

TOMRA Systems ASA 14 July 2023







Creating sensor-based solutions for optimal resource productivity - transforming how we obtain, use, and reuse resources

Collection



Recycling



Food





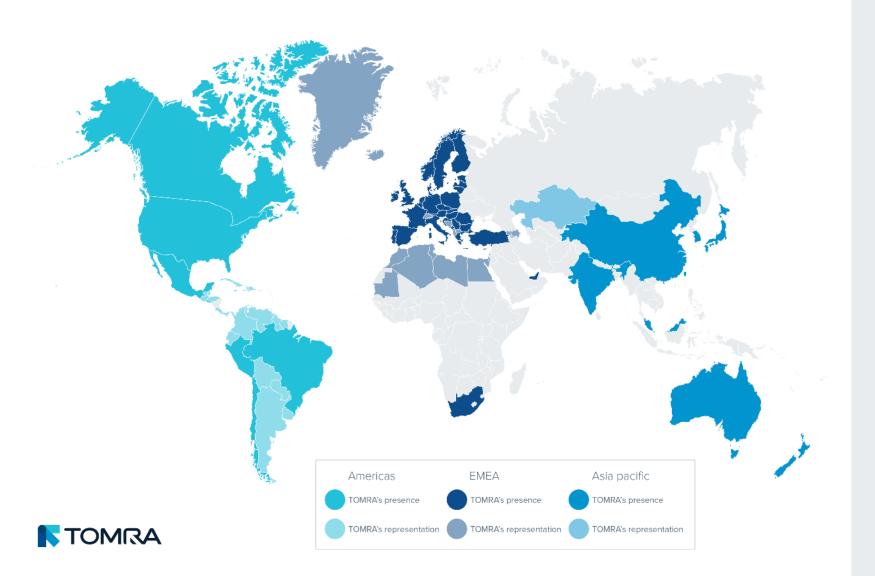








TOMRA's global presence



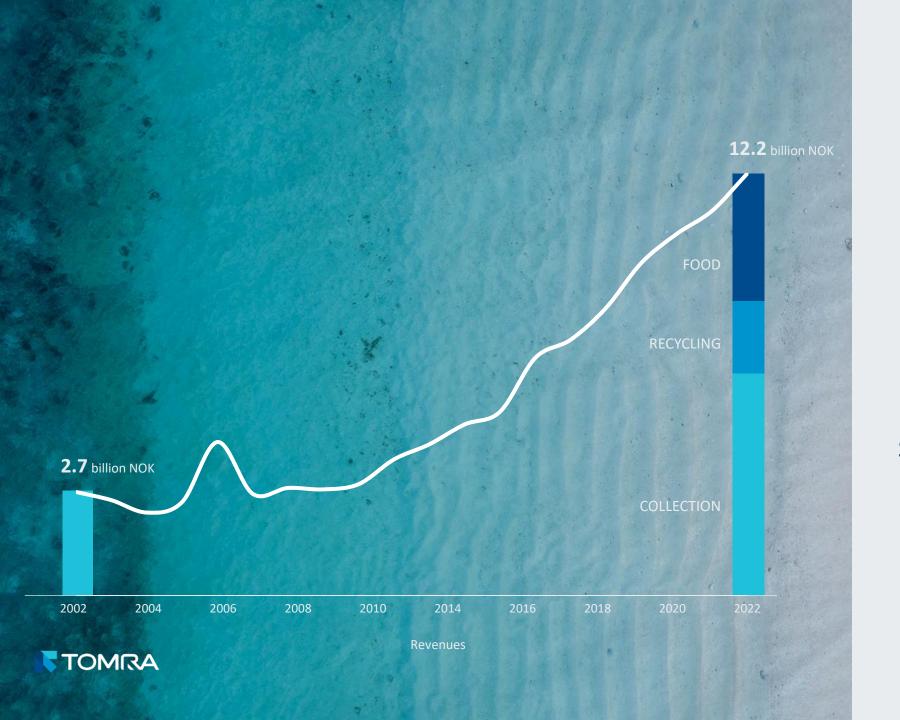
Installed base ~105,000



	Collection	Recycling	Food
EMEA	~63,000	~6,300	~5,600
Americas	~14,000	~1,400	~6,300
Asia Pacific	~5,000	~1,300	~1,900
Total	~82,000	~9,000	~13,800

Creating value through three divisions





We have built a broad business platform...

... while keeping a strong entrepreneurial spirit

TOMRA's transformation journey

mergers and acquisitions

2004 TITECH

TOMRA acquires TITECH, the world's leading provider of optical recognition and sorting technology for the waste industries and TOMRA's transformation journey starts.

2006 Commodas

TOMRA acquires Commodas
- a leading supplier within
the field of sensor-based
products for mining and
metal recycling.

2011

Sale of Californian material handling business. With the divestment the US operation became less exposed to movements in commodity prices.

2012 BEST

TOMRA acquires BEST, leading food sorting machine producer. With the acquisition of BEST, TOMRA has by far the widest reach within the food sorting universe.

2016 Compac

TOMRA expands into lane sorting, acquiring New Zealand based Compac, confirming TOMRA's position as the leading provider of sorting technology into the food industry.



2005 Orwak

TOMRA acquires Orwak Group, a leading provider of compaction for a variety of materials.

2008 Ultrasort

TOMRA acquires Ultrasort - specialists in sensor-based mining technology.

2011 Odenberg

TOMRA acquires Odenberg, rounding out the offering to include food optimization.

2014

Divestment of Orwak. Further portfolio focus on sensor-base technology.

2018 BBC Technologies

TOMRA complements its food sorting portfolio with the acquisition of BBC Technologies, a leading provider of precision turnkey solutions for blueberries and other small fruits.



TOMRA Collection



TOMRA Recycling



TOMRA Food



But the tides are shifting. There's a desire for change...



Consumer demand for responsible plastic use options



Legislative push for new plastic waste strategies



Market pull from large brand owners and companies



Today: post-consumer plastic packaging **Our ambition** is treated linear instead of circular by 2030: Source: Ellen MacArthur Foundation 14% **Collected for recycling** Recycling of plastics into the same or 98% similar-quality application 2% 8% 4% Virgin material Closed-loop Cascaded recycling recycling **Dispose** 30% Make Sell Dispose Consume 40% 14% 32% Leakage Landfill Incineration **78** Million tonnes 86% (annual production) **Material lost**



TOMRA Collection



TOMRA Collection

Transforming society's habits to keep valuable resources in a continuous loop of use and reuse.



~6.2 billion NOK in revenue





~82,000 machines in operation



Source: TOMRA.com

Over 45 billion drink containers collected in 2022



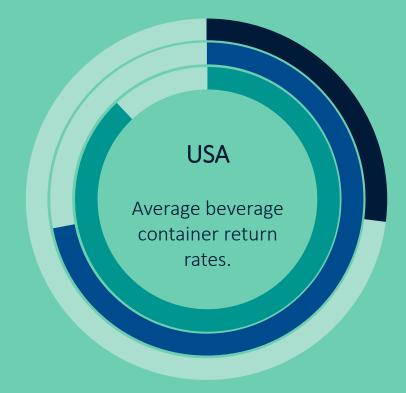
This represents only 3% of all beverage containers.

Deposit return systems enable Clean Loop Recycling



47%
Containers **without**a deposit

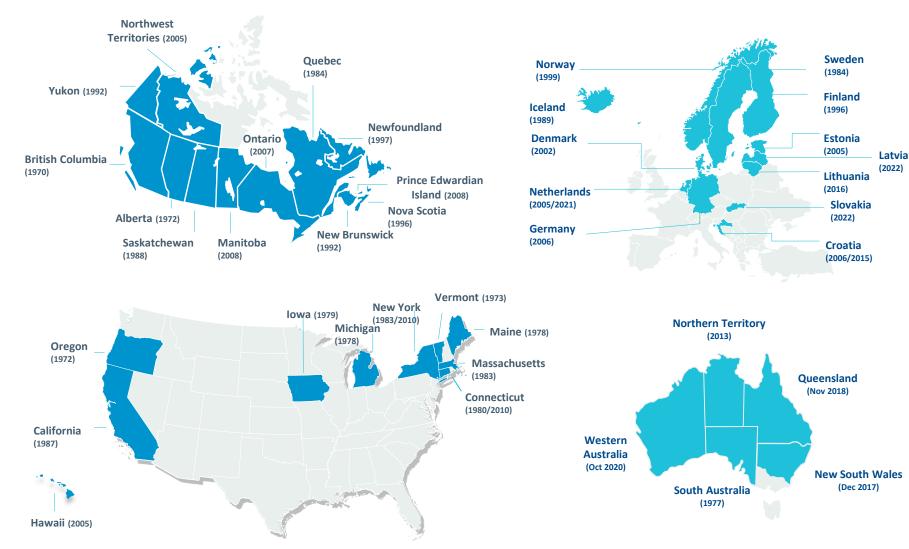
94%
Containers **with**a deposit



27%
Containers **without**a deposit¹

72% Containers **with** a deposit¹ 88%
Containers in highperforming DRS²

An overview of current deposit markets





Upcoming deposit markets

Quebec:

