidance to these players to develop solutions that facilitate the collection of UBCs
  - Assist in scaling up the developed solutions



## Country specifics



- First experiments with solutions such as RECAPP are in place – the challenge will be to scale this solution



- Superbin, highly automated "bring banks" powered by industry 4.0 solutions shows promising business case

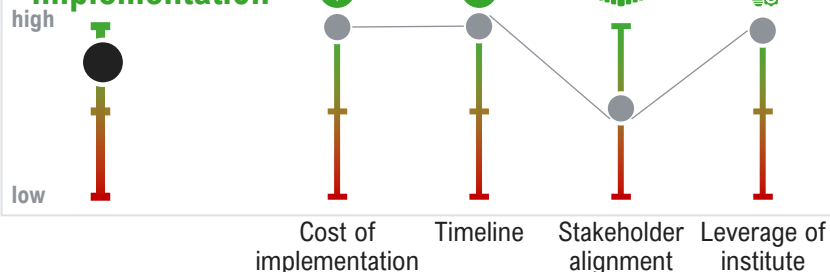


- Multiple digital collection platforms are gaining traction in Thailand & Vietnam – this success should be leveraged and learnt from in other countries

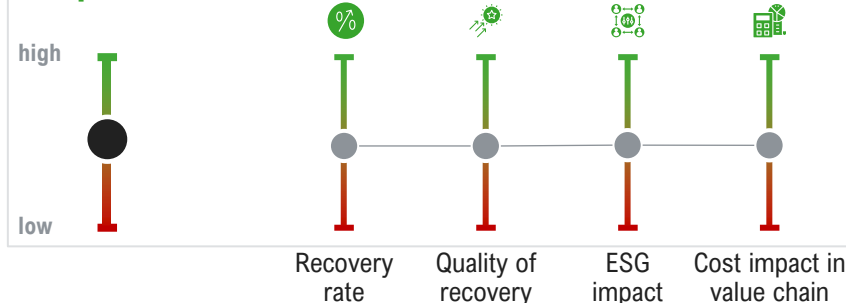


- No initiatives identified yet, but the successes of other countries can serve as inspiration

## Ease of implementation



## Impact





# The industry can lead the identification and engagement of relevant recyclable collection solution, and support them in rolling out functional solutions



Lever – Expand the reach of innovative collection mechanisms



## Next steps



- **Identify and engage with relevant stakeholders** in the market who possess technological expertise and the drive to develop innovative solutions for collecting UBCs and recyclables
  - A hackathon approach could be adopted to expedite the process
- **Lead and support the ideation phase:**
  - Provide guidance to structure brainstorm sessions to identify solutions
  - Shortlist the most relevant ideas and pilots
- **Provide technical support and guidance to grow the solution from pilot to roll-out**

	2023		2024				2025				2026		Stakeholders <sup>1)</sup>
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Stakeholder engagement 													
Identify relevant stakeholders	<div></div>												<div>Technology companies</div>
Engage with identified stakeholders			<div></div>										
Solution development 													
Ideation phase			<div></div>										<div>Waste management companies</div>
Shortlist key ideas					<div></div>								
Shortlist possible pilots							<div></div>						
Implementation													<div>Recyclers</div> <div>Traders</div>
Pilots							<div></div>						
Incorporate pilot feedback							<div></div>						
Roll-out											<div></div>		

1) Non-exhaustive



# Across the countries in scope of the study, various solutions for innovative collection have been developed which can be used as a source of inspiration

Lever – Expand the reach of innovative collection mechanisms

## Innovative collection



- They collect cans from households, and offer solutions for businesses
- Households can download the app and request their recyclables to be collected for free
- Recovered 20 tonnes of cans in 2022



”

*"With its easy-to-book door-to-door recycling service, the solution maximizes convenience and helps overcome the main barriers to recycling."*

– Regulator



- They connect individuals and restaurants with aggregators
- Go Greens offers rewards in exchange for the waste
- Recycle Day offers a fee payment in exchange for the recyclables



”

*"A clean stream of UBCs is key for covering our feedstock needs"*

– Roll manufacturer



- The 3 apps connect households with collectors; households can request their recyclables to be picked and they get rewards in exchange



”

*"Sometimes, households do not trust waste pickers; any solution that allowed households to trust pickers would be well received"*

– Association



- Since 2015, various Industry 4.0 technologies have been incorporated : AI, Big data, Remote control, robotics
- 800 machines located nation wide
- Recovers 150 tons of cans per month (120 million cans per year)



”

*"Biggest issue is aluminum cans mixed with multiple materials from production phase (such as construction materials)"*

– Collector



# RECAPP by Veolia facilitates a separate collection stream in a highly-convenient manner for citizens in the UAE

Lever – Expand the reach of innovative collection mechanisms



## Initiative

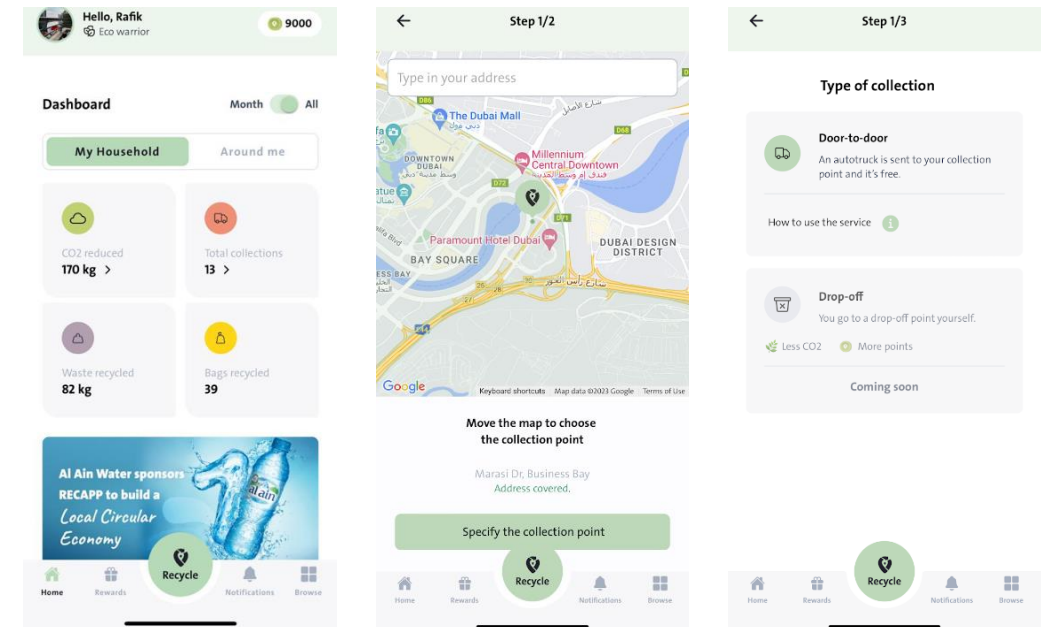


## Description of initiative

- Recycling solutions for plastic, metal, electronics and paper
- **RECAPP App:** Collection of plastic bottles and cans from households
- **RECAPP Business:** Deployment of recycling boxes, collection of bags and treatment for businesses
- **RECAPP Brand:** Deployment of recycling bins in stores and retail shops to collect end-of-life products brought back by customers
- Collected **~20 tonnes** of UBC in 2022



*“Last year, we collected 558 tons out of which 3.5% are UBCs. This year our target is 1000 tons”*





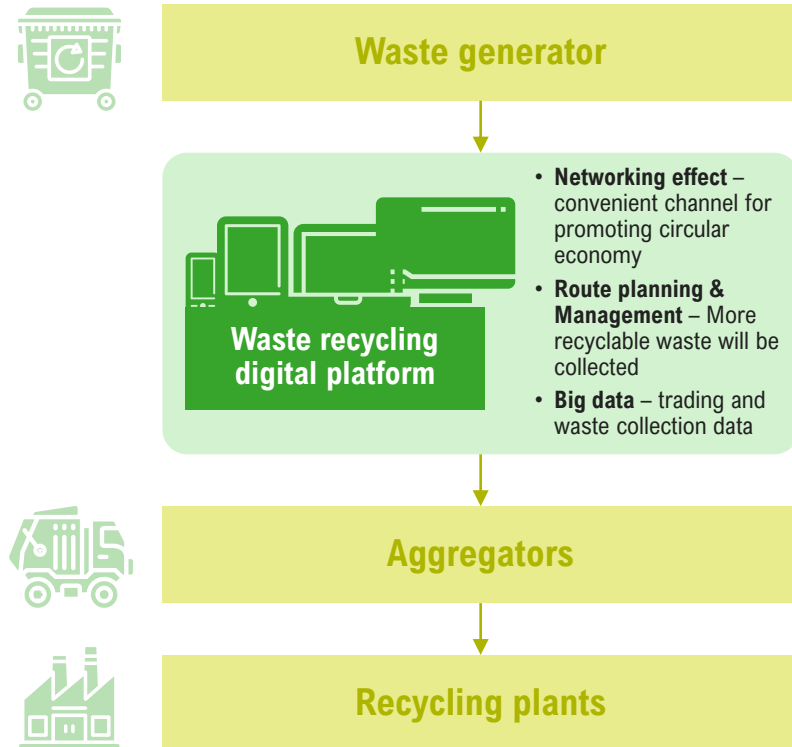


# In Thailand, the use of digital platform has recently been emerging to better manage the waste and increase the separate collection rate

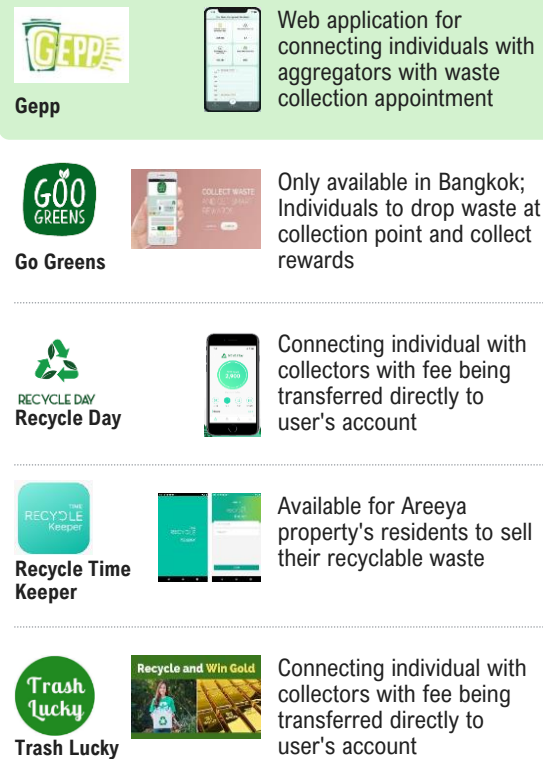
Lever – Expand the reach of innovative collection mechanisms



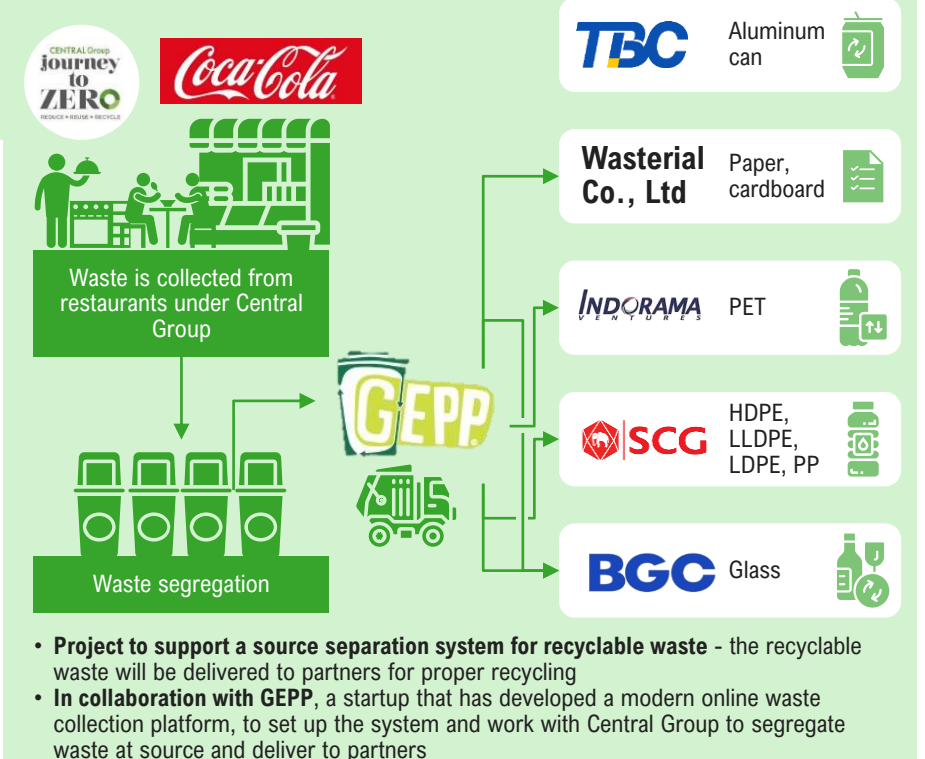
## Business model



## Company examples



## Case study - Gepp





# In Vietnam, some companies are launching innovative solutions to improve the waste management system and increase collection rates



Lever – Expand the reach of innovative collection mechanisms



mGreen

- There are **3 apps**:
  - The first one encourages users to **separate waste at source**, to **receive in exchange points** that can be redeemed for gifts
  - The second one allows collectors to receive collection requests; collectors can then sell the recyclables after paying a fee to cover the resident's rewards
  - The third one allows to redeem the points that have been collected
- The app is **focused on aluminum cans, paper, and plastics**
- The platform claims to have **100,00 users**, and **90 collector accounts**
- They claim to have managed to **collect 300 tonnes of recyclables** so far



