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ALUMINIUM BEVERAGE CAN RECYCLING IN UNITED ARAB EMIRATES AND ASIA PACIFIC

A review of waste management maturity in six countries

In 2023, the IAI commissioned an aluminium can recycling assessment by global management consultants Roland Berger to look at the current situation around aluminium can waste management and improvement levers in:

Australia **Cambodia** **South Korea** **Thailand** **UAE** **Vietnam**

The review involved stakeholder interviews, regulation reviews, market and value chain assessment, data collection and data models and baselining (volumes, rates, prices, etc.).

For each of the six countries, various aspects were analysed, including:

- Waste management and regulatory schemes
- Collection infrastructure
- Recycling and landfill rates
- Volumes on market
- Usage trends
- Overall performance
- Used beverage can trade
- Material flows
- Future recycling targets

60 million tonnes CO_2e

Aluminium cans are the package of choice for alcoholic and soft drinks, with annual global consumption set to increase from 420 billion units in 2020 to 630 billion units by 2030. Recycling them could save 60 million tonnes CO_2e per year.

Source: Roland Berger

*For additional details of the waste management of aluminium in the six countries, visit **international-aluminium.org** or scan the QR code.*

Glossary of terms used in this factsheet

C2C – Can-to-can
DRS – Deposit Return Scheme
EPR – Extended Producer Responsibility
MRF – Material Recovery Facility
UBC – Used beverage can

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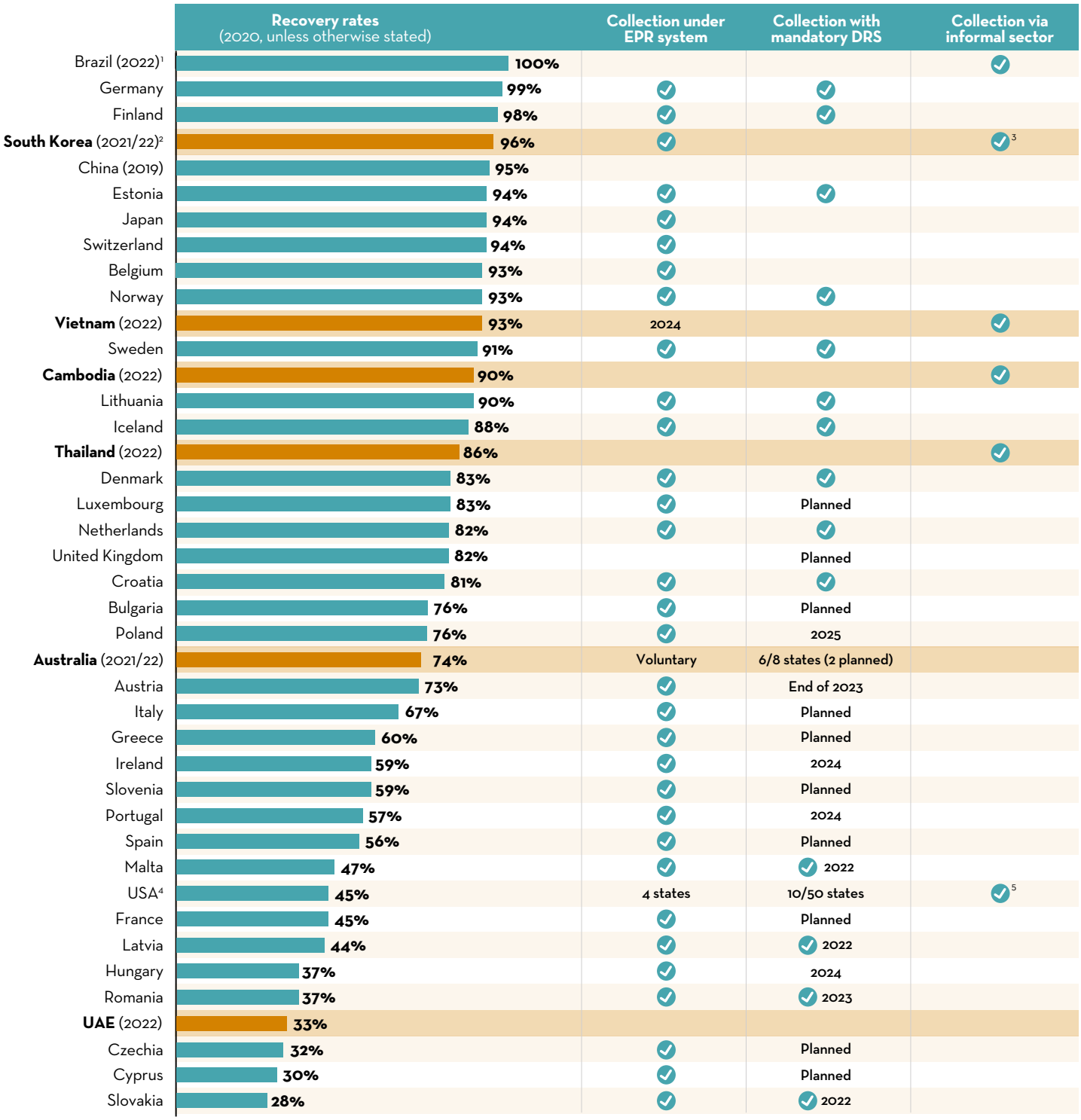
Overview of recycling systems around the world