Deposit system to be modernized 2023

Connecticut:

Expansion of existing deposit system in 2024

Poland:

Deposit system to be implemented in 2025

Hungary:

Deposit system to be implemented 2024

Romania:

Deposit system to be implemented 2023

ecticut: sion of existing Denosit

Deposit system to be implemented in 2024

Collection target for plastic bottles:

- 77% by 2025
- 90% by 2029

Recycled content in product design:

- 25% by 2025 in PET bottles
- 30% by 2030 in all plastic bottles

EU Single-Use Plastic Directive:
Targets on recycled content and
collection target for plastic
bottles. Deposit scheme
mentioned as a mean to reach

Austria:

Deposit system to be implemented 2025

Singapore:

Deposit system to be implemented 2025

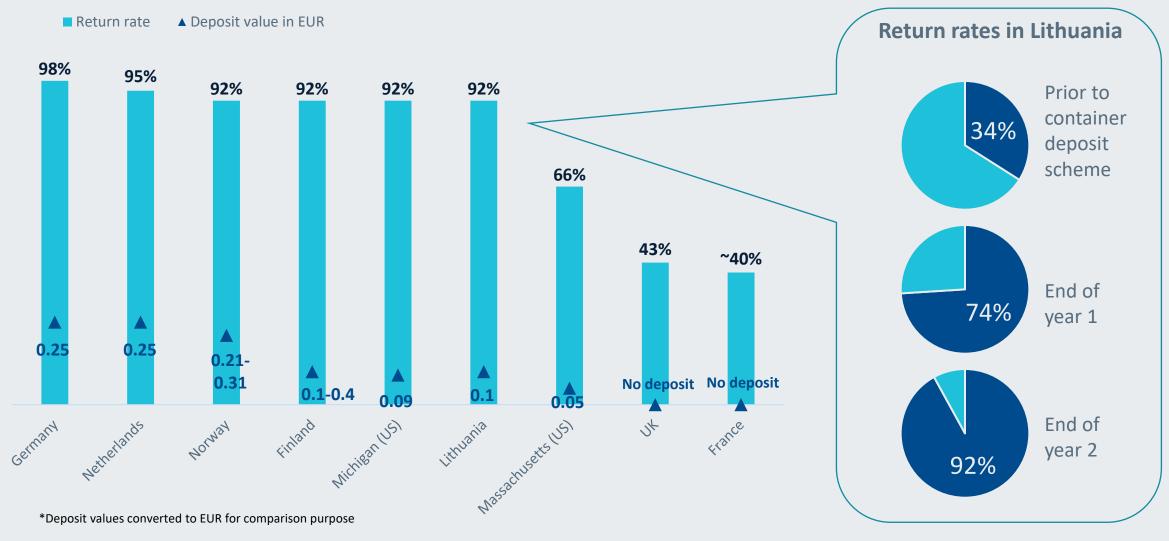
<u>Victoria:</u>

Deposit system to start in November 2023

New Zealand

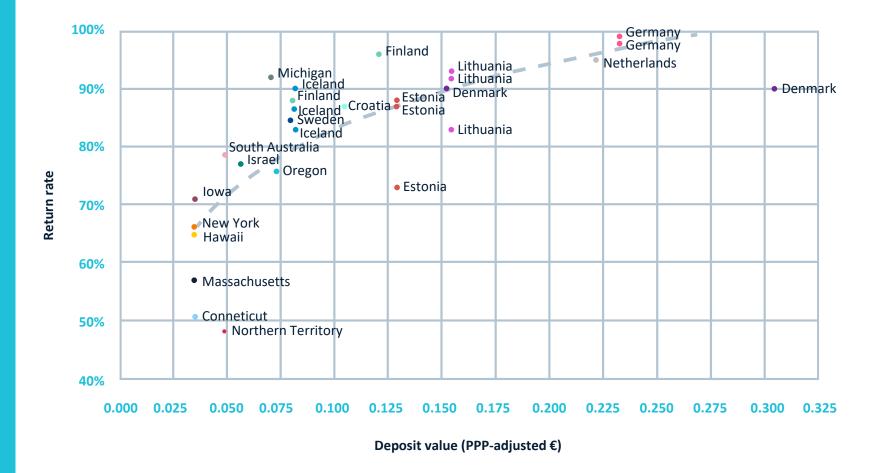
Deposit system proposed for 2025

High collection rates achieved in two years' time



A meaningful deposit value is the strongest driver of results

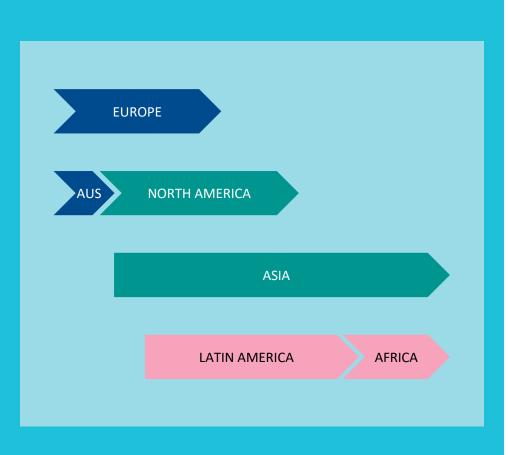
Return rates compared to purchasing power parity-adjusted deposit values - € (2018)





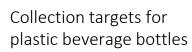
High-performing systems are achieving good results with a deposit of €0.10 (PPP-adjusted)

We are driving the market momentum through global advocacy work aiming to achieve best practice deposit systems and generate demand through innovations











Targets for recycled content in plastic beverage bottles

77% 90% 2029

25% 30% 2030 2025



Continued work with governments to implement best practice deposit legislation



Innovate solutions that trigger modernizations and increased demand

The four principles of high-performing deposit return systems

PERFORMANCE



A collection target for a broad scope of beverage packaging plus a meaningful deposit delivers strong results.

CONVENIENCE



The redemption system is easy, accessible and fair for everyone.

PRODUCER RESPONSIBILITY



Producers manage, finance and invest in the system with use of unredeemed deposits and commodity revenues.

SYSTEM INTEGRITY



Trust is built into the system's processes through transparent management, a data-driven clearinghouse, and reliable redemption technology.