- The company offers a mobile phone app that allows users to **exchange recyclables for points that can later be redeemed**
  - In order to receive the points customers can either bring their recyclables to Grac's shops or connect with collectors
  - Additionally, they offer an Enterprise Resource Planning software for collection enterprises to help them centralize waste collection data
- They claim to have **more than 1 m customers**, covering 250,000 households



- The company offer solutions to both businesses and households:
  - For households it offers a **mobile app** that provides **rewards in exchange of recyclable waste**; it is focused on Tetra Pack
  - For business it offers industrial scrap collection by connecting industrial plants with collectors
- The company claims to have **34,000 users**
- They claim to have collected **80 tonnes of industrial scrap and 100 tonnes of milk cartons**





## 3.3. Sorting



# Sorting capacities are insufficient in the UAE and some Australian areas; Building facilities in SEA would need to consider the current waste picking practices

## Lever – Sorting capacities



### Objectives

- Meet the demand for sorting capacities, to reach the volumes collected and ensure no volumes “ready for sorting” end up in landfills
- Ensure the right level of automation of the facilities, with manual preferred for quality and automated for cost benefits
- Ensure eddy current separator is installed everywhere to maximize UBC recovery
- Assess the feasibility of sorting dirtier streams or rejects, with the corresponding feasibilities
- Analyze the options of improving the quality of the sorting process by ensuring sufficiently advanced equipment



### Recommendations for aluminium industry

- Support building sorting capacities where required and ensure adequate equipment is present, also upgrading existing ones accordingly. Key steps to achieve their implementation include:
  - Perform detailed feasibility studies
  - Assess the impact of such projects on the waste management systems and recycling
  - Establish an alliance to create/ upgrade the sorting infrastructure
- Maximize cost advantages and scalability
- Assess risks: high investment and operational costs



### Country specifics



- There is no identified need for sorting facilities (to be assessed)



- Assess the suitability of tendering process and contracts for MRFs



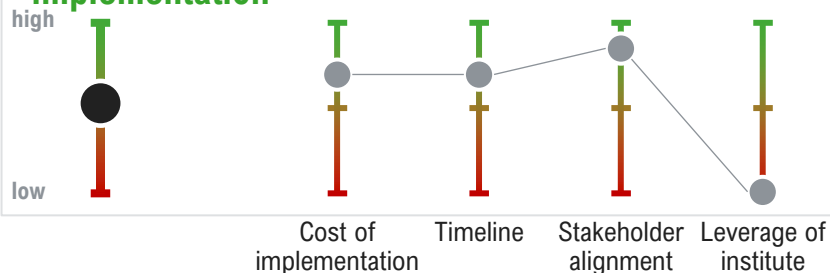
- Current capacity is not sufficient for existing volumes (to be assessed – collaboration from multiple industries needed)



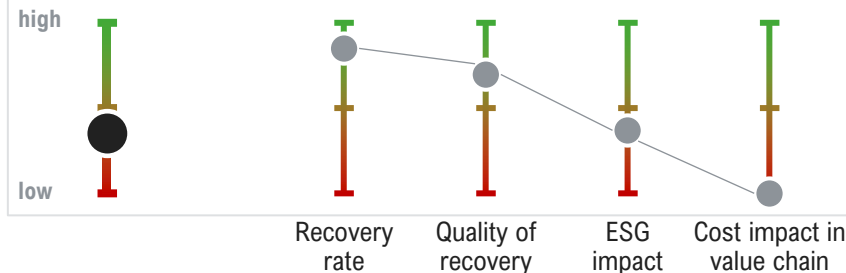
- Sorting capacities are virtually inexistent: assess the need and potential configuration of sorting facilities, taking into account current manual waste picking practices



### Ease of implementation



### Impact





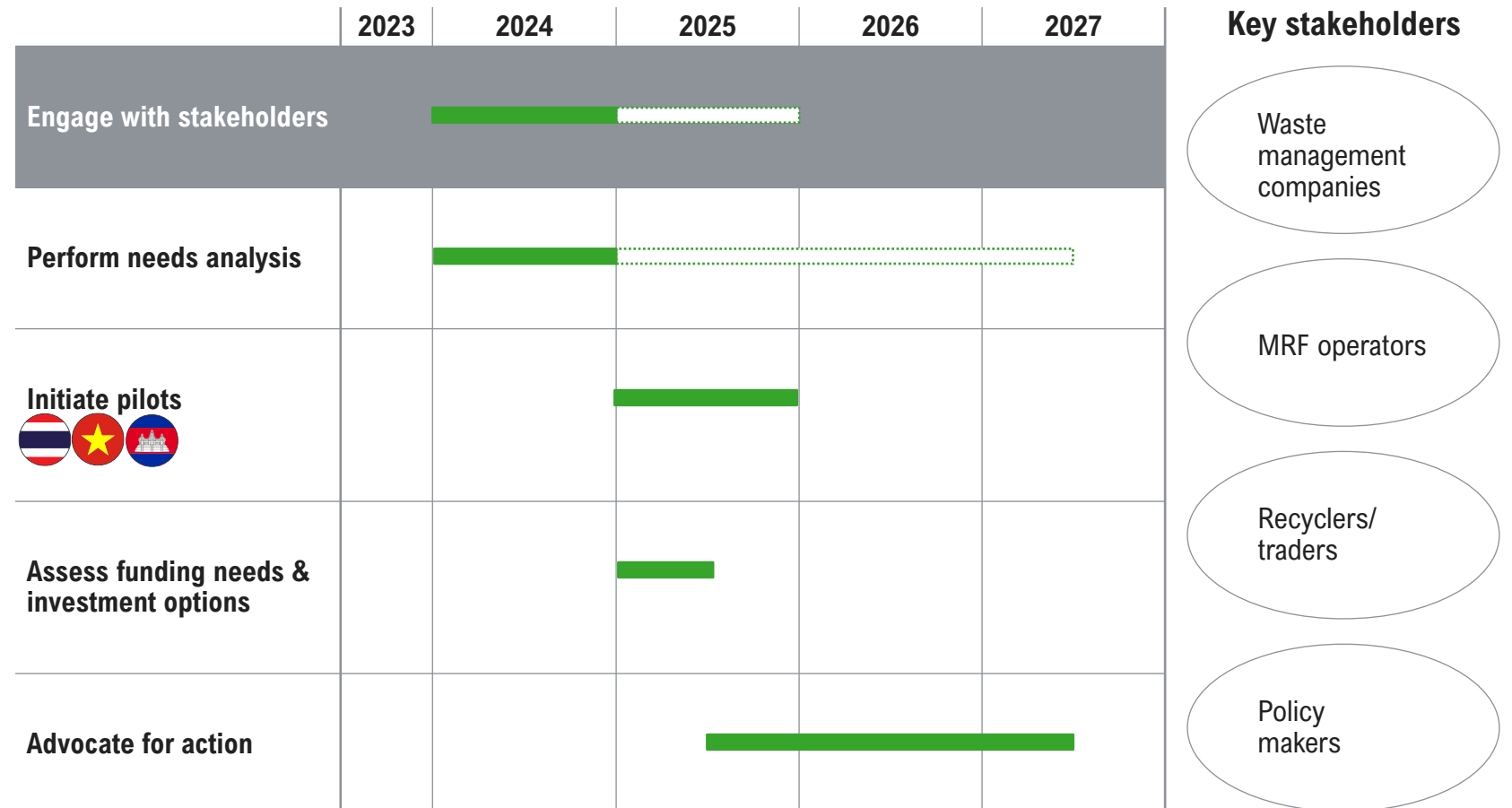
# Additional required capacities (new and upgrades) are to be assessed during discussions with stakeholders and in feasibility studies (next ~3 years)

## Lever – Sorting capacities



### Next steps

- **Engage with key stakeholders in the relevant countries:**
  - Establish a detailed report about current and future sorting capacity & way of working of the facilities:
    - Volumes processed & projection
    - % of sorting facilities equipped with conveyer belt & eddy current separators
    - UBC handling practices
  - Assess the need for sorting facilities in the SEA countries, including the impact on the waste picking economy, and initiate pilots
  - Assess funding needs & investment options across relevant geographies
  - Advocate for action & follow-up on the progress of stakeholders





# Waste sorting can broadly be organized at 4 moments in the waste collection and processing value chain

## Waste sorting overview

### Description



### AI industry action



## 1 Source separation

- Separation by households & businesses
- Separation by street pickers & collection company employees

- Advocate for source separation

## 2 Transfer station

- Basic intermediate stations where waste is collected;
- Waste collection employees have access and may perform sorting tasks



- For countries where dedicated sorting facilities are not available:
  - Advocate for the establishment of transfer stations if no dedicated sorting facilities are available
  - Advocate for equipping them with basic conveyer belts & eddy current separators

Details on how to improve transfer stations are on the next pages

## 3 Dedicated sorting facility (e.g. MRF)

- Dedicated facilities aimed at recovering recyclable material from the waste stream, including UBC & other waste streams



- In countries with existing sorting plants:
  - Advocate for building sufficient sorting capacity
  - Advocate for automation (in particular for installing conveyer belts)
  - Advocate for equipping them with eddy current separators

Details on how to improve transfer stations are on the next pages

## 4 Sorting at landfills

- Waste pickers at landfills scavenge through waste with the aim of recovering UBC



- Advocate for those measures that reduces sorting at landfills (in particular in an informal context) as creating reasonably good working conditions is very difficult



# More basic semi-automated facilities can be more easily built or improved with a moderate investment in conveyor belts and eddy current separators

Lever – Implement rudimentary sorting before incinerators/ landfills

2

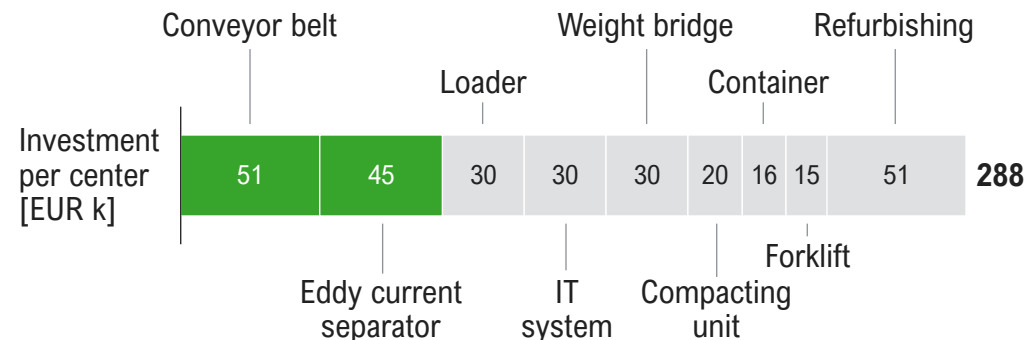
## Description

- Rudimentary transfer stations can be improved by installing first conveyor belts and later eddy current separators
- Conveyor belts would improve the sorting efficiency and HSE conditions of waste pickers working in landfills and transfer stations
- Eddy current separators would allow the station to work in almost fully automatic mode

## Components

- They are equipped with loaders and conveyor belts to intercept fleet dropping off packaging waste
- Includes infrastructure for compacting and lifting packaging waste, before sending it to sorting stations or to recyclers
- IT systems are needed to manage the plant, and refurbishing may be needed to adapt existing plants

## Investment needed



## Success factors



- Serves dual purpose of processing/ transferring waste collected from bring banks, as well as a drop-off point for pickers
- Potential to leverage as hub for waste pickers when the plant is working semi-automatically
- Operations can be easily scaled up

## Limitations



- Relatively high and fixed initial costs in setting up, also compared to manual waste picking