	Recovery rates (2020, unless otherwise stated)	Collection under EPR system	Collection with mandatory DRS	Collection via informal sector
Brazil (2022)[1]	100%			✓
Germany	99%	✓	✓	
Finland	98%	✓	✓	
South Korea (2021/22)[2]	96%	✓		✓[3]
China (2019)	95%			
Estonia	94%	✓	✓	
Japan	94%	✓		
Switzerland	94%	✓		
Belgium	93%	✓		
Norway	93%	✓	✓	
Vietnam (2022)	93%	2024		✓
Sweden	91%	✓	✓	
Cambodia (2022)	90%			✓
Lithuania	90%	✓	✓	
Iceland	88%	✓	✓	
Thailand (2022)	86%			✓
Denmark	83%	✓	✓	
Luxembourg	83%	✓	Planned	
Netherlands	82%	✓	✓	
United Kingdom	82%		Planned	
Croatia	81%	✓	✓	
Bulgaria	76%	✓	Planned	
Poland	76%	✓	2025	
Australia (2021/22)	74%	Voluntary	6/8 states (2 planned)	
Austria	73%	✓	End of 2023	
Italy	67%	✓	Planned	
Greece	60%	✓	Planned	
Ireland	59%	✓	2024	
Slovenia	59%	✓	Planned	
Portugal	57%	✓	2024	
Spain	56%	✓	Planned	
Malta	47%	✓	✓ 2022	
USA[4]	45%	4 states	10/50 states	✓[5]
France	45%	✓	Planned	
Latvia	44%	✓	✓ 2022	
Hungary	37%	✓	2024	
Romania	37%	✓	✓ 2023	
UAE (2022)	33%			
Czechia	32%	✓	Planned	
Cyprus	30%	✓	Planned	
Slovakia	28%	✓	✓ 2022	

[1]*Brazil (2020) = 97%.* [2]*The official recovery rate in 2021 is 79% (Korea Resource Circulation Service Agency). This rate covers members only.*
[3]*Collection in row houses is partially done by informal workers.* [4]*USA 2019 data of 46% is more representative because of Covid.*
[5]*Supplemental income.*

The definition of "recovery rate" might differ from country to country, but is usually measured at the gate of the remelter (therefore excluding losses for delacquering and remelting).

Source: European countries (European Aluminium & Metal Packaging Europe); USA (US Aluminum Association, Can Manufacturer Institute); Japan (Japan Aluminium Association); China (Eunomia); Australia, Cambodia, South Korea, Thailand, UAE and Vietnam (Roland Berger)