Reinvestment of unredeemed deposits and material revenue within the system

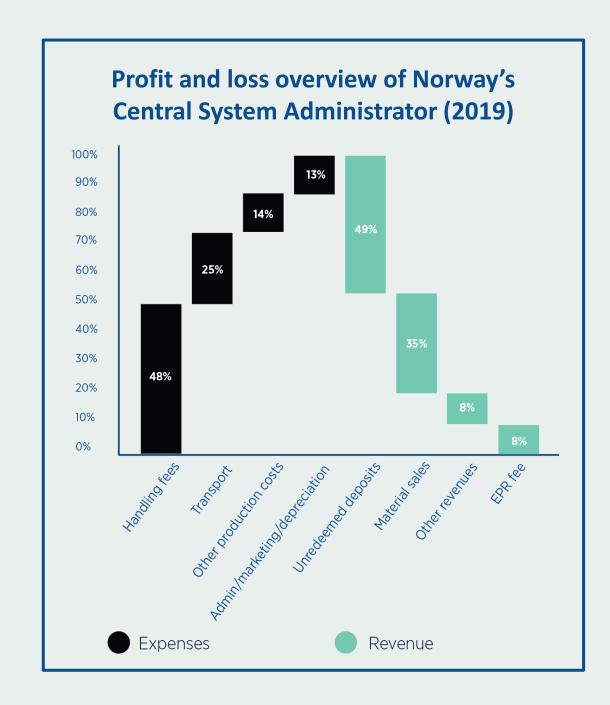
In Norway **over 80%** of the

system's costs are

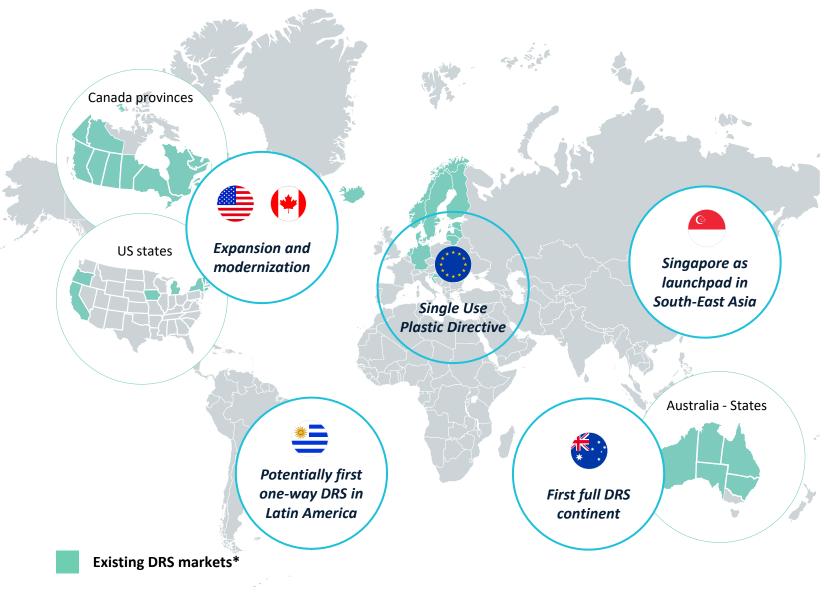
covered by

unredeemed deposits

and material revenue

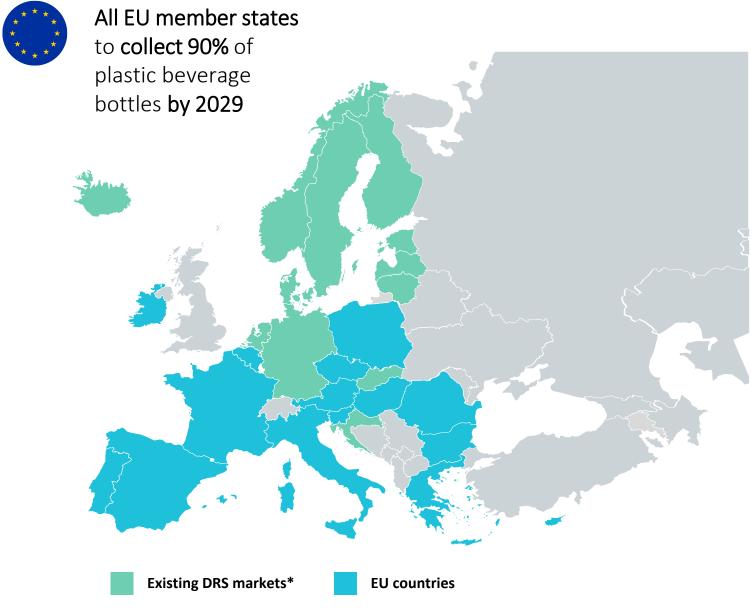


Legislative outlook supports new and expanded Deposit Return Scheme (DRS) markets towards 2030



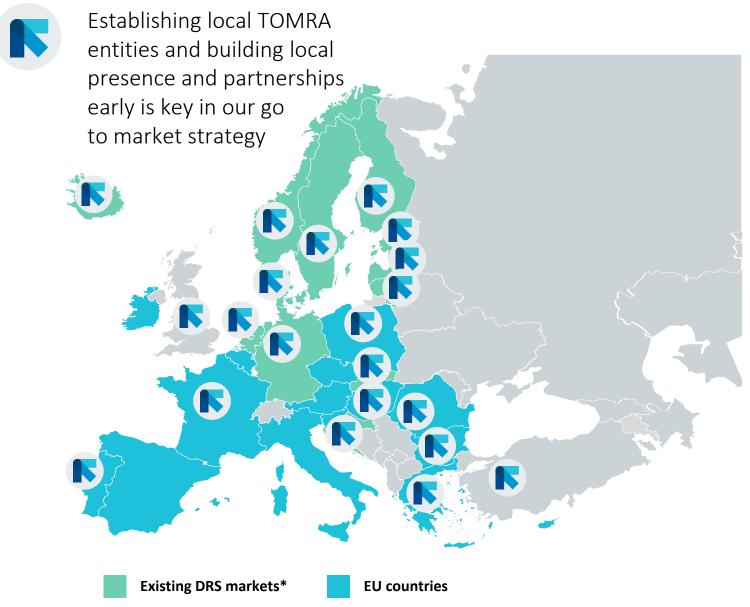
^{*} In addition, some markets have refillable deposit systems such as: Austria, Belgium, Chile, Czech Republic, France, Hungary, Poland and South Korea

Europe and the Single Use Plastic Directive (SUPD) will be the main driver of new deposit markets towards 2030



²⁸

Strong local presence in existing and upcoming European deposit markets



²⁹

Our offering





Reverse vending machines



Reverse vending centres



Reverse vending machine kiosks



Digital products and APIs



Equipment for automated depots

Customer centricity is at the core of our innovation strategy

Strategic aspiration:
Innovate the most
attractive solutions
and the best customer
experience