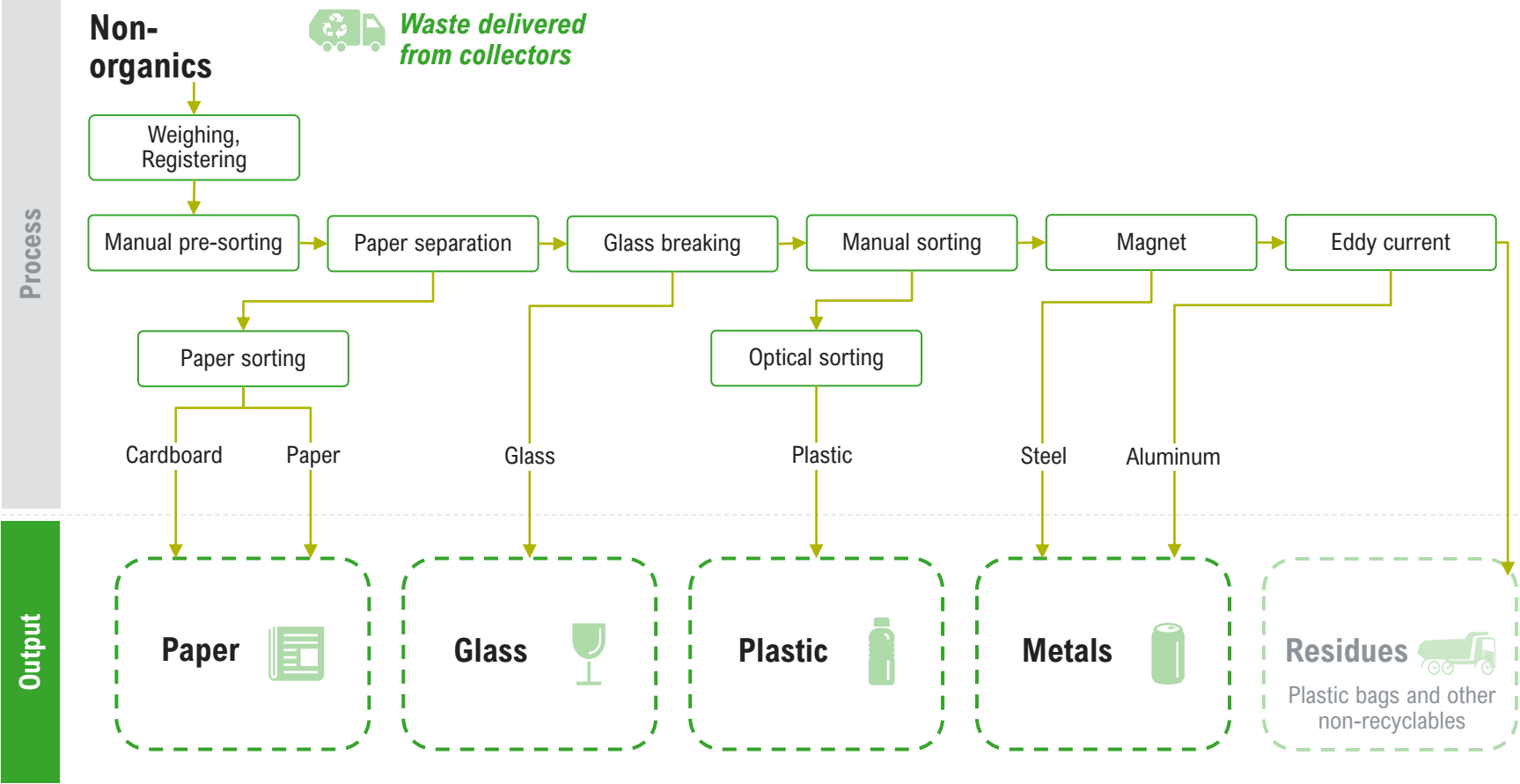




# A typical dedicated MRF follows a general process steps from feedstock to final output, with the sequence of materials

Example of a typical dedicated sorting facility (MRF process flow)

3





# Building a sorting facility requires investment in equipment, depending on the number of materials, up to a few EUR m

Sorting centers – Key components, investments, success factors and risks

3

## Infrastructure

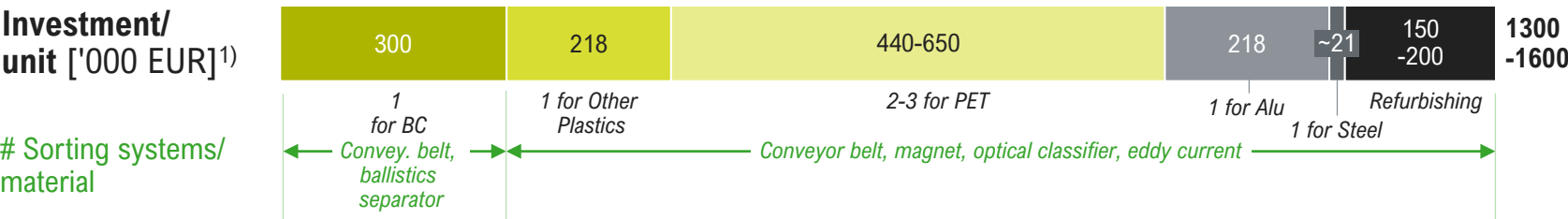
- **Pilot sorting centers**, each with an area of ~2,000 sqm, to be built for waste sorting infrastructure for alu, PET, other plastics, steel and bev. cartons
- Sorting can be **contracted** to tertiary sorting centers for the remaining volumes

## Components



### #1 Equipment

- Sorting systems for all materials: conveyor belt, ballistics separator rotating glass etc.



## Components



### #2 Auxiliary equipment

- > Equipment used to handle the different types of packaging



1) Ranges account for differences between the two sorting center pilots

## Key advantages/ success factors



- Value creation for lightweight fraction collected via HH and non-HH (HoReCa) – Significant costs/ complexity otherwise to manage separate fractions for all packaging materials
- Can be scaled up gradually depending on alliance size/ volumes under compliance

## Key risks/ limitations



- High investment/ fixed costs & complexity to operate
- Additional associated operational costs (personnel, fuel) that need to be covered, even for low generated waste volumes





## 3.4. Disposal



# Landfill fees need to be at a high level in developed and underperforming countries, while ensuring viable alternatives exist in developing systems

## Lever – Landfill fees



### Objectives

- Discourage landfilling of household waste and the recyclable materials contained in it by increasing the cost per ton of material being landfilled
- Make the business case of alternatives to landfilling more attractive by increasing the cost of landfilling
- Reduce land consumption by landfills



### Recommendations for aluminium industry

- **Support a feasibility study to confirm the need and steps (different for each country) required to increase landfilling fees:**
  - Assessment in detail of the current UBC content found in landfills
  - Benchmarking landfill fee practices around the world to identify best practices
  - Assessment of the knock-on effects on other aspects of the waste management system
- **Establish advocacy action with waste management policy makers to increase landfilling fees**



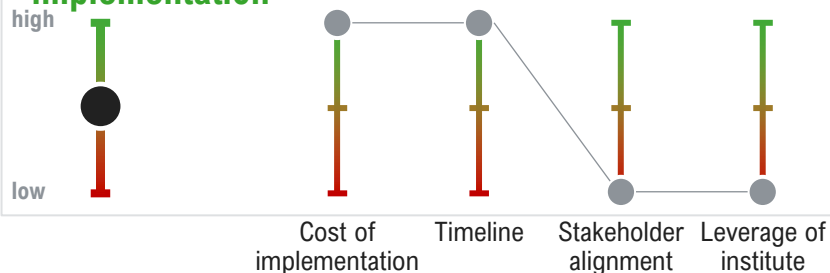
### Country specifics



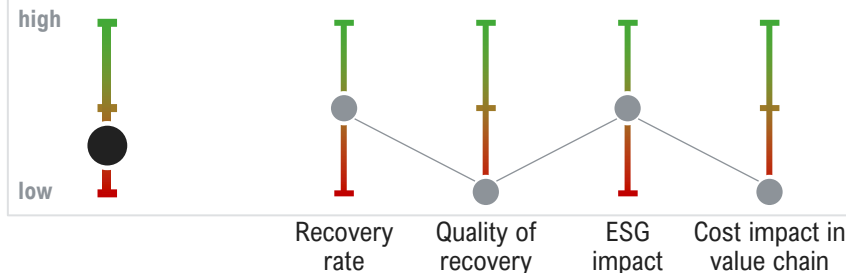
- Landfilling fees in Korea are already prohibitively high
- Could be increased in many regions of the country, where viable alternatives exist
- Assess an increase to encourage development in alternative treatment (incineration/ recycling)
- Viable alternatives need to be put in place and ensured before increasing or imposing large landfilling fees
- Implementation could start at a pilot stage in large urban areas



### Ease of implementation



### Impact



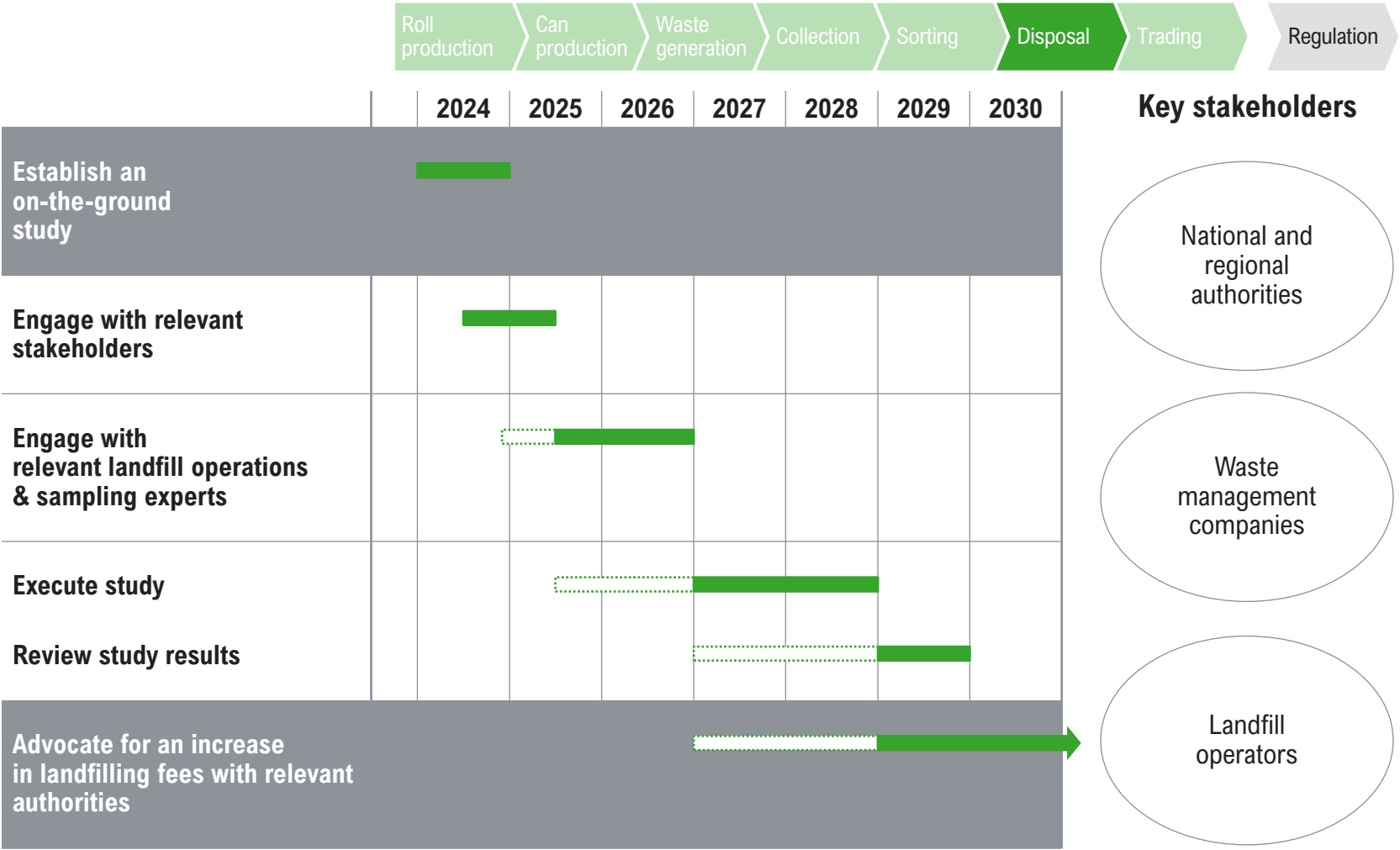


# Landfilling fees can be adjusted in the short-medium term by national or regional authorities, after pilots ensure the appropriate level

## Lever – Landfill fees

### Next steps

- Establish an on-the-ground study to detail the landfill content in relevant countries – understand in detail the UBC content in landfill:
  - Engage with relevant waste management stakeholders
  - Engage with relevant waste management experts to set up study
  - Execute study
  - Review study results
- Advocate for an increase in landfilling fees with relevant authorities









# Many Western European countries ban some types of MSW and impose high incineration taxes

Landfilling and incineration fees in key EU countries



## Landfill tax/ ban ≥ Incineration fees

	Landfill tax/ ban	Comments	Incineration tax/ ban	Comments
 <b>Germany</b>	<b>Ban</b> of combustible/ biodegradable waste	Germany was one of the first countries to take action to limit landfilling in order to increase recycling	<b>EUR 150/ tonne</b>	Regional rates, can vary to up to EUR 200/ ton (e.g., in Bavaria)
 <b>Belgium</b>	<b>Ban</b> for household waste in place since before 2006	Landfilling has been legally limited and now accounts for only 2% of plastic waste treatment	<b>EUR 95/ tonne</b>	If incineration is included in ETS <sup>1)</sup> , the rate could increase to EUR 125/ tonne <sup>2)</sup>
 <b>Netherlands</b>	<b>Ban</b> on landfill for 35 waste-streams, including all waste suitable for incineration	A lack of landfill capacity prompted the country to reduce landfilled waste to ~2%	<b>EUR 70/ tonne</b>	If incineration is included in ETS, the rate could increase up to EUR 85/ tonne <sup>3)</sup>
 <b>France</b>	<b>EUR 45/ tonne</b>	Ban on source-separated waste collected & waste from municipalities with no source separation	<b>EUR 18/ tonne</b>	Estimated to double by 2025

Comparatively low taxes in France contribute to low recycling rates

## Key observations

- The EU sets some clear guidelines for environmental and waste management targets, such as a 10% reduction by 2035 in municipal waste generated, outlined in the **Landfill Directive**
- According to this directive, the proportion of **municipal waste disposed of by landfilling in EU countries should be reduced to 10% or less** of the total amount of municipal waste generated **by 2035**
- Municipal waste incineration is currently excluded from the European Emissions Trading System** – this may change in the future, requiring waste companies to buy **emission credits for CO<sub>2</sub> resulted in the process of treating waste**; this additional cost could be a **strong incentive** for a greater shift towards reuse and recycling