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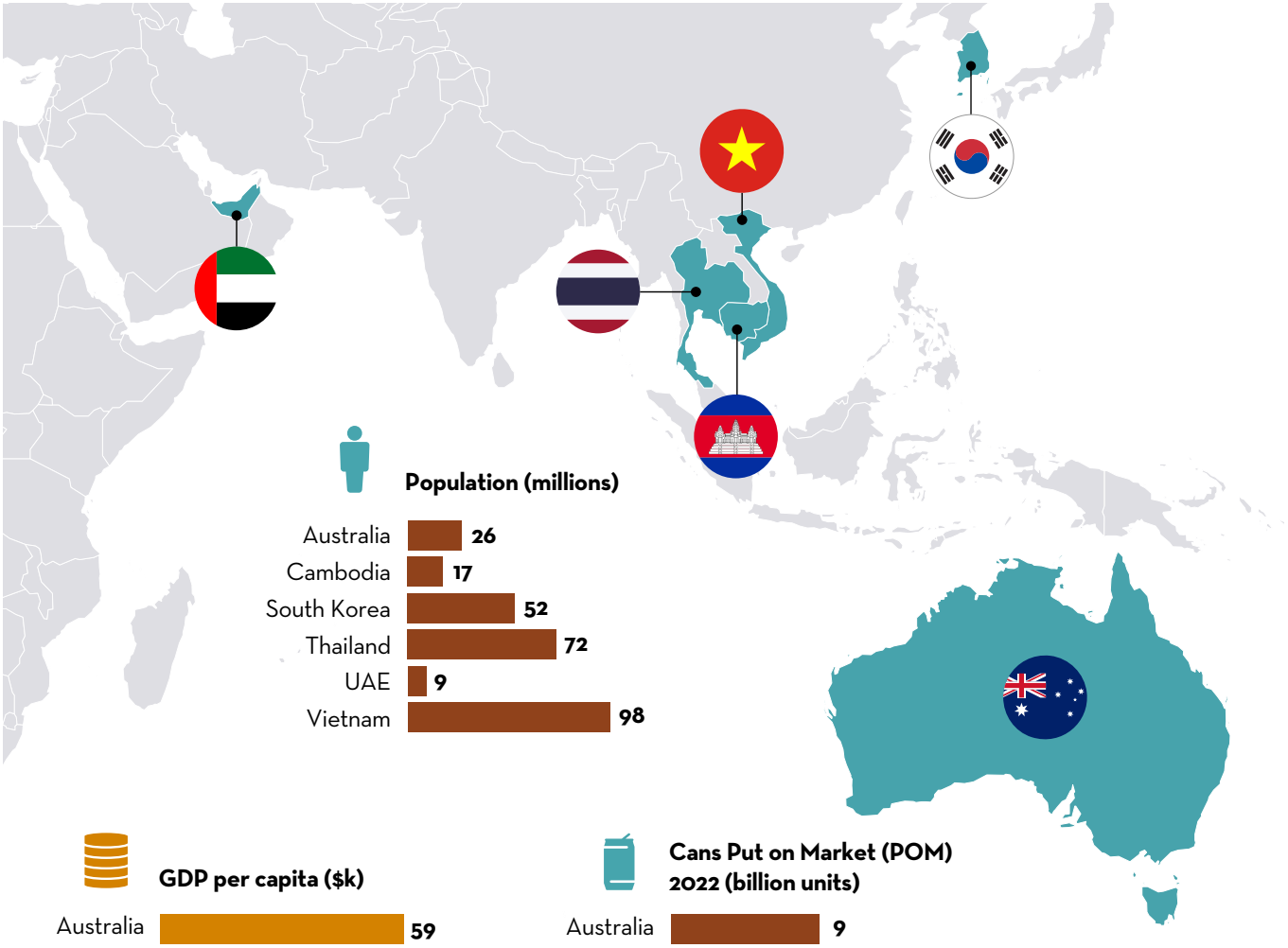
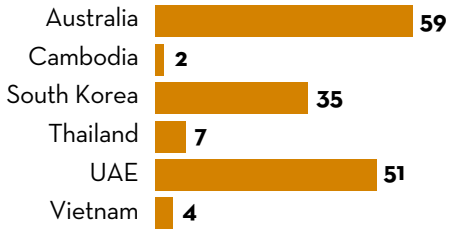
OVERVIEW OF 6 COUNTRIES IN SCOPE

These six countries represent 9% of the global can market.

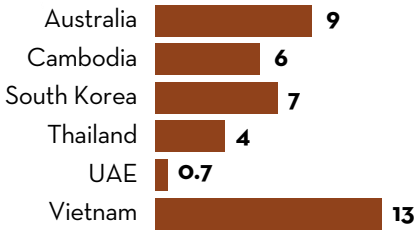


Population (millions)

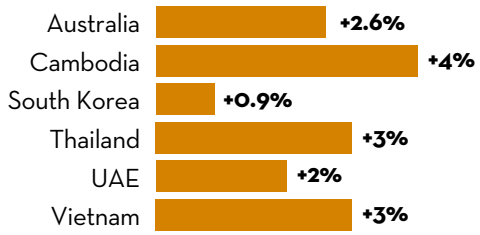
GDP per capita ($k)



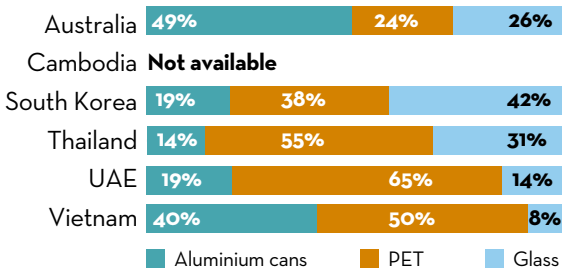
Cans Put on Market (POM) 2022 (billion units)



Annual POM growth rate 2022-2030



2022 composition of containers to market (based on filled volume)



Where data does not add up to 100%, remaining percentage is made up of other containers.

Visit international-aluminium.org for more information.

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WASTE MANAGEMENT SYSTEM TYPES

Three groups of countries have been identified based on the characteristics of their waste management systems.

INFRASTRUCTURE LIGHT SYSTEMS

Countries with significant informal sector infrastructure. There is a high proportion of collection from the informal economy, i.e. Thailand, Cambodia, Vietnam.

- Informal sector workers collect UBCs for their value.
- No formal source separation.
- Junkshops trade scrap through aggregators.
- Collected cans have high-quality. Collected cans in Thailand are used for C2C recycling. In Cambodia, the lack of local recycling forces exports to other countries. In Vietnam, cans are often locally recycled, the aluminium is recycled into non-can uses. In other countries, cans are recycled into non-can products domestically.

TRANSITIONING SYSTEMS

The collection infrastructure is largely fully developed, but does not include mandatory or well-functioning EPR, nor DRS, i.e. UAE.