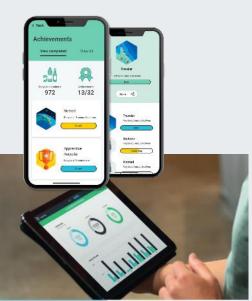


Efficient operations for peace of mind

A smart investment for long-term benefits

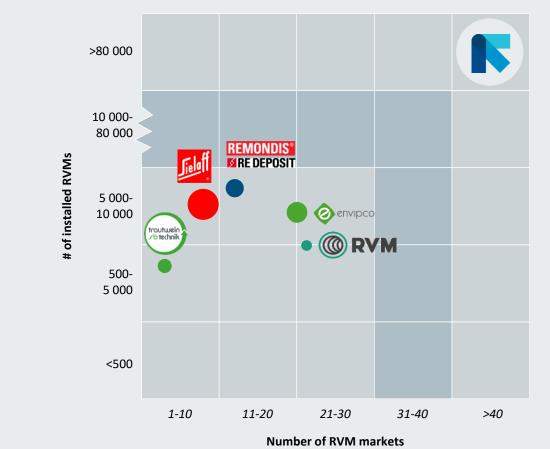




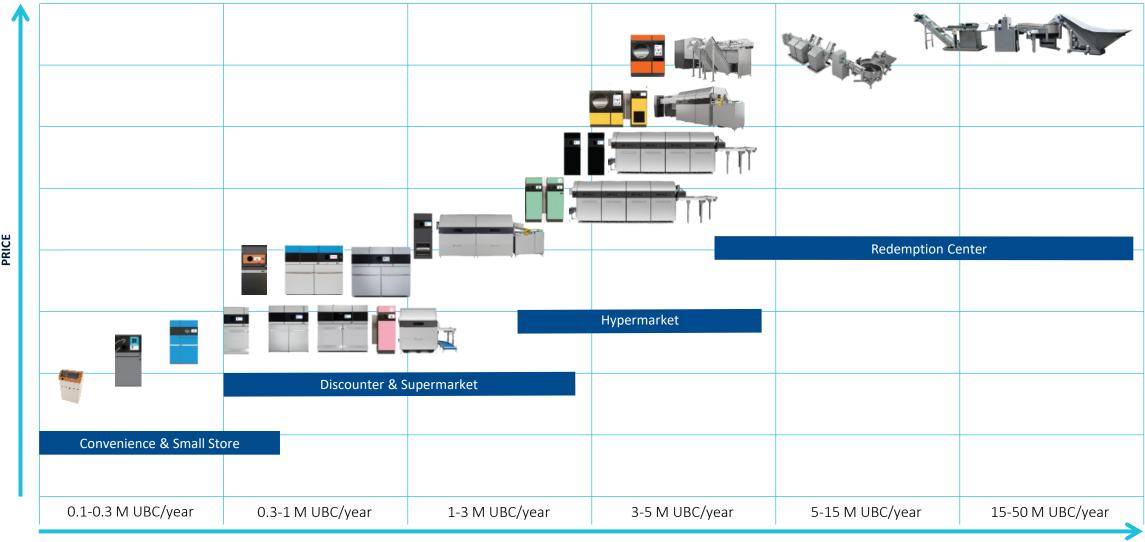


Preferred partner in reverse vending solutions





Our reverse vending portfolio



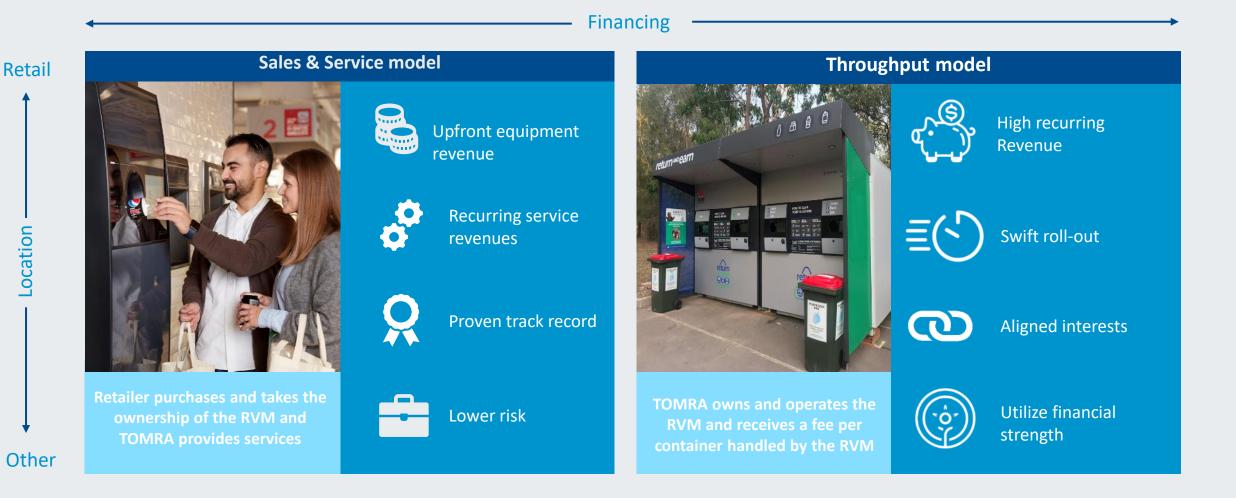
CONTAINER VOLUME





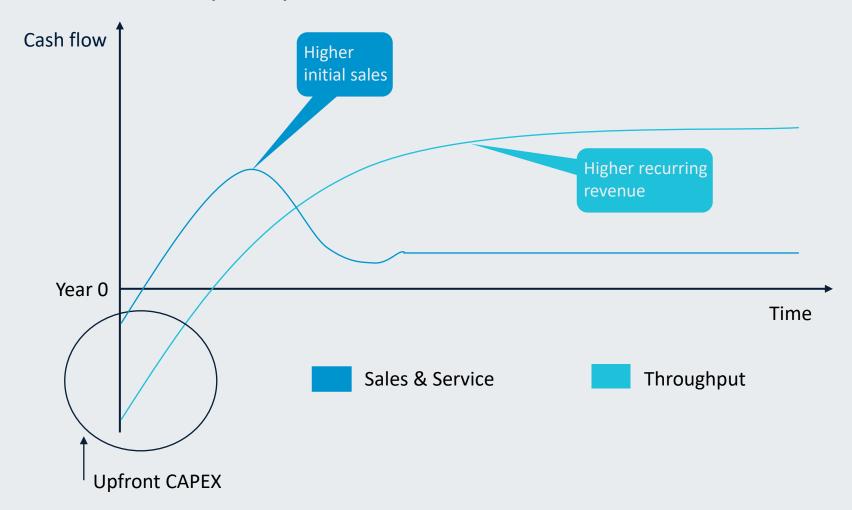


Business model expertise across deposit systems



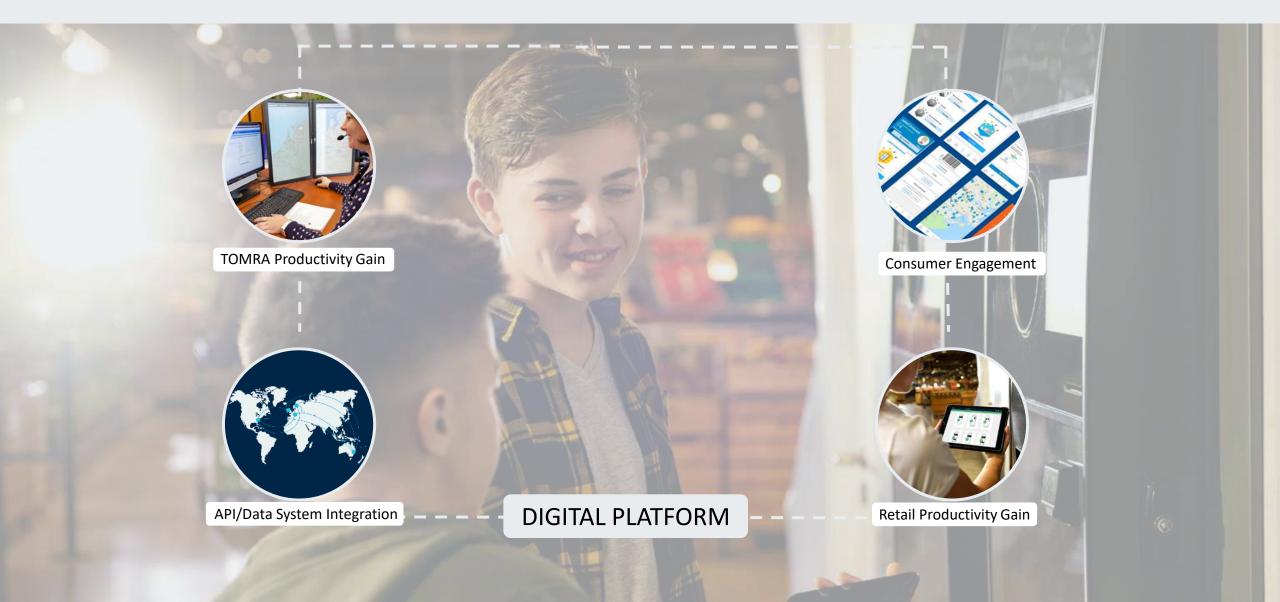
Cash flow profiles of the two business models

Illustrative cash flow profiles per machine

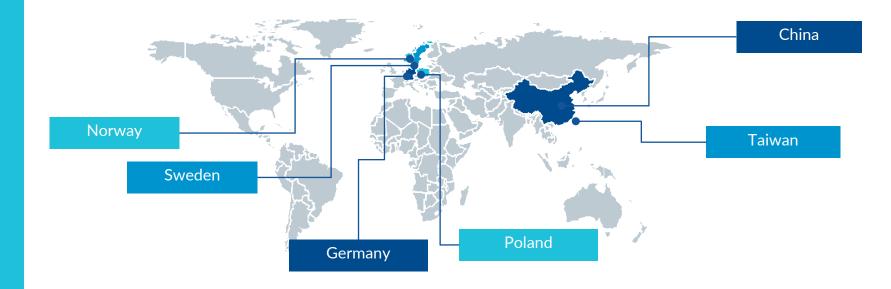




Advanced digital platform leveraged across stakeholder groups



Current supply chain with country origin on purchased material



Global Supply Chain

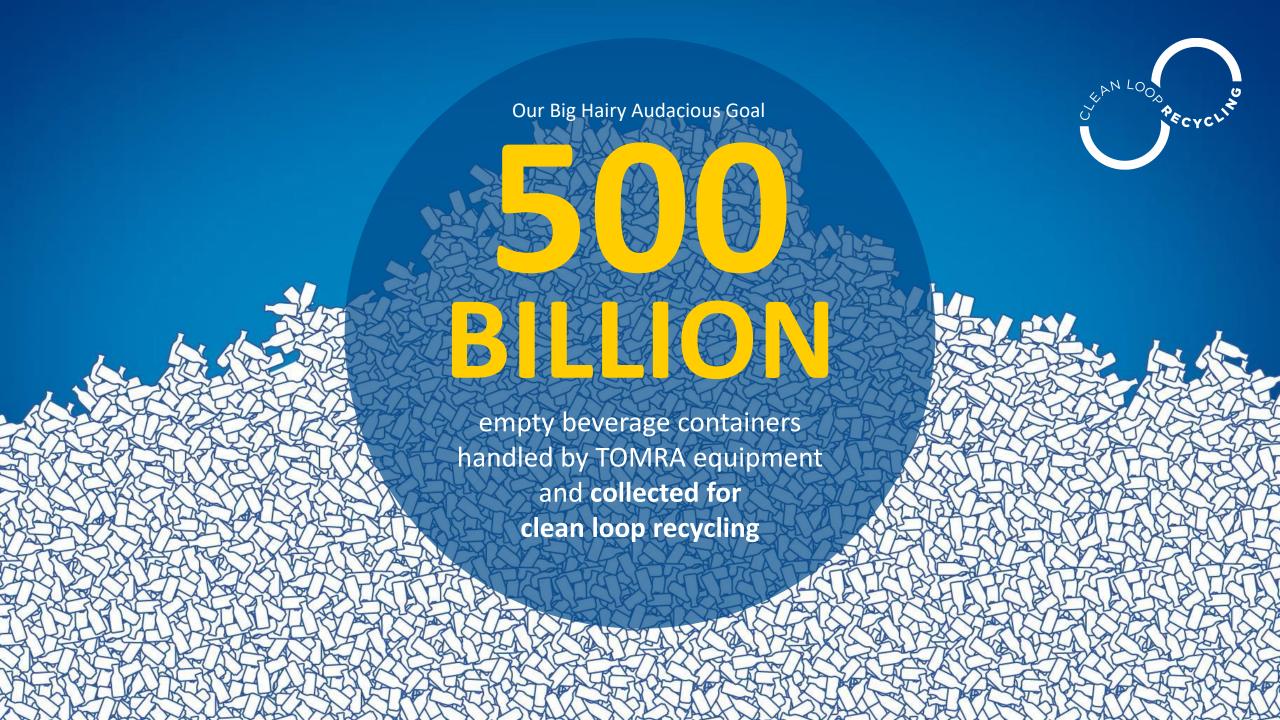
Optimize global sourcing and production set-up

The goal

Support the market demands both on capacity and flexibility

Capable of annual delivery of up to 30.000 RVMs

Dual sourcing strategy in focus to reduce risk and exposure (increase European sourcing)



TOMRA Recycling



TOMRA Recycling

Transforming resource recovery through advanced waste and metals sorting that **turns waste into value**.