1) EU Emissions Trading System

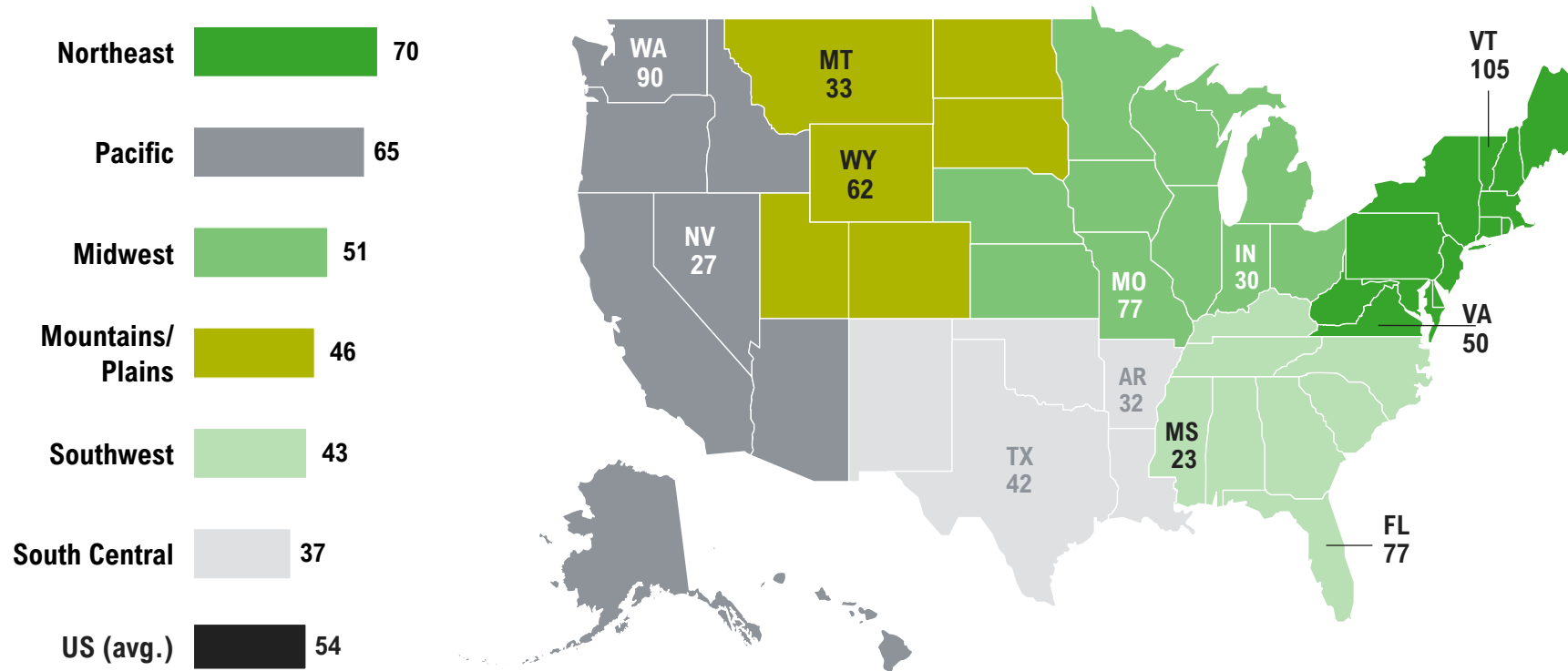
2) For the forecasted 2030 EU ETS carbon prices of EUR 90/ tonne



# Prevalence of landfilling in the US can be attributed in part to low fees and lack of landfill diversion strategies

## Landfilling fees by state

Average landfill fees for MSW in USD/ tonne<sup>1)</sup>



1) Data from 2021

## Key takeaways



- Low landfilling costs are considered an important factor for the slow development of collection/ recycling schemes in the US
- US is considerably lagging behind EU (EU average landfill price ~USD 74/ tonne and much higher in some Western countries; legislation to restrict recyclable landfilling by 2035)
- There is high variation in cost between regions
- Discrepancies inside states are even higher; some states (e.g., WA) have costs of ± USD 50 compared to state average
- Adding to the relatively low landfilling fees, limited landfill diversion targets are in place

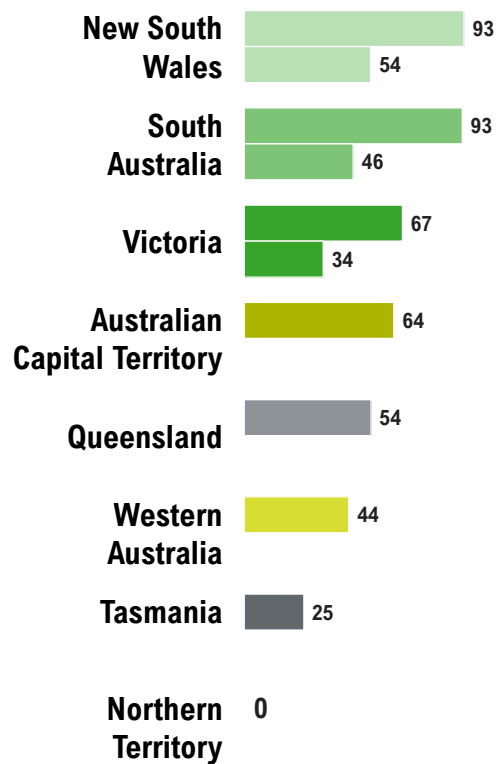


# Similarly low fees in Australia (also compred to the purchasing power) are not a large landfilling deterrent

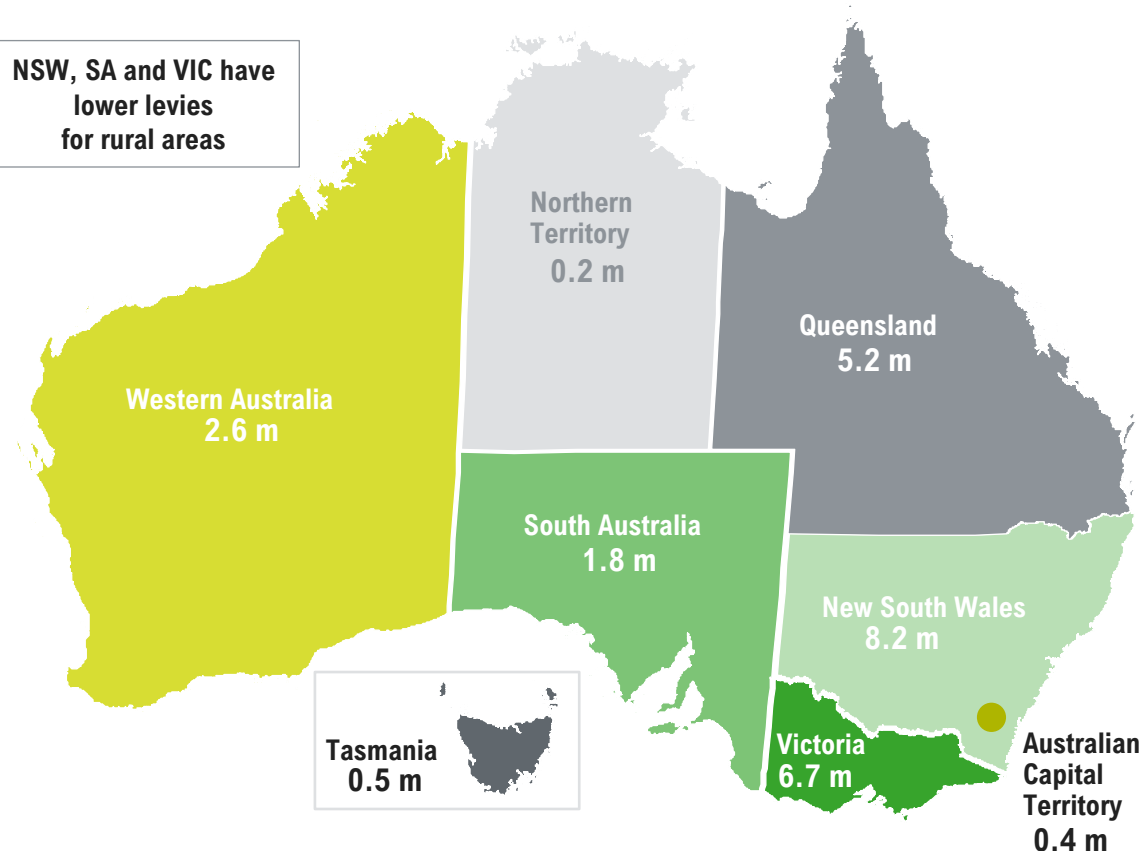
## Landfill fees in Australian territories



### Landfill fees for MSW in EUR/ ton



NSW, SA and VIC have lower levies for rural areas



X.X Territory population [inhabitants], 2020

## Key takeaways



- Overall value chain costs of recycling (incl. collection etc.) are slightly higher than total costs of landfilling for plastics and board in general
- There is a relatively high variance of landfill costs between states, but main population areas with highest levies
- Within-state variance of costs are based on urbanization level
- Moderate landfill levies are in place in comparison to Western Europe, and closer to North America

*"Landfilling is still common and fees are low especially outside large cities"*

– Industry association expert





## 3.5. Trading



# A global trading platform is needed to enhance transparency and a more efficient market where aluminium UBC can reach optimal recycling facilities

Lever – Support global trading platform for waste



## Objectives

- Improve the overall UBC scrap market, enabling aluminium UBC scrap to reach destinations where it can be optimally recycled
- Facilitate global trade between countries and make the value chain more efficient
- Enhance price transparency and increase supply chain visibility to reduce the risk of fraud
- Provide the opportunity to recyclers to issue certificates on the actual recycling of the bails
- Provide confidence to consumers, brand owners & collectors that waste is actually properly recycled



## Recommendations for aluminium industry

- **Partner with relevant stakeholders to create an international UBC scrap trading platform that increases transparency:**
  - Design the operating model for such trading platform (governance, process, organization)
  - Develop an MVP (minimum-viable product), establishing minimum functionality (likely in partnership with relevant service providers)
  - Run a pilot project with a select group of stakeholders
  - Scale the project, by onboarding more traders & recyclers over time



## Country specifics

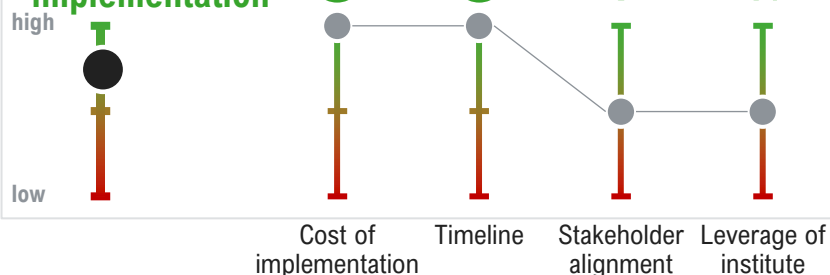


- The lever is applicable globally and is expected to reap benefits, both in the countries in scope of this study and beyond

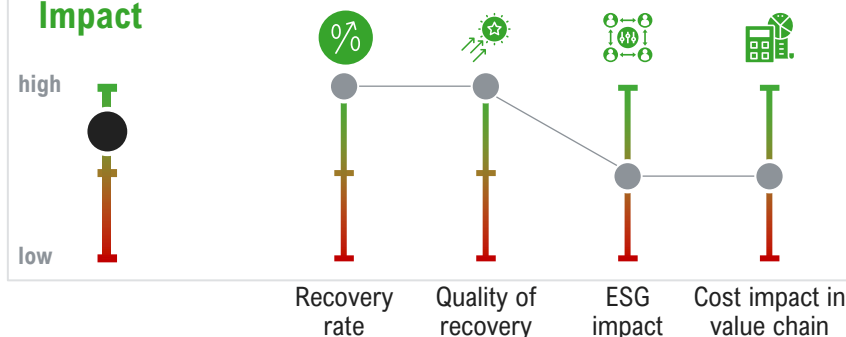


- The responsible stakeholders for creating the ID for the UBC bail would be junk shops

## Ease of implementation



## Impact





# A pilot involving a significant percentage of all relevant stakeholders would allow fine-tuning the platform before rolling it out

Lever – Support global trading platform for waste



## Next steps



- Initiate discussions with key stakeholders, which include collection companies, MRF operators, traders, and recyclers, to align on the requirements of the system
- Design the operating model (governance, process, organization) considering the received input from stakeholders
- Design a pilot with a select group of stakeholders test the platform and enhance it with the collected feedback
- Launch training and awareness campaigns to onboard all relevant stakeholders

	2023		2024				2025				2026		Key stakeholders
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Engage with stakeholders	■												Collectors
Design operating model			■										MRF and sorting facility owners
MVP development					■								Traders
Initiate pilot							■						Recyclers
Training and awareness							■						Customs authorities
Scale-up and rollout									■				



# A clearing house approach is suggested for the creation of an aluminium scrap trading platform; the platform would increase transparency and market efficiency