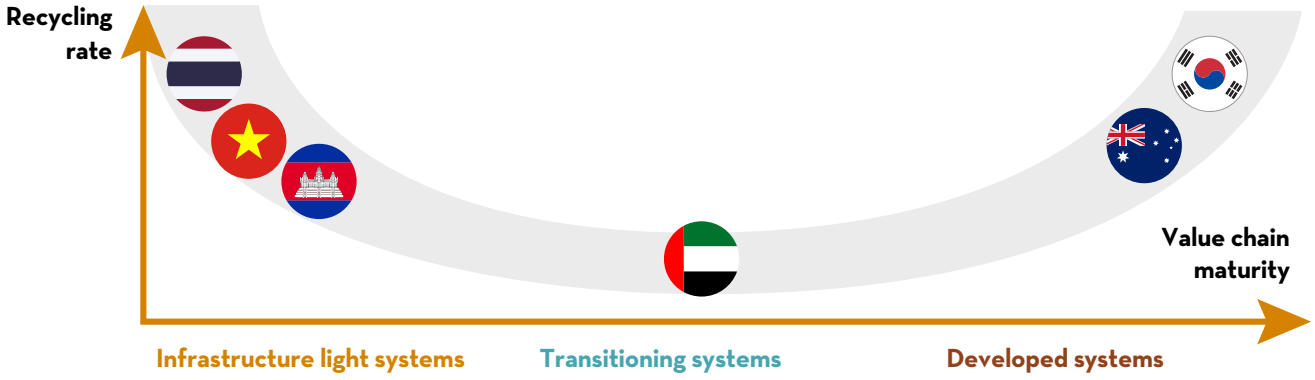
- Mostly single stream collection (i.e. partially separating at source); no DRS.
- Lack of sorting infrastructure – though in development.
- Lack of local recycling infrastructure.

DEVELOPED SYSTEMS

More complex waste management systems: EPR is enforced and/or DRS present, i.e. South Korea, Australia (a DRS is present in Australia only).

- Mature sorting at source.
- Mature sorting infrastructure.
- Well-established quantitative targets.

The waste management systems of the six countries in scope could be categorised into these three broad groups, based on the common characteristics of the value chain. Aluminium cans perform well in both infrastructure light systems and in developed systems.



09/2023

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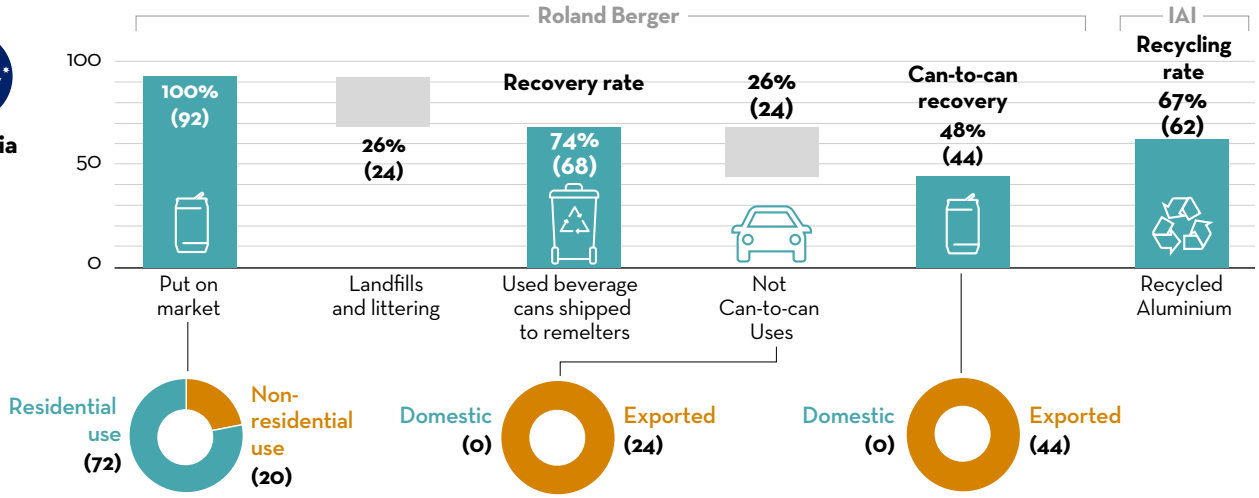
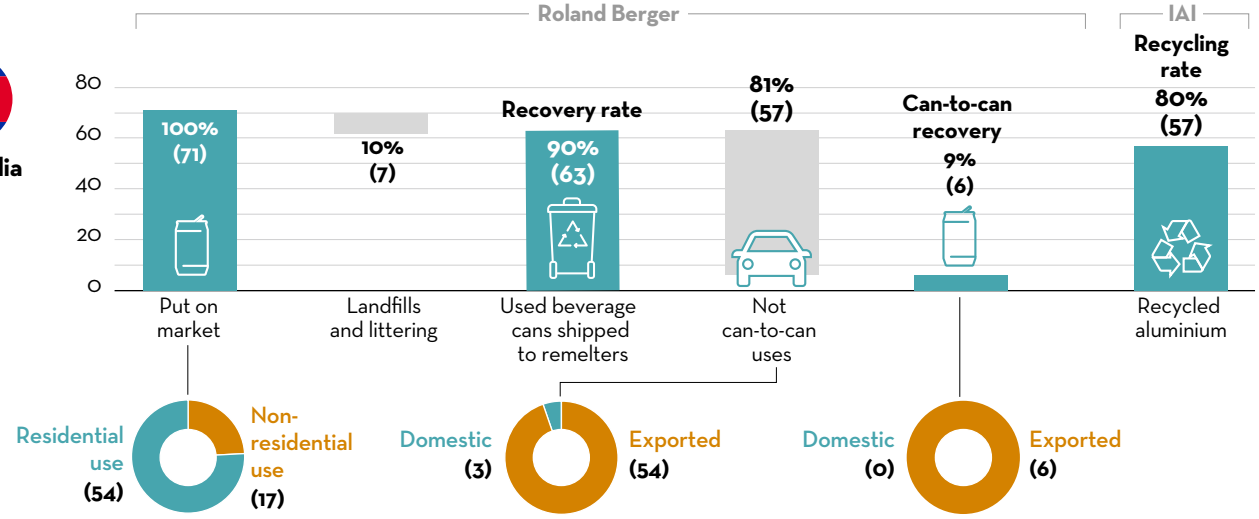
ALUMINIUM RECOVERY AND RECYCLING RATES ALUMINIUM CANS (1,000 TONNES)