At least 33% of waste is not managed in an environmentally safe manner

The world generates

2.01 billion

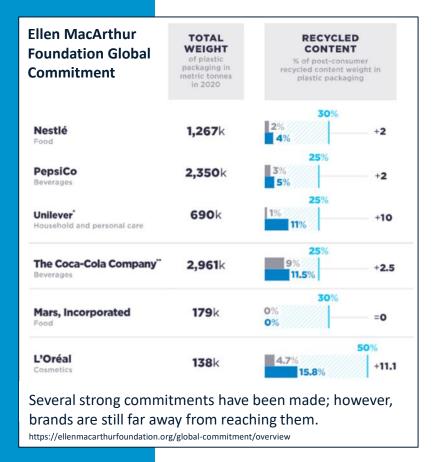
tons of municipal solid waste annually.

TOMRA's smart sorting machines maximize resource recovery



There is a legislative push and market pull towards a circular economy



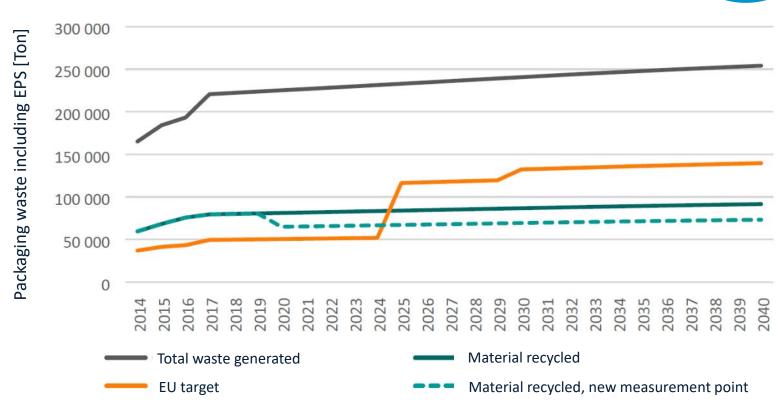


Example: Norway

Target 2025=50% recycling

Target 2030=55% recycling

EU member states need to meet PPWD¹ targets for plastic recycling



¹ Packaging and Packaging Waste Directive



Strong commitment from the industry to use recycled polymers

Selected global commitments (non-exhaustive)



"Our ambition is to use 1 million tons of plastic waste a year in our global chemical plants by 2025"

1 million tons



"Produce and market 2 million tons of recycled and renewable based polymers annually by 2030"

2 million tons



"Produce 2 million tons of sustainable (includes recycled and biobased) polyolefins by 2030"

2 million tons

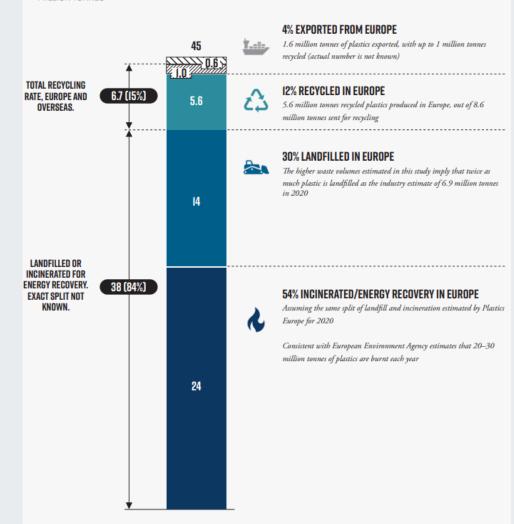


"By 2030, Dow will enable 1 million tons of plastic to be collected, reused or recycled through its direct actions and partnerships" 1 million tons

TREATMENT OF END-OF-LIFE PLASTICS IN EUROPE, 2020

TREATMENT OF EUROPEAN END-OF-LIFE PLASTICS, 2020

MILLION TONNES



https://materialeconomics.com/publications/europes-missing-plastics

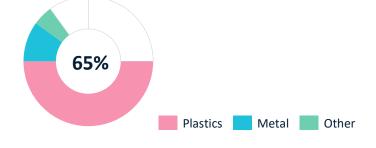
Sorting is essential for a circular economy



Waste sorting segment

Recover materials for recycling from both source separated and mixed household waste

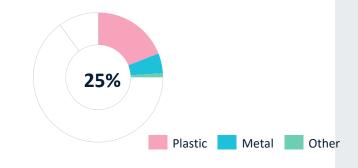
Segment share of installed base



Recycling segment

Upgrade material to pure fractions for high quality recycling

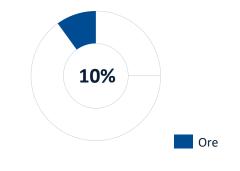
Segment share of installed base



Ore sorting segment

Recovery and ore sorting to reduce environmental impact

Segment share of installed base

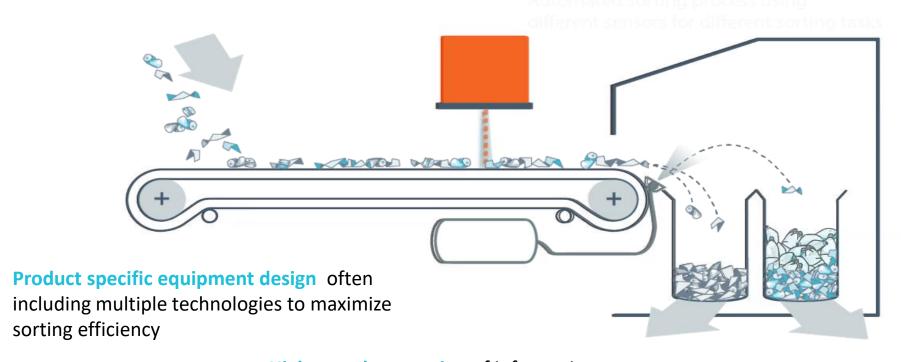




How does sensor-based separation work?

Feeding of unsorted material

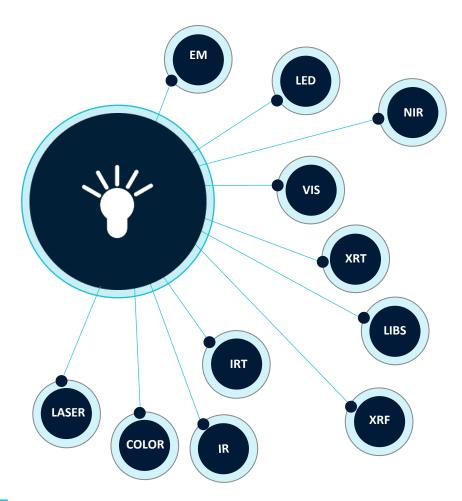
High-tech sensors to identify objects



Precise ejection by ultra fast air jets

High-speed processing of information (material, shape, size, color, defect, damage and location of objects)

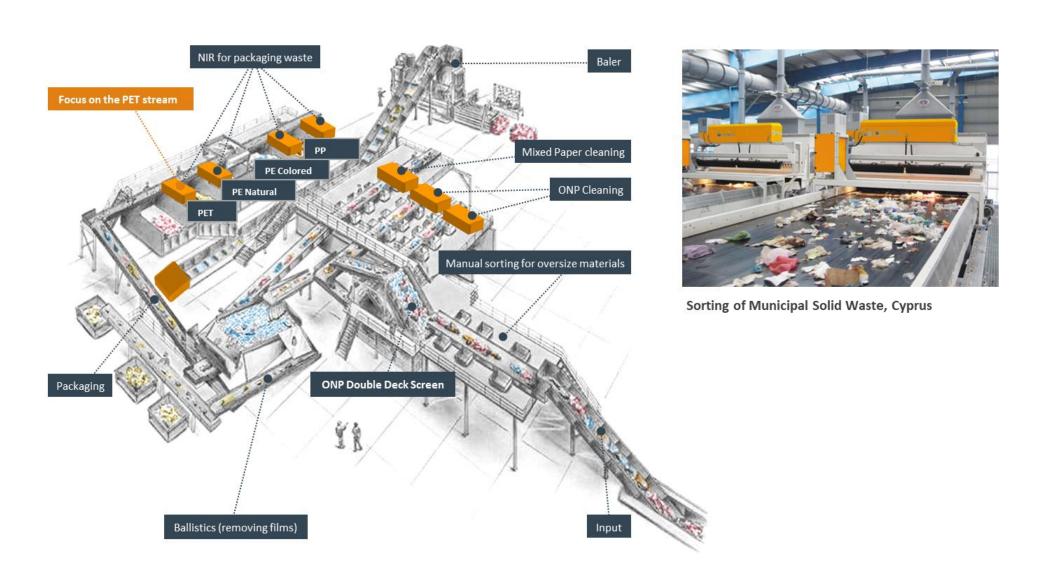
A broad sensor-based technology portfolio