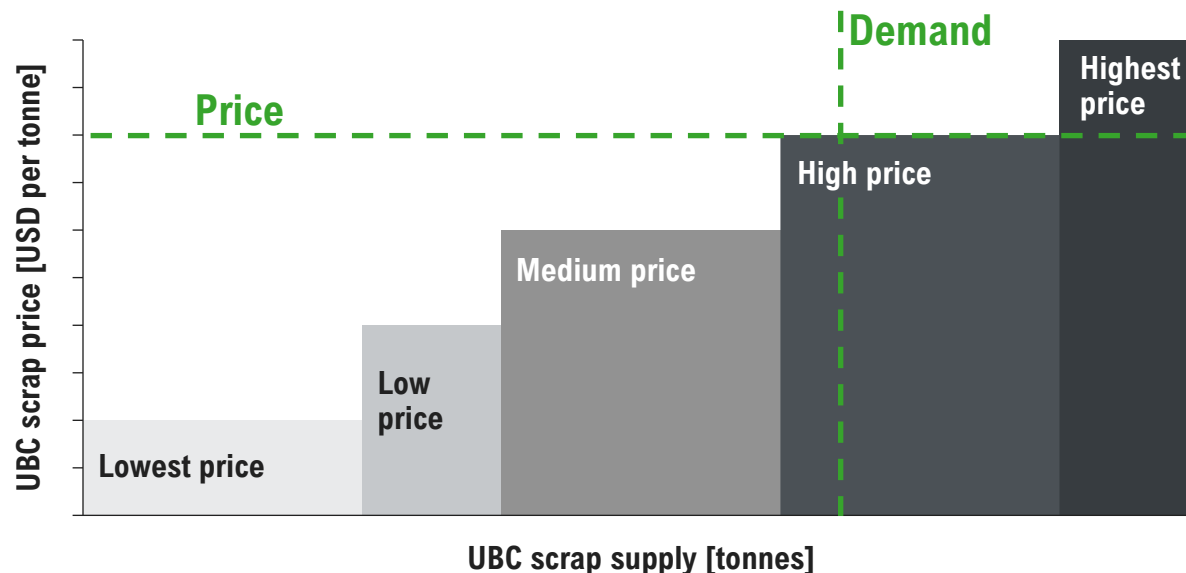
## Clearing house platform overview

### Global trading platform

#### Transparent offer & demand principles

- I • **Traders make their offers:** volume, price, scrap characteristics
- II • **Buyers make their buy bids:** volume, price, characteristics
- III • **The platform is transparent,** all market participants can get (anonymized) data about the actions of other market participants

#### Clearing house



- The offer-demand match will determine a price per each quality grade of the scrap (very high, medium, low quality, etc.)
- A market price will be determined on a timely basis (to be determined) based on the offer that is covered by the demand





## 3.6. Recycling



# SEA is a region of focus which would benefit from additional recycling capacities; Australia would need a facility with mixed feedstock to achieve a competitive scale

## Lever – Recycling capacities



### Objectives

- Cans can be recycled into a closed-loop process (can-to-can) or downcycled into lower value products
- The aim is to increase the proportion of cans being recycled globally and the quality of recycling (with a preference for can-to-can process)
  - Ensure recycling is done in environmentally friendly processes
  - Ensure enough capacity is available for the volumes of scrap generated locally/ regionally
  - Where there are significant volumes being downcycled, investigate opportunities to achieve closed loop recycling



### Recommendations for aluminium industry

- Opportunities to improve the recycling infrastructure in the different target countries have been identified
- The aluminium industry can take a leading role in realizing these projects by:
  - Performing detailed feasibility studies on the opportunity of installing or upgrading recycling
  - Assess the impact of such projects on the UBC scrap market and on adjacent markets (e.g. the scrap market for deoxidizers, car parts, etc.)



### Country specifics<sup>1)</sup>



- Existing capacities are enough to cover more than the domestic demand



- There could be an opportunity for new capacities with mixed feedstock (incl. cans) potentially in the South East



- Opportunity to develop local (C2C) recycling, but nearby capacity in KSA to be considered



- Expand existing facility, this is only relevant if more volumes from neighboring countries come

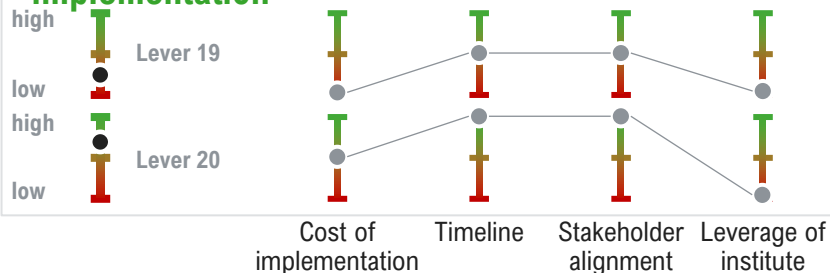


- Upgrade existing facilities (reduce environmental impact)
- Build C2C capacities given high can volumes

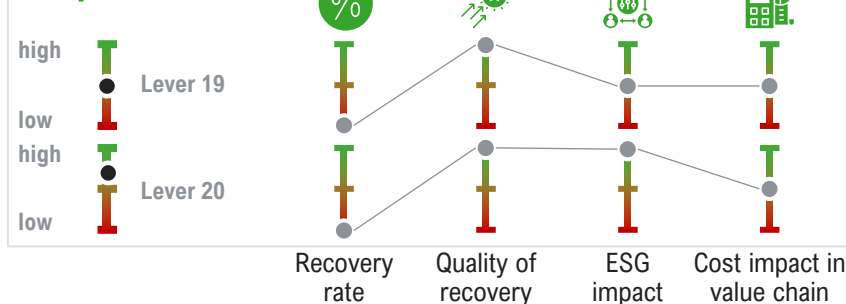


- To be assessed, but unlikely due to limited market size; more attractive countries in the region

### Ease of implementation



### Impact



1) More details provided on the next pages



# Ensuring enough recycling capacity takes firm alignment & feasibility studies, considering costs, expected returns & impacts on all aspects of the value chain

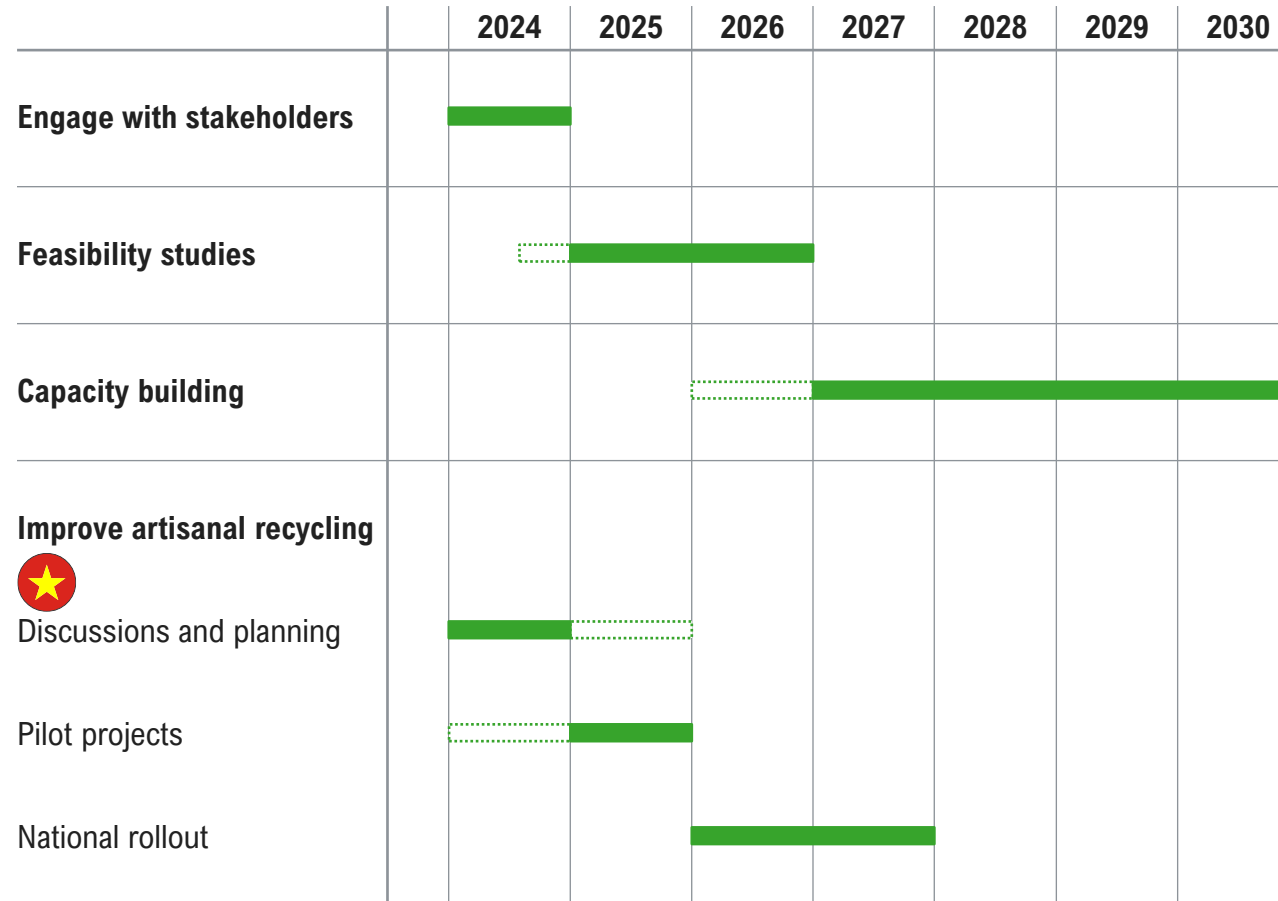
## Lever – Recycling capacities



### Next steps



- Initiate discussions with key stakeholders in the countries where applicable (Australia and SEA region)
- Analyze the feasibility of building a plant in Australia (most likely with mixed feedstock) and potential geographical location (focus on the SE region)
- Assess the need for additional capacity in the SEA region
- Expand existing C2C capacities in Thailand (if applicable from previous assessment)
- Initiate plan of improving the quality of small-scale recycling in Vietnam
- Build capacity in Vietnam (if applicable from previous assessment)



### Key stakeholders



Smelters  
Traders/ exporters  
Industry associations  
Federal and state gov.  
Can producers



Recyclers  
Policymakers  
Industry associations  
Can producers

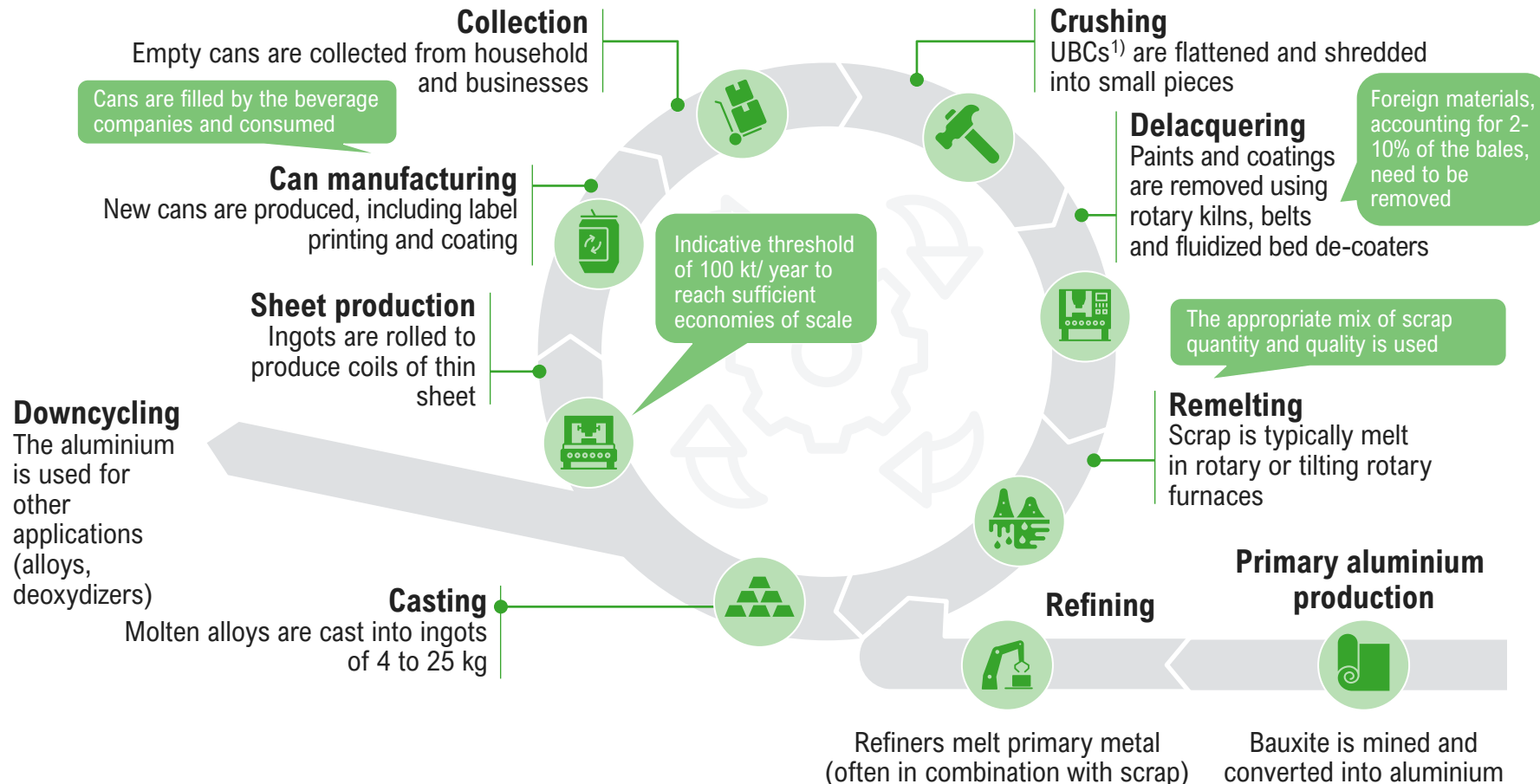


Recyclers  
Policymakers  
Industry associations  
Traders/ exporters



# Recycling cans is a multi-step process, with considerations in pre-treatment and the chemical composition of products

## Aluminium cans recycling process



1) Used beverage cans

## Key takeaways



- For pre-processing, it is required: a shredder, magnet separator, zig-zag separator
  - Explosions are common in shredders, so they need to be robust
- Remelting can be done into blocks such as ingots and billets, which can be used for a variety of applications
- In case of lack of scrap, other types of aluminium can be added; however, this results in different grades of aluminium obtained
- Ingots are finally rolled in the rolling mill in the case of can-to-can process



# Operating a can-to-can or industry grade alloy recycling plant requires significant economies of scale for the three major components identified

## Key components of a can-to-can recycling facility

### Description

#### Preprocessing facility

- Various types of sorting equipment is used (shredders, eddy current separators, vibrating screens, zigzag separators, etc.)