The charts below map out total recovery, can-to-can recovery and recycling rates for the six countries in scope. To analyse data further, please visit: **international-aluminium.org**

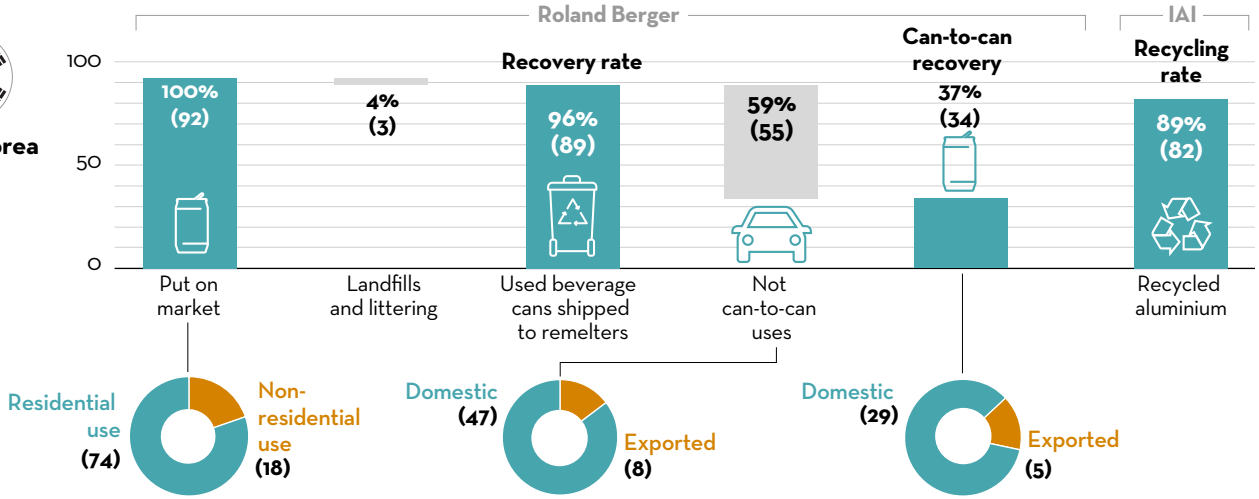
Australia



Cambodia



South Korea



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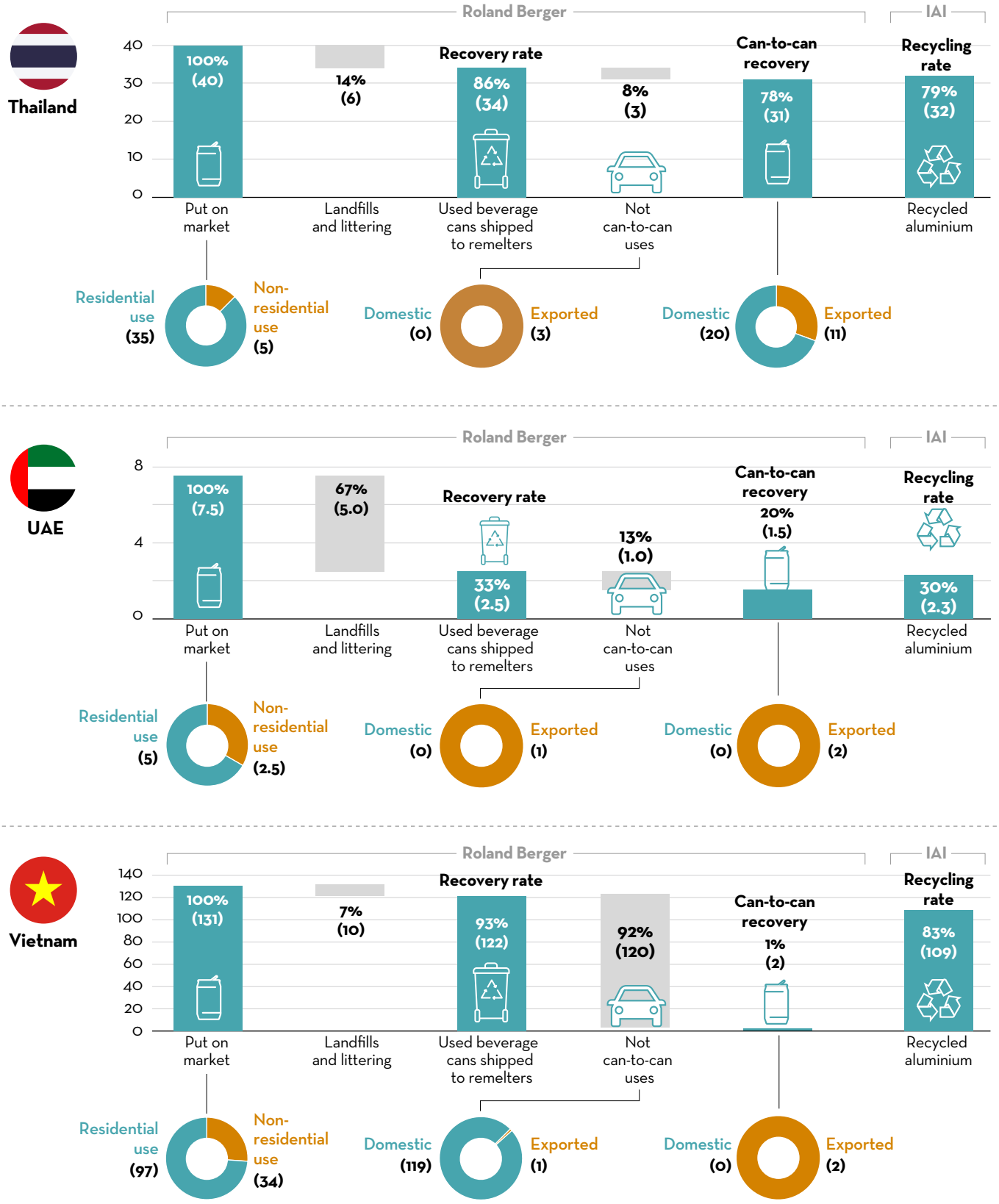

Numbers may not add up due to rounding.

Visit international-aluminium.org for more information.

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IMPROVEMENT LEVERS

The research highlighted the following as key levers for improving aluminium can circularity:

- **Improved awareness**
- **Infrastructure investment**
- **Increased transparency**
- **Better waste streams**

Implementation of these levers requires:

- Action by stakeholders (e.g. can makers, brand owners, collection companies, landfill operators, traders, recyclers and government), including advocacy for regulation, support of pilot projects, launch of awareness campaigns and improvement of recycling capacity
- Appropriate collection and sorting equipment and operations
- Pilots and initiatives with well-defined scope
- Increased transparency through local data collection
- International traceability and certification systems
- Greater public awareness

The recommendations in Roland Berger's review have been mapped based on feasibility and impact assessment, and recommendations with high impact and feasibility should be tackled first. These include:

Can production:

- Aluminium cans are fully recyclable. Optimise alloy design for cans to maximise recycled content. ▲

Generation

- Increase awareness/education and encourage the population (households/ businesses) to change behaviour ★▲

Collection

- Expand the reach of innovative collection mechanisms ★▲
- Create collection points to drop off UBCs ★
- Pilot separate on-the-go collection options
- Advocate for homogenisation of collection (fractions, bin colour, design, etc.)

Sorting

- Support piloting semi-automatic basic and medium-sized sorting facilities ★
- Advocate for all sorting facilities to have 1-2 eddy currents

Disposal

- Review landfilling fees

Trading

- Support a global trading platform for waste to facilitate trading and enhance traceability ★▲

Recycling

- Work with small-scale recyclers to improve recycling processes ★
- Reduce environmental impact (applicable to Vietnam) ★

Regulation

- Advocate for the implementation or adjustment of an EPR tool ★
- Advocate for an increase in data transparency ▲
- Advocate for beverage can recycling targets and appropriate policies

KEY

★ The recommendations with both a good/high impact *and* good ease of implementation

▲ The recommendations that are applicable to all six countries in scope

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FUTURE ACTIONS

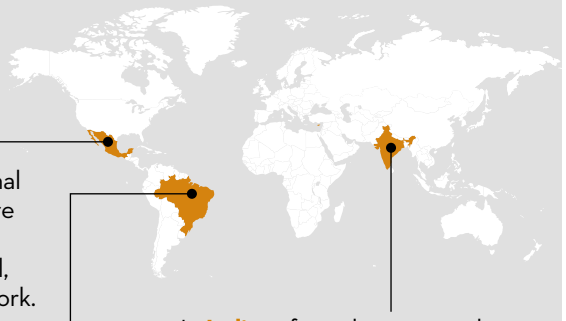
IMPROVE INFORMAL SECTOR WORKERS' LIVES

Objective

Improve the lives and working conditions of those in the informal sector to ensure their roles remain safe and attractive.