	DECYCLING	5000
ELECTROMAGNETIC SENSOR (EM) Electro-magnetic properties like conductivity and permeability	RECYCLING X	FOOD
LED SPECTOMETRY (LED) Color and spectral properties based on multiple LED light sources in very high optical resolution	х	х
NEAR-INFRARED SPECTROSCOPY (NIR) Specific and unique spectral properties of reflected light in the near-infrared spectrum	х	х
VISIBLE LIGHT SPECTROMETRY (VIS) Specific and unique spectral properties of reflected light in the visible spectrum	х	x
X-RAY TRANSMISSION (XRT) Atomic density irrespective of surface properties and thickness	х	x
LASER INDUCED BREAKDOWN SPECTROSCOPY (LIBS) Elemental composition	х	
X-RAY FLUORESCENCE (XRF) Elemental composition	x	
INFRARED TRANSMISSION (IRT) Density and shape properties by light absorption		х
IR CAMERA (IR) Heat conductivity and heat dissipation		x
COLOR CAMERA (COLOR) Color properties measured in very high optical resolution	х	x
LASER REFLECTION/FLUORESCENCE (LASER) Structural, elemental and biological properties by reflection, absorption and fluorescence of laser light	х	х



Automation with TOMRA units



Our solutions enable recovery of recyclables from different waste streams

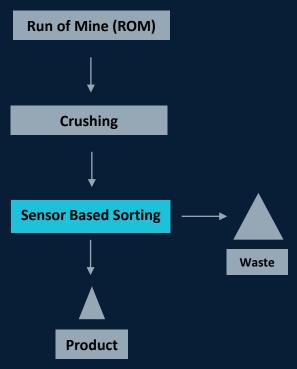


A modern packaging sorting plant can contain up to 60 NIR sorters

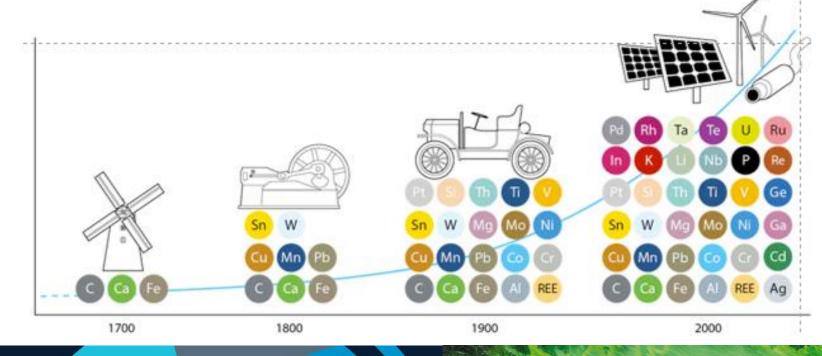
Our solutions can also recover valuables from residual waste streams

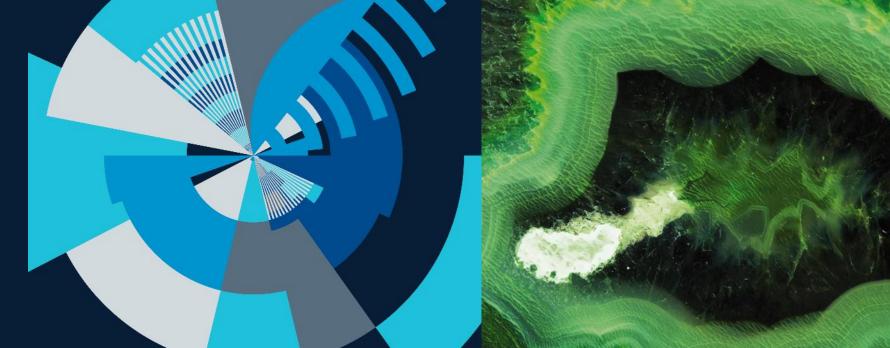


The essential nature of mining means that the industry needs to make a leap towards a more sustainable future



- 15% to 50% of the ROM can be rejected in an early stage of the process (application dependent)
- low grade waste rocks don't need to be transported, crushed, grinded, or further treated





Our ore sorting solutions enable the mining industry to reduce their footprint

Ore sorting is used to:

- Reduce operational footprint by splitting the "good" and the "bad" materials early in the process
- Extend the lifetime of a mine
- Reclaim valuables for stockpiles

VALUE-ADD:						
EFFECT OF SENSOR-BASED SORTING (SBS)	ENVIRONMENT	COST & PRODUCTIVITY	SAVINGS			
Decreased energy consumption (Transport, pumping & dewatering, disposals)	✓	✓	15 kWh saved per ton of material 2% to 3% of the world energy consumption is used for crushing, screening and milling			
Decreased water consumption (Cooling, transport in the process)	✓	✓	3 to 4 m³ water saved per ton of material			
Reduced carbon footprint	✓	✓	 CO2/Green counter, 7.5 kg per ton of material sorted TOMRA Sorters saved ~124,000 metric tons of CO2 in 2018 			
Decreased Transport cost		✓	Costs down €0.30/ton/km			
Chemical usage decrease (Flotation reagents, acid for leaching and cyanide)	✓	✓	A few grams up to a few kilos per ton			
Reduced tailings (fine particles)	✓	✓	3 m³ tailings volume per ton (2 m³ material plus 1 m³ water)			
Productivity increase (De-bottleneck conventional process)		✓	Per ton of waste 1 additional ton of ore production			
Lifetime of Mine increased	✓	✓	30-50% longer life of a mine			
Waste into value (Create sellable product)	✓	✓	The coarse waste rejected can be sold (for a low price)			
Legislation		✓	Up to 3 years quicker approvals			
Reduced cut-off grade (Higher dilution in the mine, process marginal dumps)		✓	30-50% more reserves			

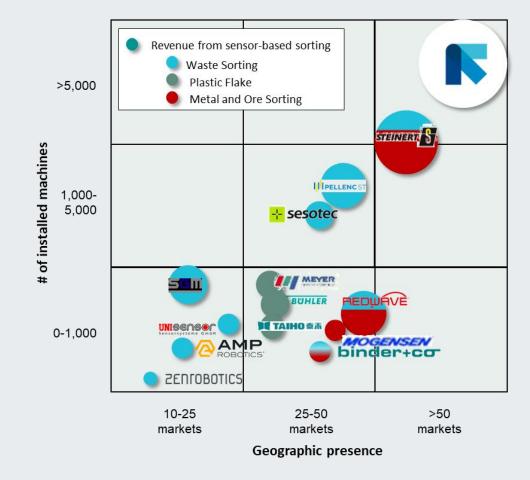
Our technology and innovations continue to push the boundaries of the recycling sorting market

New segments for automated sorting

Increase of automation and performance

Capacity growth

Recycling sensor-based sorting equipment market



Our solutions close the loop by enabling high quality recycling



Plastics

We are actively pushing the boundaries of plastics recycling by:

- Demonstrating advanced mechanical recycling
- Supporting chemical recyclers







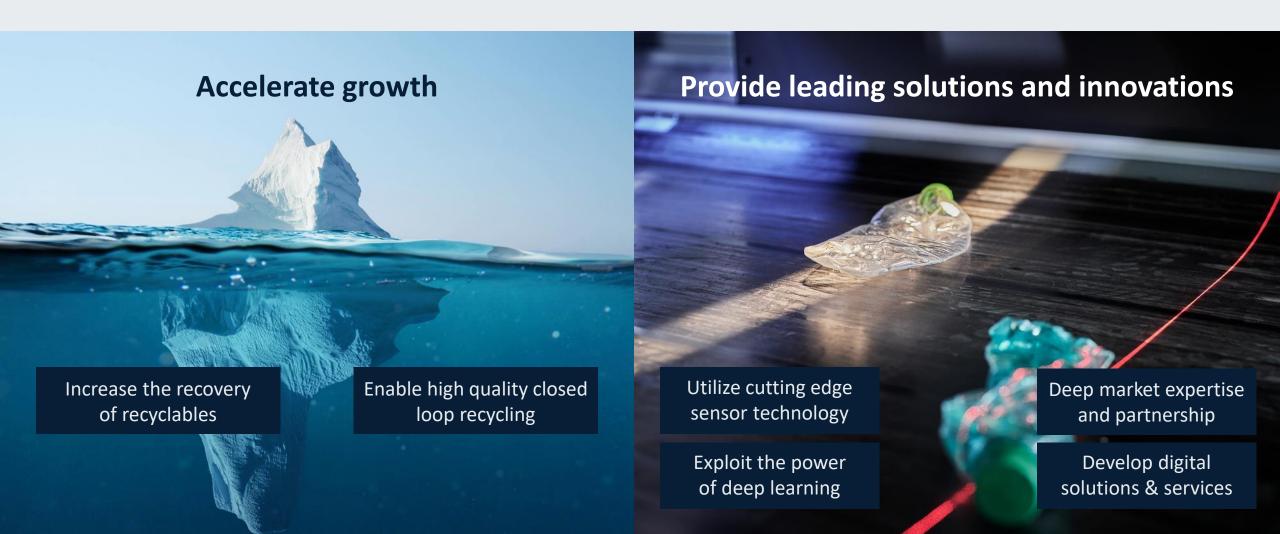
Wood sorting

Textile sorting

Alloy sorting

We are investing into the development of solutions for new segments

We have two strategic priority areas



We are here to enable closed loop recycling solutions - material stream by material stream