### Investment requirement

Indicative, for a 100 kt/ year plant

- 100-200 m

### OPEX considerations

- Raw materials

#### Remelting plant

- Remelting can be done into blocks such as ingots and billets, which can be used for a variety of applications
- In case of lack of scrap, other types of aluminium can be added, resulting in different alloys



- 200-250 m

- Labor, utilities, maintenance

#### Rolling mill

- Ingots are finally rolled in the rolling mill in the case of can-to-can process
- The process can be done “hot” or “cold” with differences in output characteristics and cost



- 400-500 m









- Labor, utilities, maintenance

As a rule of thumb, recycling facilities need to process c. 100 ktonne of aluminium scrap per year to reach sufficient economies of scale to ensure viable operations



# Building/ expanding recycling capacities is a highly feasible option in Thailand & Vietnam, while the other countries will likely rely on existing facilities and exports





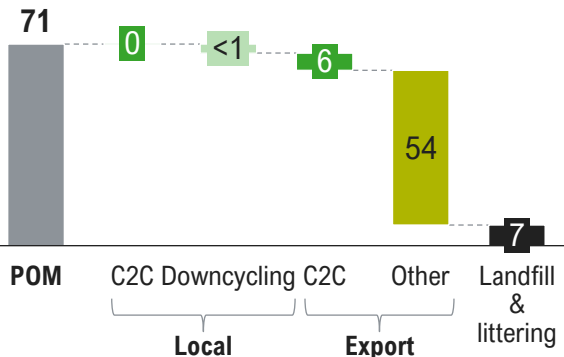

## Lever – Recycling capacities – Country options

Current situation	Investment options	Cost	Feasibility	Considerations
 <p>92</p> <p>0 &lt;1 45 24 23</p> <p>POM C2C Downcycling C2C Other Landfill &amp; littering</p> <p>Local Export</p>	<p><b>Option 1a:</b> Build local shredder, remelting &amp; recycling capacity as well as rolling mill</p> <p><b>Option 1b:</b> Build local shredder, remelting &amp; recycling capacity</p>	<ul style="list-style-type: none"> <li>Can processing, remelting facility &amp; rolling mill</li> <li>Can processing, remelting facility</li> </ul>	 	<ol style="list-style-type: none"> <li>Local UBC scrap volumes too low to reach 100 kt threshold</li> <li>Relevant other sources of aluminium scrap to be identified &amp; secured (&amp; demand for associated products to be secured)</li> <li>High transport costs to transport UBC across scattered populated regions</li> <li>High labor costs</li> </ol>
 <p>7.5</p> <p>0 0 1.5 1.0 5.0</p> <p>POM C2C Downcycling C2C Other Landfill &amp; littering</p> <p>Local Export</p>	<p><b>Option 1a:</b> Build local shredder, remelting &amp; recycling capacity as well as rolling mill</p> <p><b>Option 1b:</b> Build local shredder, remelting &amp; recycling capacity</p>	<p>Can processing, remelting facility &amp; rolling mill</p>	 	<ol style="list-style-type: none"> <li>Local UBC scrap volumes too low to reach 100 ktonne threshold</li> <li>Strong local competition for UBC scrap from neighboring KSA</li> <li>Relevant other sources of aluminium scrap to be identified &amp; secured (&amp; demand for associated products to be secured)</li> </ol>
	<p><b>Option 2:</b> Continue reliance on export</p>	<p>Limited investment in improving export conditions &amp; traceability</p>	 	<ol style="list-style-type: none"> <li>Need for enhanced traceability of exports</li> </ol>



# Building/ expanding recycling capacities is a highly feasible option in Thailand & Vietnam, while the other countries will likely rely on existing facilities and exports

## Lever – Recycling capacities – Country options

Current situation (ktonnes)	Investment options	Cost	Feasibility	Considerations
  <p>131 0 124 1 &lt;1 10</p> <p>POM C2C Downcycling C2C Other Landfill &amp; littering</p> <p>Local Export</p>	<b>Option 1a:</b> Improve local recycling facilities <b>Option 1b:</b> Establish local C2C facilities  <b>Option 2:</b> Increase exports to countries with C2C capabilities	<ul style="list-style-type: none"> <li>Can processing (mostly at small scale)</li> <li>Can processing, remelting facility &amp; rolling mill</li> </ul> Limited investment in improving export conditions & traceability	   	1. Social impact on existing recycling villages if the current facilities are closed 2. Skills & capabilities present in the recycling villages to be assessed 3. Supply-demand disruptions if recycling villages stop operating  1. Impact on government revenues if export tax abolished 2. Need to establish additional transparency
  <p>71 0 &lt;1 6 54 7</p> <p>POM C2C Downcycling C2C Other Landfill &amp; littering</p> <p>Local Export</p>	<b>Option 1a:</b> Improve local recycling facilities <b>Option 1b:</b> Establish local C2C facilities  <b>Option 2:</b> Continue reliance on export	<ul style="list-style-type: none"> <li>Can processing (mostly at small scale)</li> <li>Can processing, remelting facility &amp; rolling mill</li> </ul> Limited investment in improving export conditions & traceability	   	1. Volumes too low to reach critical threshold of 100 kt per year 2. Unfavorable business conditions (ease of doing business, missing skilled labor force, energy costs)  1. Need for enhanced traceability of exports





## **3.7. Can Production**



# Contemporary UBCs are the result of years of design and are fully recyclable – further innovation and guidelines can simplify closed-loop recycling

## Lever – Support design for circularity of aluminium cans



### Objectives

- **Continuously engage with players across the value chain to encourage all players across the value chain to always opt for the best possible design choices**
  - Emphasize, through the existing coalition the importance of implementing already identified best practice for can design that will make can-to-can recycling easier (cf. guidelines issued earlier by the International Aluminium Institute)
- **Continue ongoing research into can design (aim for unalloy cans, pursue further light weighting of cans, etc.)**



### Recommendations for aluminium industry

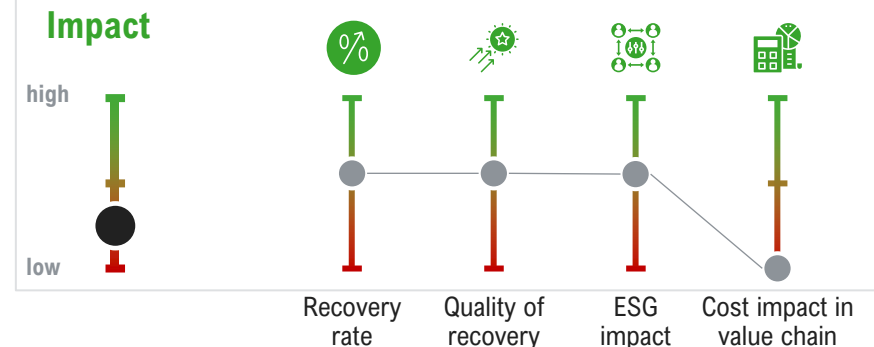
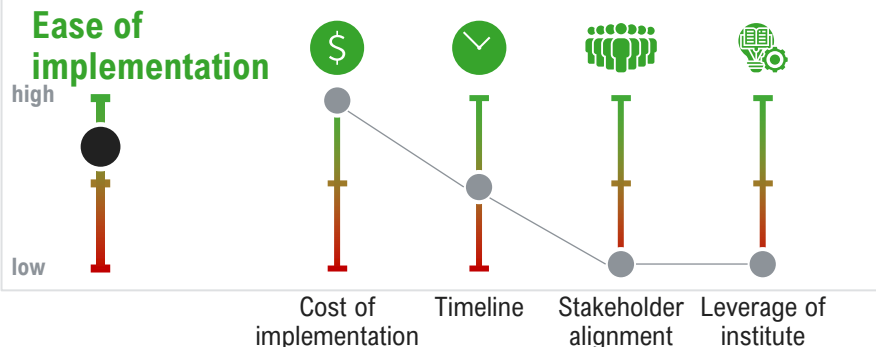
- **Engage with players across the value chain – in particular brand owners – to maintain awareness on design choices that simplify processing of cans for can-to-can recycling**
  - Leverage existing global coalition and/or national coalition as a platform to drive optimal can design choices and in that way encourage circularity.
  - If relevant, establish a charter with principles & guidelines to be respected by all players to promote can design best practice
- **Maintain and deepen working relations with research institutions to:**
  - Ensure all stakeholders are informed about the latest developments in this field
  - Consider sponsoring further research in this field, e.g. through establishing grants



### Country specifics



- The lever is applicable globally and is expected to reap benefits, both in the countries in scope of this study and beyond





# The aluminium industry can be a driving force in bringing market stakeholders together around a common guidelines that simplify full circularity

Lever – Support design for circularity of aluminium cans



## Next steps



- **Maintain awareness on optimal can design choices**
  - Reach out to stakeholders & establish a coalition
  - Define & negotiate charter for good practices can design
- **Engage with research institutes**
  - Establish fora & conferences on the topic
  - Assess the relevance / opportunity to further sponsor investment into can design

	2023				2024				2025				2026				Stakeholders <sup>1)</sup>
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
<b>Establish (global) coalition aimed at optimizing can design</b>																	Brand owners (soft drink manufacturers, beer producers, etc.)
• Reach-out to coalition members																	Can manufacturers
• Define & negotiate charter for good practices																	
• Monitor the implementation of identified good practices																	Research institutes with a strong focus on material sciences
<b>Engage with research institutes</b>																	
• Establish discussion & exchange with research institutes																	
• Establish grants for specific investment into research on can design																	

1) Non-exhaustive





## **3.8. Regulation**



# A mandatory EPR is suggested as a fundamental policy in developing efficient waste management infrastructure for all analyzed countries

## Lever – EPR



### Objectives

- An EPR (Extended Producer Responsibility) scheme supports the recycling infrastructure by collecting fees from brand owners to fund infrastructure
- Implementation of an efficient EPR sets the foundation of a performant recycling system
- Key prerequisites for EPR implementation are:
  - A **solid waste management framework**
  - Wide **coverage of waste collection** services
  - Some level of collection, sorting and **recycling infrastructure**
  - **Enforcement mechanisms**
- The implementation of EPR **typically requires 4-6 years** – alignment across the entire value chain



### Recommendations for aluminium industry

- Advocate for the implementation of an appropriate EPR schemes in the countries without an existing one.
- The aluminium industry can play a leading role by:
  - Analyzing the existing waste management framework maturity and the readiness of the country for an implementation of a scheme
  - Providing inputs on the legislative framework (incl. targets and enforcement mechanisms) to complement an upcoming scheme
  - Engaging with stakeholders to encourage alignment on a sufficiently ambitious EPR scheme



### Country specifics

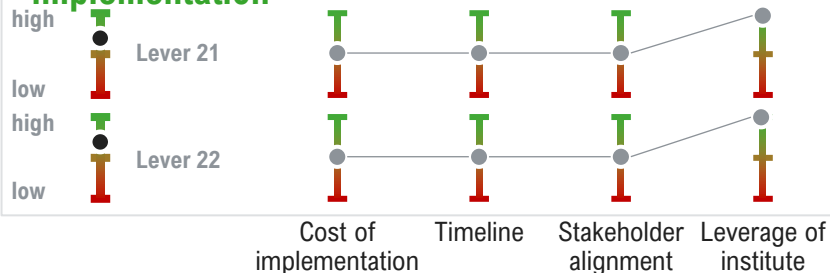


- Assess an extension of the scope and increase of fees
- Advocate for a switch from the current voluntary EPR to a mandatory system

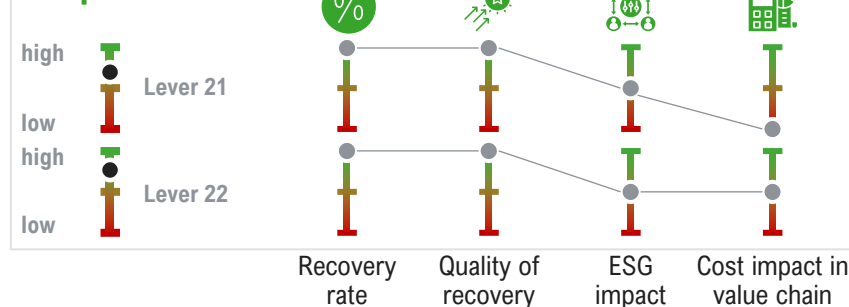


- Support the implementation of an EPR, voluntary/mandatory, with specifics to be decided as result of the alignment discussions and ongoing pilots