Recommendations for the aluminium industry: Engage with NGOs and set up partnerships; provide tools through local networks; influence government – advocate for informal sector workers' interests with policy makers. To increase collection rates and quality in SE Asia, it will be key to leverage the informal sector infrastructure.

Global best practice



In **Mexico**, informal sector workers are being helped to switch to a formal, legal system of work.

Brazil has been investing in collection and recycling centres in close collaboration with cooperatives.

In **India**, informal sector workers are organised in cooperatives to provide front-end waste management services, and women are being offered vocational training programmes.

20 million+

Number of informal sector workers worldwide who contribute to infrastructure light waste collection systems. In some countries – such as Brazil, Cambodia, Vietnam and South Africa – as much as 90% of aluminium collection is supported by an informal economy.

DEPLOY MULTI-STREAM COLLECTIONS

Objective

Deploy standardised multi-stream collection across the UAE and South Korea, and improve MRF sorting capacity by increasing the aluminium can content in the MRF feedstock.

Recommendations for the aluminium industry: Advocate for both the widespread adoption of dual-stream collection across different waste streams (rural and urban households, shopping malls, etc.), and the establishment of source separation streams in a phased approach. Get involved with pilot projects.

INCREASE SEPARATE COLLECTIONS OF RECYCLABLES

Objective

Increase separate collection rates of recyclable waste generated in public places, and prevent littering.

Recommendations for the aluminium industry: Advocate to municipalities and policy-makers for the widespread adoption of at-home recycling and separate on-the-go collections in public spaces. Contribute to initiatives in well-defined contexts/places, such as concerts, festivals, airports and shopping malls.

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INCREASE SORTING RATES

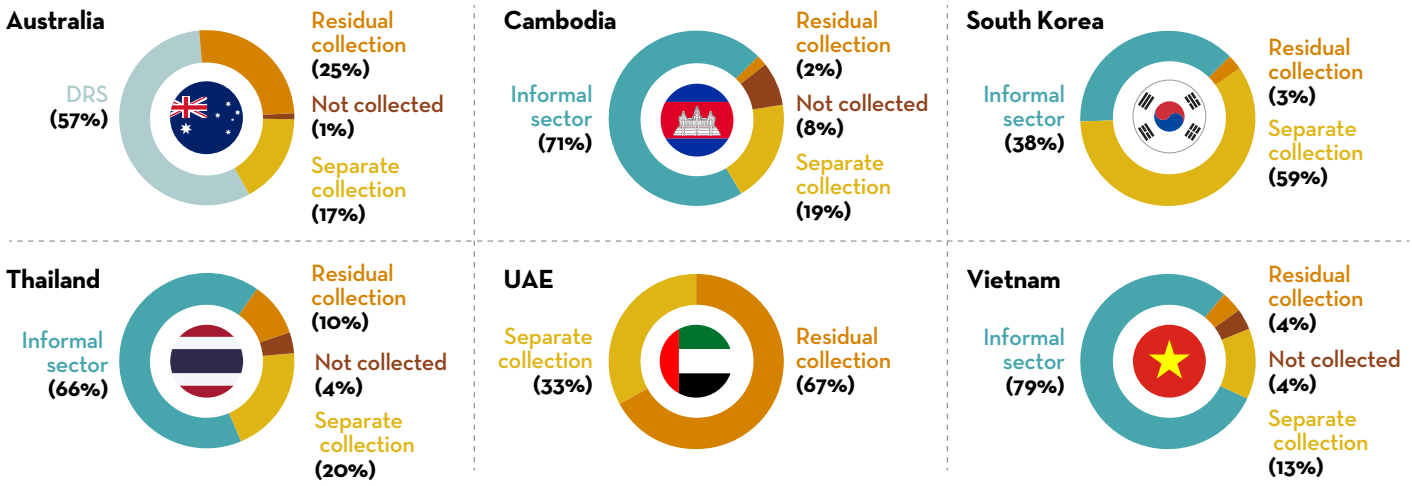
Objective

Increase sorting-at-source rates by implementing standardised measures that improve the user experience and facilitate waste separation. Support the development of sorting capacities when required and ensure adequate equipment is present.