Our commitment towards plastic packaging by 2030

30%

of post-consumer plastic packaging is recycled in a closed-loop



TOMRA Food



TOMRA Food

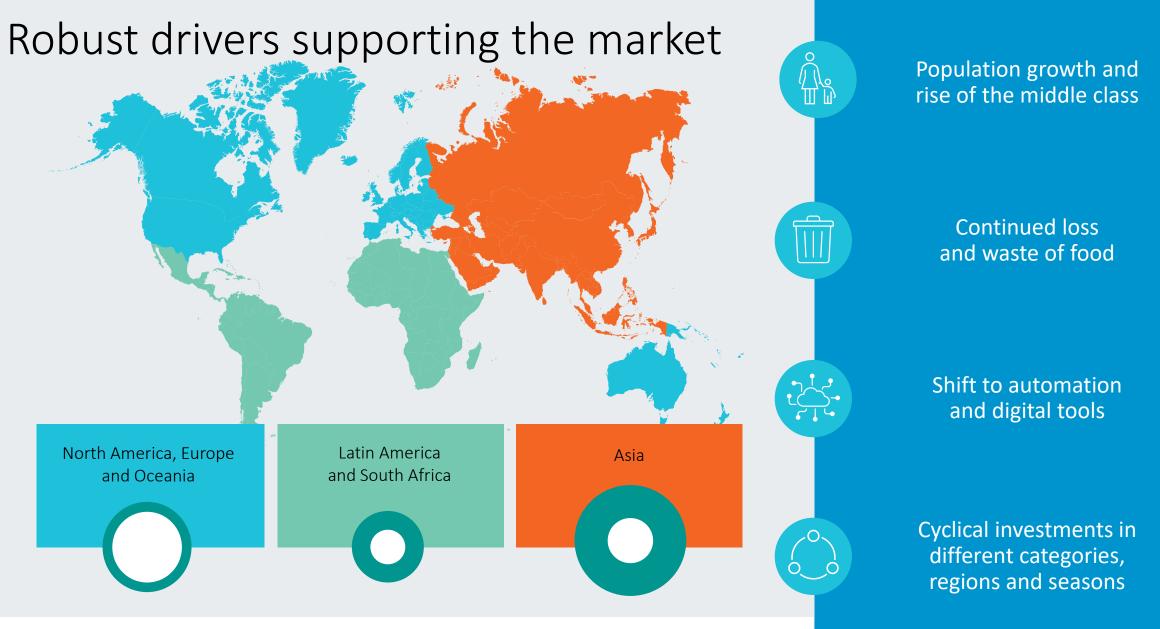
Transforming global food production to maximize food safety and minimize food loss by making sure Every Resource Counts™.

Currently, **33%** of all food produced is either lost or wasted

By 2050, a global population of **9.8 billion** will need **70%** more food than is consumed today

We have ambitions to enable a post-harvest food loss reduction of 50% by 2030







TOMRA Food with a strong value proposition



Why TOMRA

Know-how

Expertise to transform the food industry

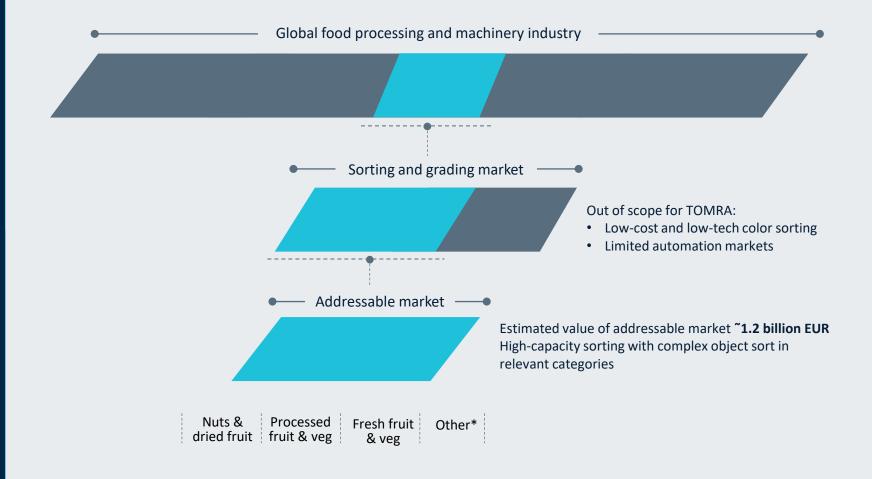
Technology

Best-in-class sorting and grading solutions, and digital insight Partnerships

With local understanding, global know-how and long-term relationships

We are addressing approximately 60% of the total food sorting and grading market

Market position and addressable market



Our Technology...



...are detecting a wide range of parameters



Foreign Material

Removal of foreign material in a material stream, e.g. insects, glass, metal, wood & plastics



Blemishes

Objects with spots or other (small) blemishes are removed



Toxins

Removal of produce contaminated with aflatoxin



Removal of soft,

molded or rotten food



Biometric Characteristics

Sort based on chemical composition such as water, protein content, sugar content (Brix) and dry matter



Shape & Size

Sort on length, width, diameter, area, brokenpiece recognition



Color

Grading by color or removal of discolorations in mono- and mixed-color material



Defects

Removal of visible and invisible small and substantial defects



Damage

Broken, split and damaged objects are detected and removed



Fluo

Based on the chlorophyll level present in produce defects are removed



Density

Detection of density differences

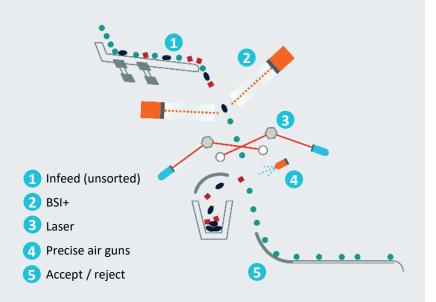
Visible

Invisible

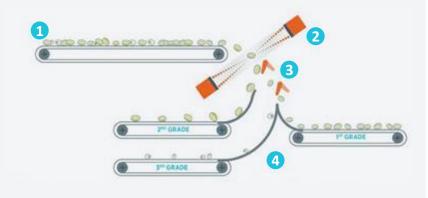
Both

Working principles in Food sorting

Chute or Channel sorter

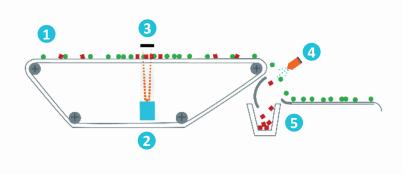


Air inspection



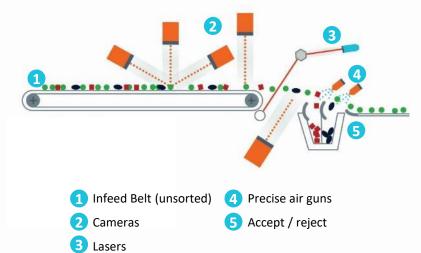
- 1 Infeed belt (unsorted)
- 3 Intelligent finger ejectors
- 2 Full width NIR and Color Vision sensors
- Accept/reject

Xray sorter

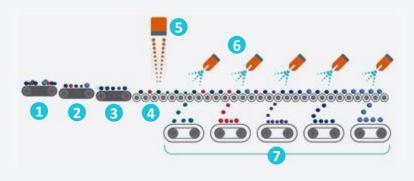


- 1 Infeed (unsorted)
- 4 Precise air guns
- 2 X-ray source
- 5 Accept / reject
- 3 X-ray detector

Belt inspection



Singulated grading



- 1 Accumulation conveyor
- 2 Singulation conveyor
- 3 Acceleration conveyor
- 4 Roller rotation units
- **5** Cameras and NIR sensors
- 6 Gentle tipping or air jets
- Specified grade