### Ease of implementation



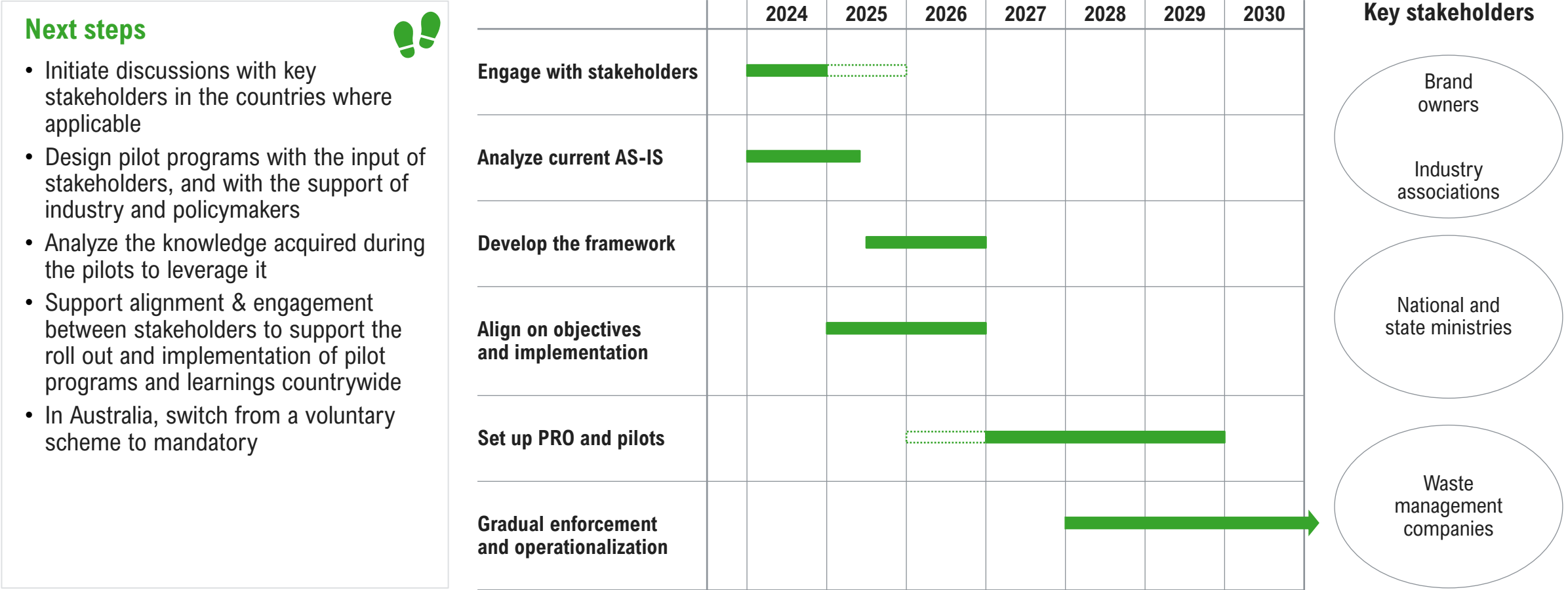
### Impact





# The timeline for introduction of EPR includes initial discussions with stakeholders and analysis of the AS-IS, with pilots in as soon as ~3 years, and further rollout

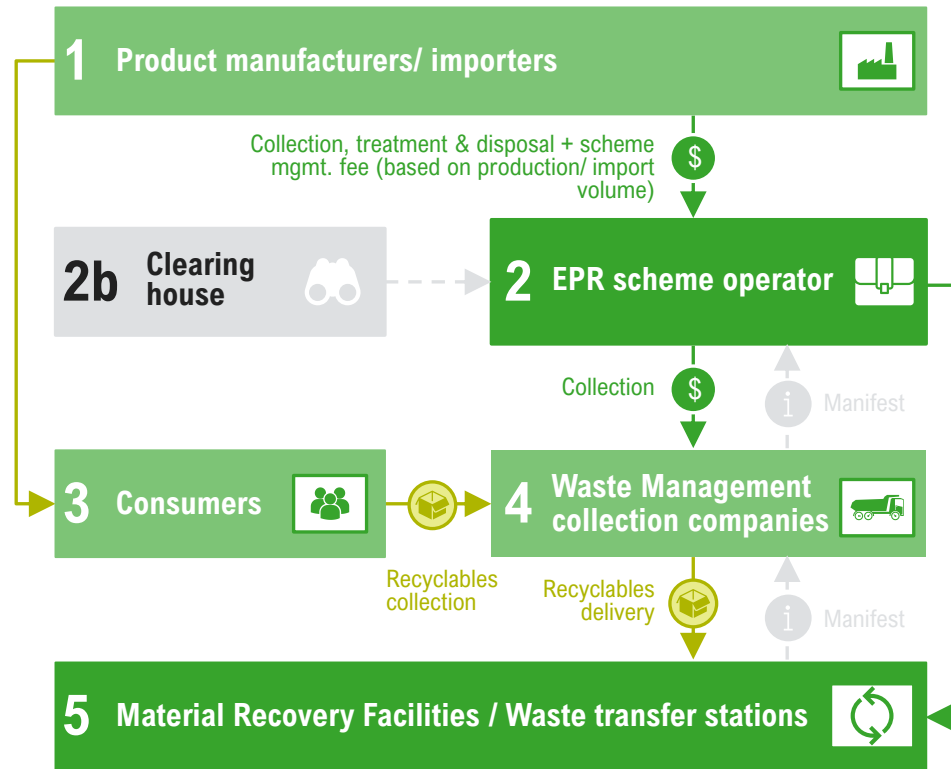
Lever – EPR





# Within the EPR scheme, PROs collect fees from producers & importers and use the resources to incentivize packaging collection & recycling

## Packaging EPR scheme overview



- 1**
  - Pays the EPR fee
- 2**
  - Sets the EPR fee
  - Collects funds from product manufacturers
  - Channels funds to WM collection companies and MRF
- 2b**
  - Balances the difference between planned and actual volume with the EPR fee of producers
- 3**
  - Segregates waste at source
- 4**
  - Collects and delivers waste to MRF
- 5**
  - Treats the waste received



The clearing house can be operated by the government authority or by the private sector after system is complete

Material flow
 Money flow
 Information flow



# Successful implementation of EPR is challenging – several key elements must be put in place

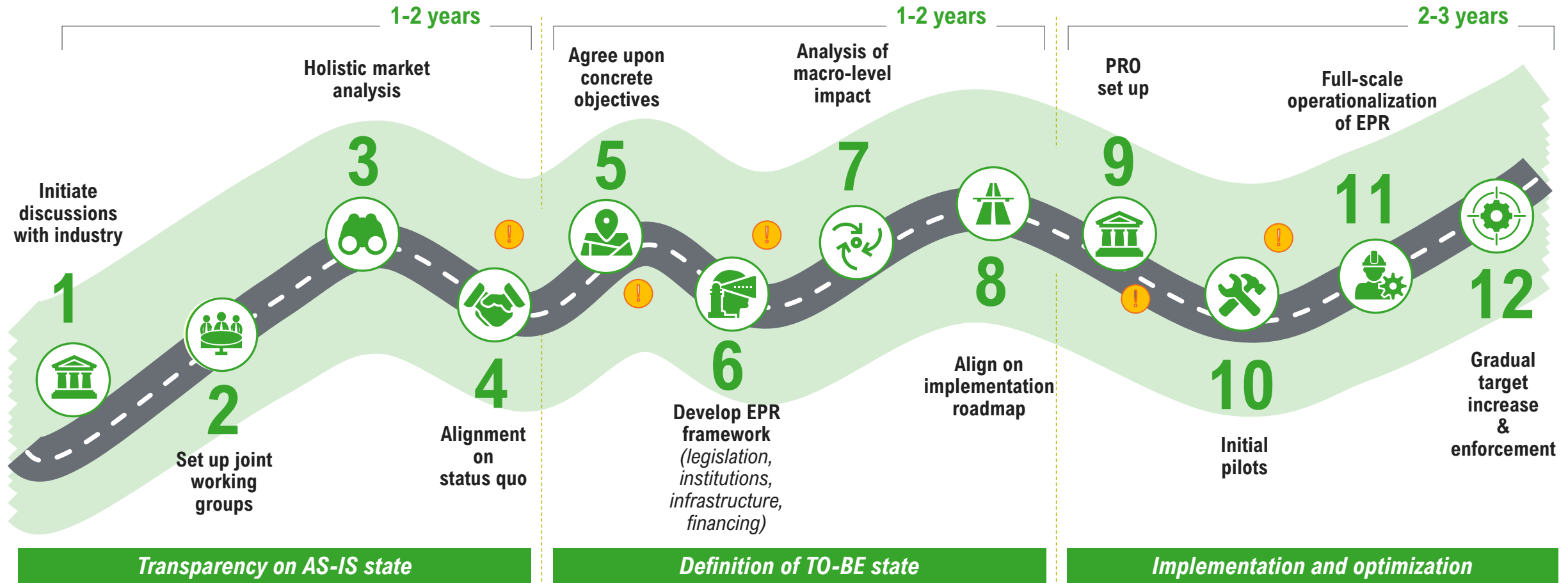
## Key elements to successful implementation of EPR – Selection





# It is essential that an EPR framework is developed jointly with industry, as part of an iterative process over multiple years

## Key elements to successful implementation of EPR – Timeline



🚩 Key decision point



# Ambitious, yet realistic targets for aluminium cans could be set and achieved in all countries, and must be complemented by a strong regulatory framework

## Lever – Recycling targets for alu cans



### Objectives

- Setting ambitious targets for recycled content incentivizes suppliers to provide recycled aluminium and implement quality control to ensure required standards
- Improving recycling rates can be accomplished with clear targets and complemented by better collection and sorting, and other innovative solutions
- Ensure the regulatory framework is in place for setting concrete actions, auditing and enforcement







### Recommendations for aluminium industry

- Engage with market participants on relevance & feasibility of setting or increasing recycling target / recycling content targets
- Study expected impacts of such targets, required investment needs and secondary effects
- Engage with policy makers to increase awareness around the importance of such targets & the need to further increase them

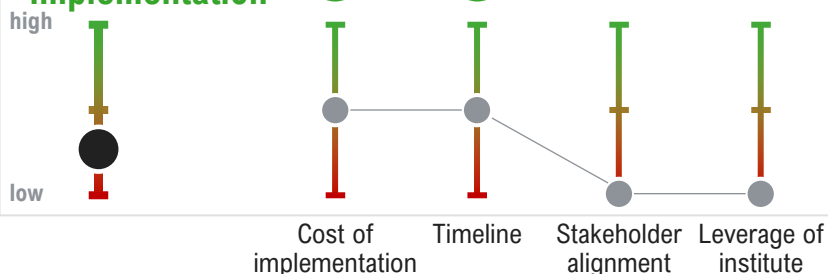


### Country specifics

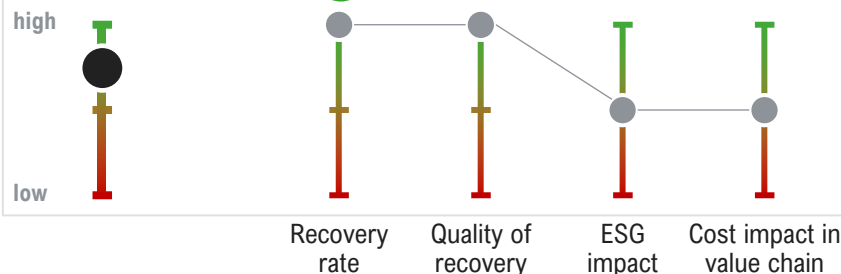


-  • Focus on recycled content targets due to already high recycling rate
-  • No dedicated recycling or recycling content target. As an EPR is in place, the country should be ready to initiate the conversation around these targets
-  • As an EPR is not yet in place, establishing and enforcing targets may prove difficult
-  • Consider and leverage the already well performing informal sector in setting and meeting targets; establishing EPR first will facilitate target setting & required reporting

### Ease of implementation



### Impact





# Setting and enforcing the targets is a process involving multi-stakeholder alignment and collaboration over 5-6 years for the countries analyzed

## Lever – Recycling targets for alu cans



### Next steps



- Review current UBC recycling targets & feasibility to increase the level of ambition:
  - Study current performance of the recycling sector
  - Identify feasibility to increase recycling targets & associated investment needs
- Engage with policy makers to advocate for ambitious, yet realistic targets

	2023	2024	2025	2026	2027	2028	2029
Engage with stakeholders							
Develop strategy and targets							
Collaborate with manufacturers, recyclers and municipalities to define reporting standards							
Awareness and information							
Adaptation and grace period							

### Key stakeholders

- Government (institutions responsible for environmental policies)
- Aluminium manufacturers and recyclers
- Waste collection companies
- Consumer advocacy groups



# Ambitious targets for aluminium cans could be set and achieved in all countries, and must be complemented by a strong regulatory framework

## Lever – Recycling quality targets



### Objectives

- Incentivize can-to-can recycling over other end-uses of UBC to reduce the need for virgin aluminium for the production of cans



### Recommendations for aluminium industry

- Understand & market the advantages related to can-to-can recycling – but also study the knock-on effects if less scrap becomes available for other industries
- Engage with the aluminium industry to calibrate realistic targets considering both the advantages & said knock-on effects
- Engage with policy makers to establish target, associated reporting as well as update the incentive mechanism to encourage can-to-can recycling
- A well-functioning EPR, with recycling targets, is a prerequisite for this lever



### Country specifics



- Korean EPR implementation is mature and can be updated to include targets & incentives related to can-to-can recycling
- Knock-on effects on other industries (in particular production of deoxidizers) needs to be well-understood)



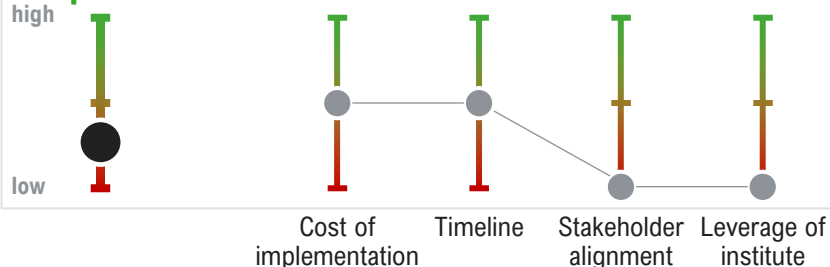
- Australia has an EPR, but no UBC recycling targets