Recommendations for the aluminium industry:
Advocate for the government to implement regulations that establish minimum requirements for waste fractions, as well as colour schemes and designs for waste bins. Participate in campaigns to increase public knowledge and understanding.

CAN COLLECTION SYSTEMS

Collection systems across the six countries in scope



Residual waste (or mixed residual waste) is the waste that is left once the recyclable waste has been separated (waste paper, plastic packaging, metal packaging, drinks packaging, biodegradable waste, glass and textiles).

INCREASE CAN-TO-CAN RECYCLING

Objective

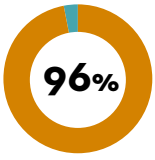
Increase the proportion of cans being closed-loop recycled; ensure recycling is done in environmentally friendly processes; and ensure enough capacity is available for the volumes of scrap generated locally/regionally; and ensure exports to countries with can-to-can recycling.

Recommendations for the aluminium industry:
The aluminium industry can take a leading role by performing detailed feasibility studies on the opportunities to install and upgrade sorting and cleaning processes, and assessing the impact of projects on the UBC scrap market and adjacent markets.

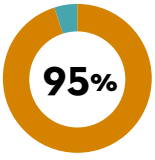
Roland Berger's assessment found that upgrading recycling capacities is a feasible option in Vietnam, while the other five countries in the scope will likely rely on existing facilities and exports.

South Korea has capacity to recycle all cans put on market in closed-loop recycling systems. The industry should advocate for can-to-can recycling targets.

In Australia, with no local recycling, almost all UBCs are either recovered and exported for C2C processing (60%) or recycled into other uses in South-East Asia (40%).



Percentage of put on market cans that are recovered in South Korea. Just one-third (37%) is recycled as a can, but the remainder is used for deoxidisers (33%) and casting alloys (26%).



In Cambodia, the Phnom Penh Waste Management Strategy and Action Plan targets a recycling rate of non-organic waste of 95% in 2035.

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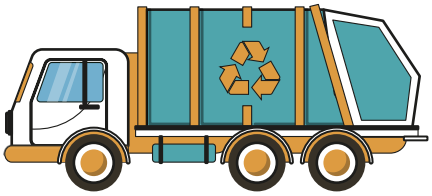
INTRODUCE AN EXTENDED PRODUCER RESPONSIBILITY SCHEME (EPR)

What is an EPR?

An EPR policy tool supports the recycling infrastructure by collecting fees from brand owners to fund waste management infrastructure and cover the costs of managing end-of-life packaging. 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; and some level of collection, sorting and recycling infrastructure and enforcement mechanisms.



Objective

Implement EPRs in countries where this policy tool is not developed.

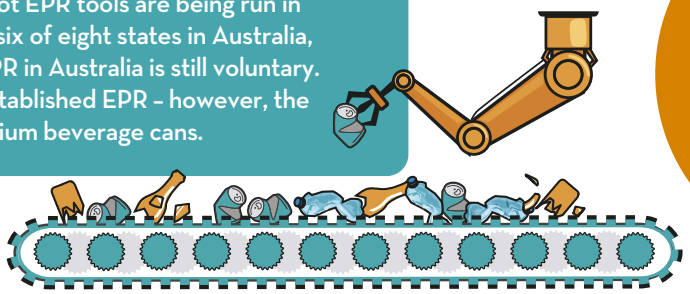
Incentivise C2C recycling over other end-uses of UBCs to keep alloys in the same recycling loop.

Recommendations for aluminium industry: Advocate for the implementation of an appropriate EPR tool in the countries without an existing one. Analyse the existing waste management framework maturity and the readiness of the country for an implementation of an EPR. Provide inputs on the legislative framework.

Engage with market participants on relevance and feasibility of setting or increasing recycling targets. Study the expected impacts of such targets and engage with policy-makers to increase awareness around the importance of such targets.

Understand and market the advantages related to C2C recycling, but also study and raise awareness of the knock-on effects if less scrap becomes available for other industries.

In the countries in the scope of the study, key enablers EPR and DRS are missing in Cambodia, Thailand, UAE and Vietnam, although pilot EPR tools are being run in Thailand and Vietnam. In six of eight states in Australia, a DRS is in place, while EPR in Australia is still voluntary. South Korea has a well-established EPR – however, the DRS doesn't cover aluminium beverage cans.



In Vietnam, EPR is to become mandatory for packaging from January 2024. Thailand aims to launch mandatory EPR in 2027 for some packaging. Drafting of a framework and law is due to start in 2023.

PUT IN PLACE DEPOSIT RETURN SCHEMES (DRS)

Objective

Implement a DRS, which puts a deposit value on beverage containers (including aluminium cans), redeemable at return points. It aims to establish a stream of clean and separately collected cans.

Recommendations for the aluminium industry: Bring together industry stakeholders and improve understanding of best-in class systems, and show support for pilot projects and new policies. Specifically for the six countries in scope, the report recommends a DRS is implemented in South Korea that becomes a clean collection stream, and that the existing systems in Australia are improved.