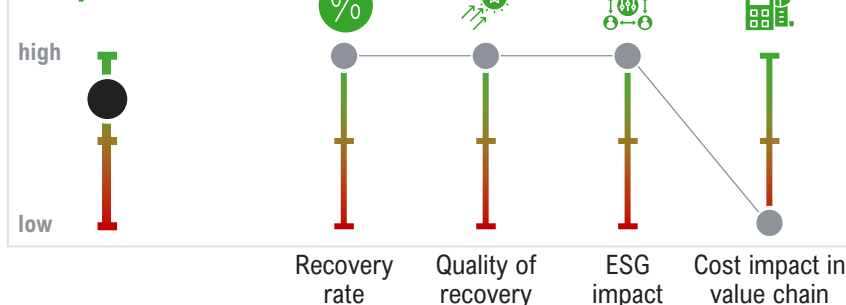
- The other countries in the scope of this study have no functioning EPR, a prerequisite for the implementation of can-to-can recycling incentives



### Ease of implementation



### Impact





# Setting and enforcing the targets is a process that needs to consider the recycling capabilities of the country

## Lever – Targets for alu cans

### Next steps

- Review current UBC recycling targets & feasibility to define targets aiming at increasing the quality of the recycling, i.e. incentivizing can-to-can recycling
  - Study current performance of the recycling sector
  - Study the benefits / downsides of can-to-can recycling
  - Identify feasibility to increase recycling targets & associated investment needs
  - Identify required incentives to establish can-to-can recycling
- Engage with policy makers to advocate for ambitious, yet realistic targets





# Increasing data transparency would benefit policy and decision-making across all steps on the value chain

## Lever – Increase data transparency



### Objectives

- Establish clear processes & systems that will provide transparency on put-on-market volumes & real-time visibility on when & how these UBC are recycled. Increased transparency will lead to:
  - Better decision-making for local authorities to make better-informed decisions about waste management policies and strategies
  - Increased accountability of collectors, traders, and recyclers, to ensure that set targets are met
  - Improved efficiency of the value chain by identifying and avoiding the leakages



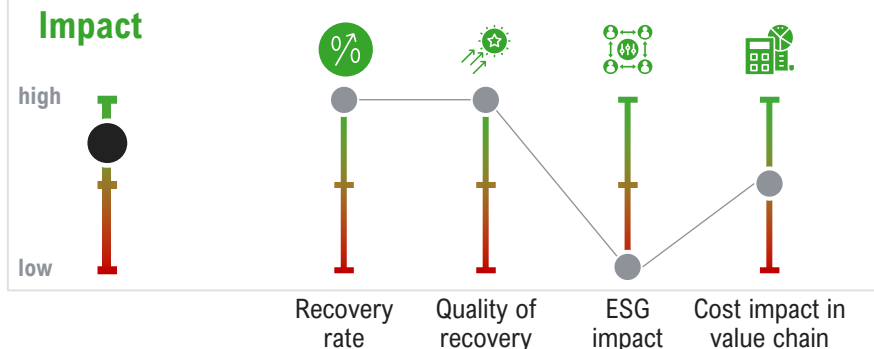
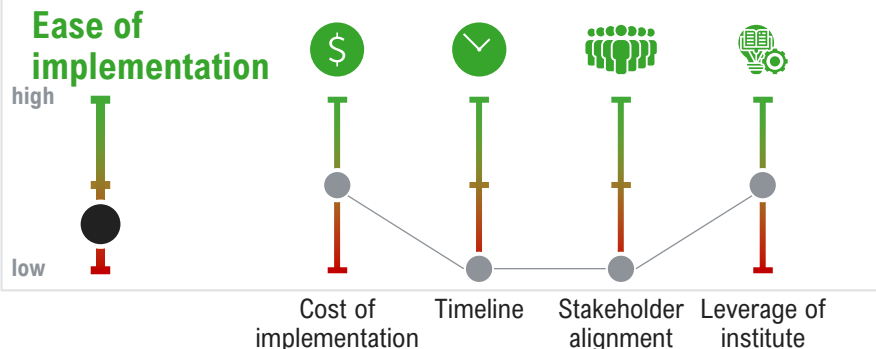
### Recommendations for aluminium industry

- The aluminium industry and its members can provide support to local policy makers in the designing and implementation of digital tools to facilitate data-sharing across the aluminium beverage can value chain
- The aluminium industry and its members can actively engage with government officials and policymakers to provide input and advocate for legislative frameworks that require mandatory recycling reporting
- The aluminium industry can take the lead in creating transparency on those areas of the value chain where the industry has significant leverage (trading & recycling)



### Country specifics

- Centralized consolidated reporting of put-on market volumes and recycling rates already in place
- Transparency on exports can be improved
- There is a consolidated tracking of put-on volumes through the DRS, but no tracking on the other streams and of recycling/trading
- The current maturity level is low; There is no data collection and no consolidated tracking
- 
- 



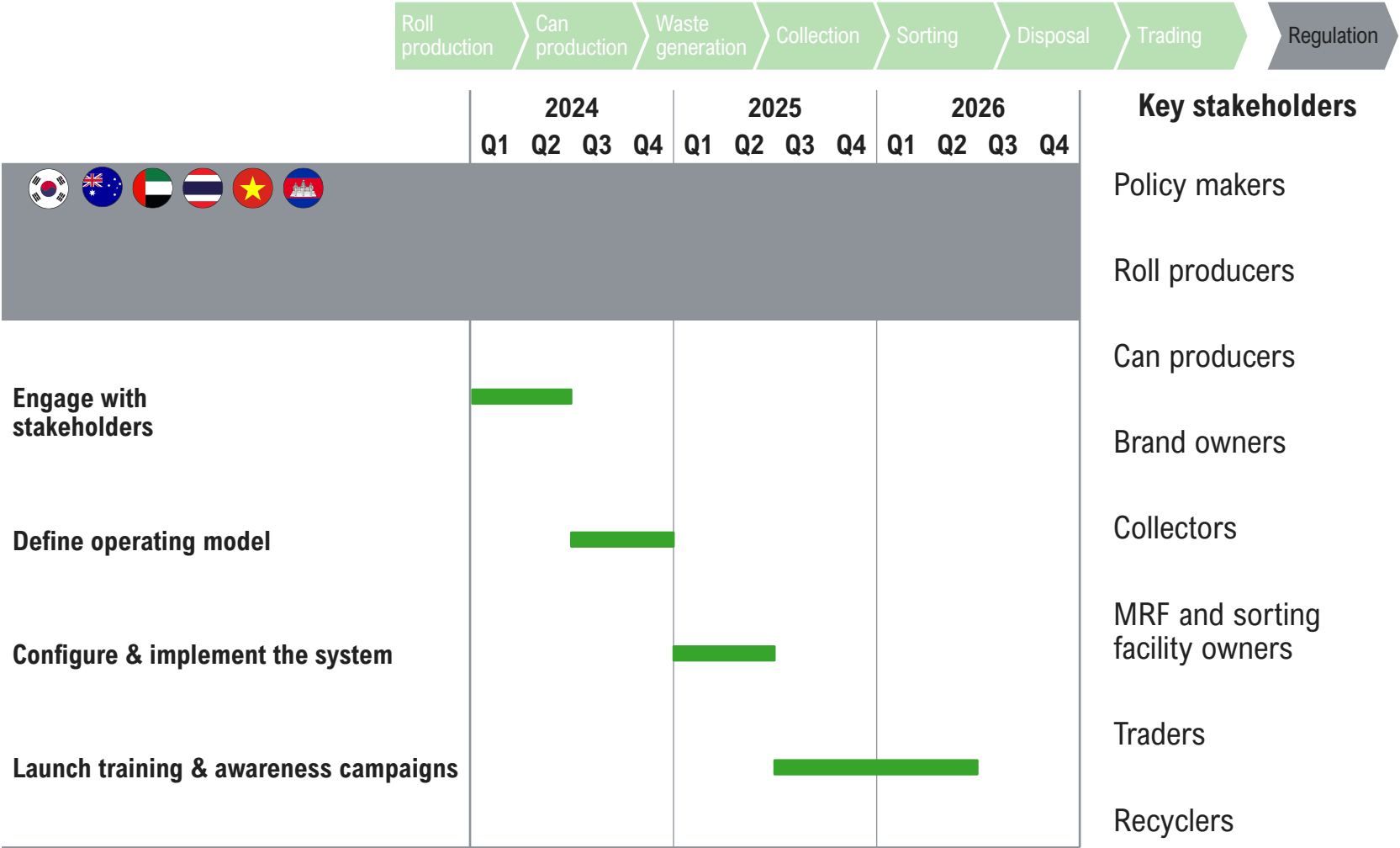


# A functioning EPR is a pre-requisite for data transparency; the aluminium industry can offer its support lobbying policy-makers and engaging with stakeholders

Lever – Increase data transparency

## Next steps

- Engage with relevant stakeholders and align on the requisites of the system
- Define the parameters of the process, i.e. its operating model:
  - Data collection frequency, data to be reported, etc.
  - System design such that human interaction is minimized
- Configure and implement the system as per the requirements of each country
- Launch training and awareness campaigns to all involved stakeholders
- Provide a grace period before enforcement

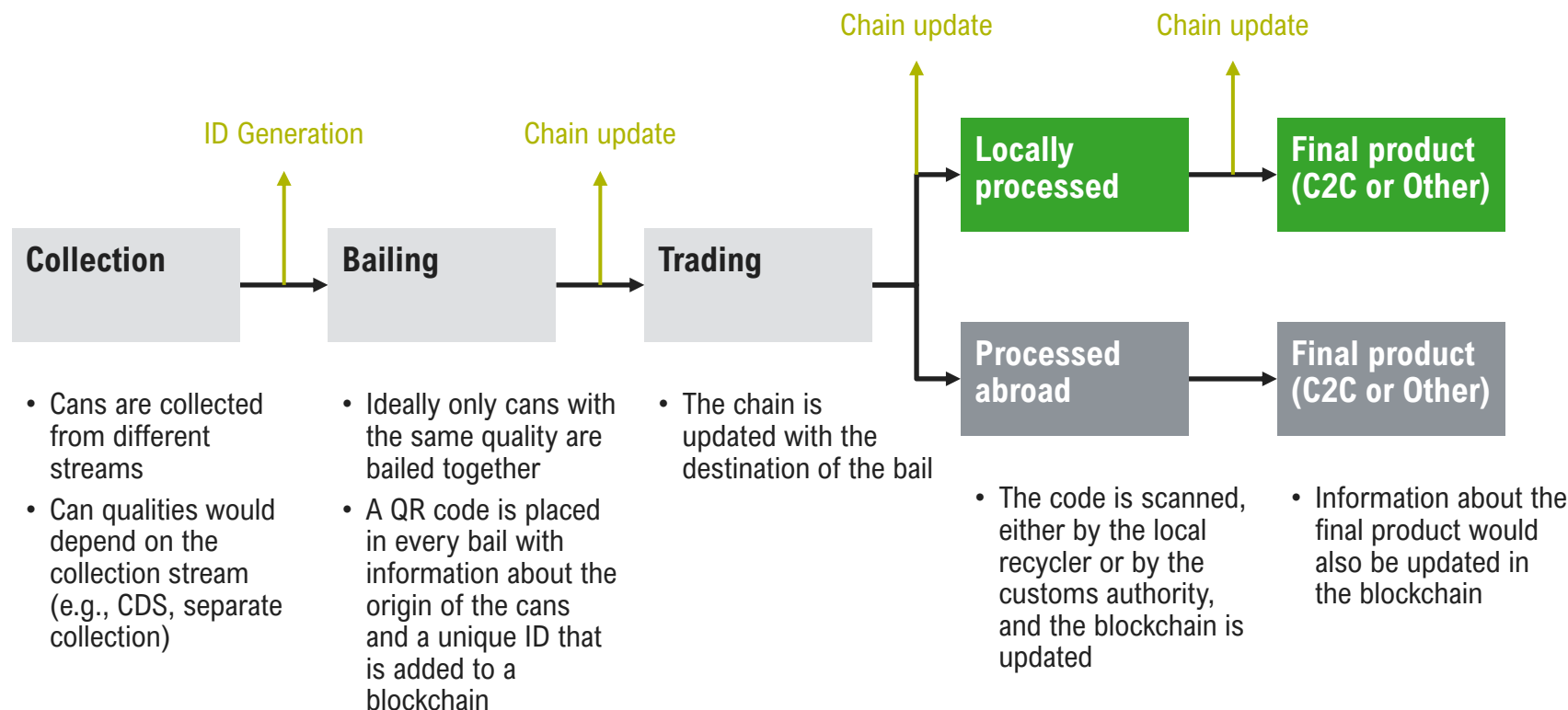




# A reporting system available for all market participants is suggested; all the anonymized data allows the EPR operators to improve the system

Lever – Support global trading platform for waste

## System available for all market participants



## System requirements



- The system should be able to work if just implemented by one country; but it should be easily scalable to cover multiple countries
- The system should allow to accept transfers of money from the PRO to recyclers

## User principles



- All the data is anonymized to ensure there is no breach of confidential information
- All the players that regularly upload the data can access the anonymized data
- EPR remains the custodian of the data and continues to do studies to improve the system using the collected data



Roland  
Berger