Food technology platforms

Solutions for fresh and processed produce



Integrated sorting solutions for fresh produce

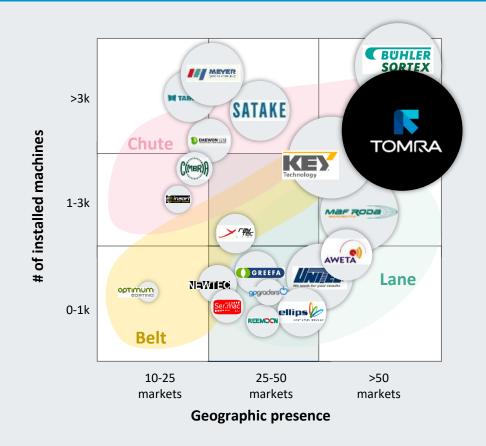


Leading position globally

Total Food Sorting and Grading Market

Addressable Food market

TOMRA 2022: ~0.4 EUR billion



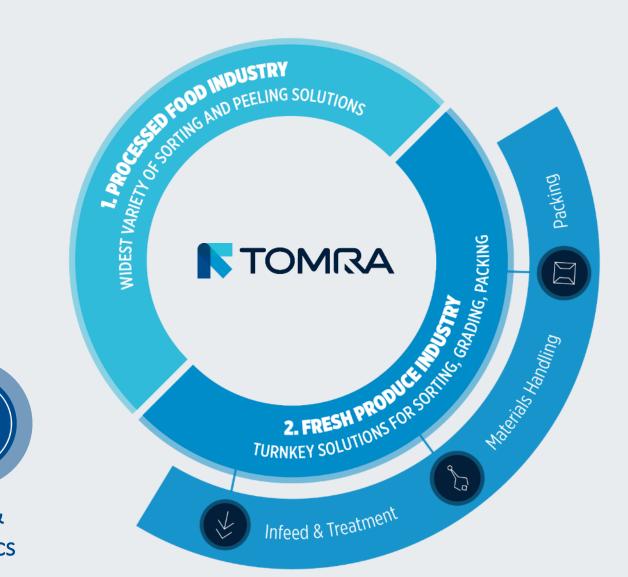
Food Categories



Leading technology



Sorting & Grading





Artificial Intelligence



Data & Analytics



Service & Support



Some of our customers

Processed Food



Nomad Foods











Fresh Food













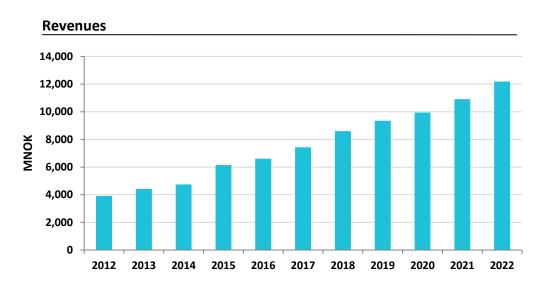


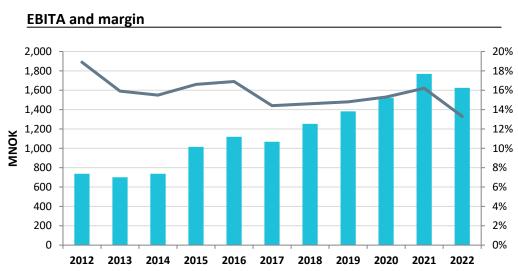


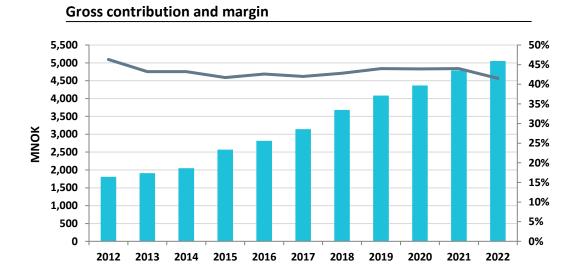


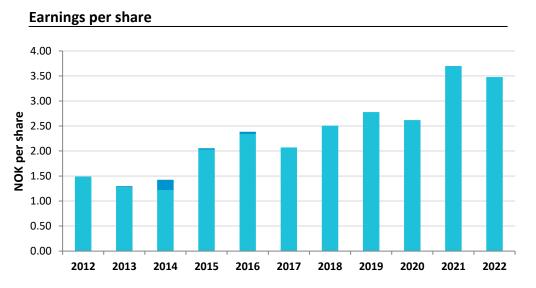


Group financials development













Ideally positioned to develop adjacent opportunities





Legislative push to advance circularity

Recycled content

EU's Packaging & Packaging Waste Regulation (proposed)

% of post-consumer recycled content in packaging

	2030	2040
Single use plastic beverage bottles	30%	65%
Contact-sensitive packaging	30%*	50%
Other types of packaging	35%	65%

Reuse and refill

EU's Packaging & Packaging Waste Regulation (proposed)

% of reusable Take-away packaging

	2030	2040
Cold & hot beverages	20%	80%
Ready prepared food	10%	40%

National legislation on take-away packaging



France 1 January 2023:

Mandatory reusable tableware for dine-in



Germany 1 January 2023:

Mandatory reusable take-away alternatives



Sweden 1 January 2024:

Mandatory reusable take-away alternatives



Denmark 1 January 2025:

Introduction of EPR packaging fees



Portugal 1 July 2022:

Tax on single use take-away packaging

The gap in plastics recycling

Majority of plastics are lost today



- In Europe alone, 24 million tons of plastics are lost to incineration and 14 million tons to landfill
- The volume of each waste plant and incinerator is too low for sophisticated sorting to ensure the quality and fractions required for recycling

Demand for recycled plastics

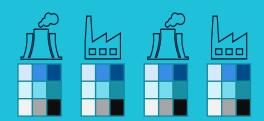


- Already a strong demand for recycled plastics will increase significantly in the next few years (more than 10 million tons from major plastic producers)
- Mechanical and chemical recyclers need an individual polymer fraction at sizeable volumes to justify investments





Input



Mixed plastics fraction sourced from material recovery facilities

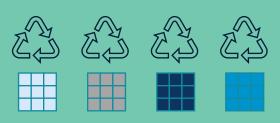




Advanced sorting

Dry washing

Output



High quality polymer fractions to be supplied to recyclers (PE, PE-LD, PP, PS, PET, film)











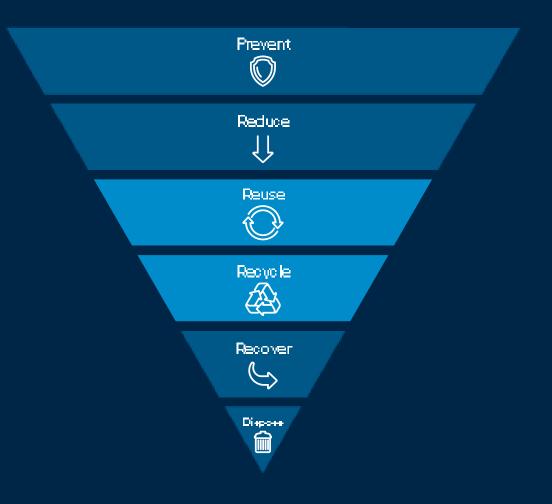
Germany

- Announced 19 December 2022
- 100% TOMRA owned
- EUR ~ 50-60 million investment
- Capacity ~ 80.000 tons p.a.
- Input: mixed post-consumer plastic
- Output: >10 different polymer fractions for mechanical and chemical recycling
- Operational in 2024-2025 est.

Norway

- Announced 31 May 2023
- Joint Venture 65% TOMRA / 35% Plastretur
- EUR ~ 32 million investment
- Capacity ~ 90.000 tons p.a.
- Input: mixed post-consumer plastic
- Output: 8 different polymer fractions for mechanical and chemical recycling
- Operational in the first quarter 2025 est.

Circular re-use system for takeaway packaging





Collaboration with Aarhus Municipality in Denmark on a deposit system for takeaway packaging

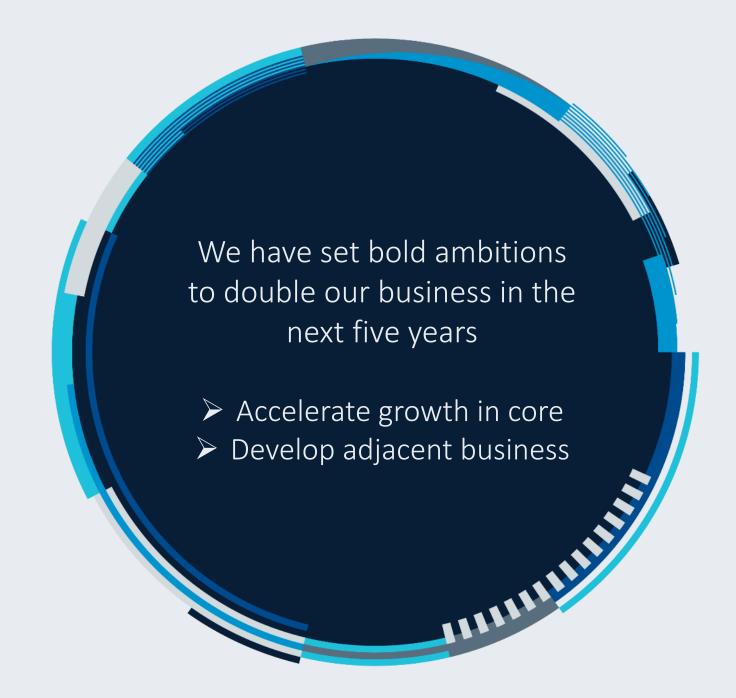


Aarhus indfører pant på takeawayemballage

Vi bruger ca. 300 millioner engangskopper og 150 millioner engangsbokse til takeaway om året i Danmark. Som den første kommune i landet er Aarhus klar til at indføre pant på takeaway-emballage. Målet er at skabe et cirkulært system, hvor emballagen bliver indsamlet, vasket og genbrugt.



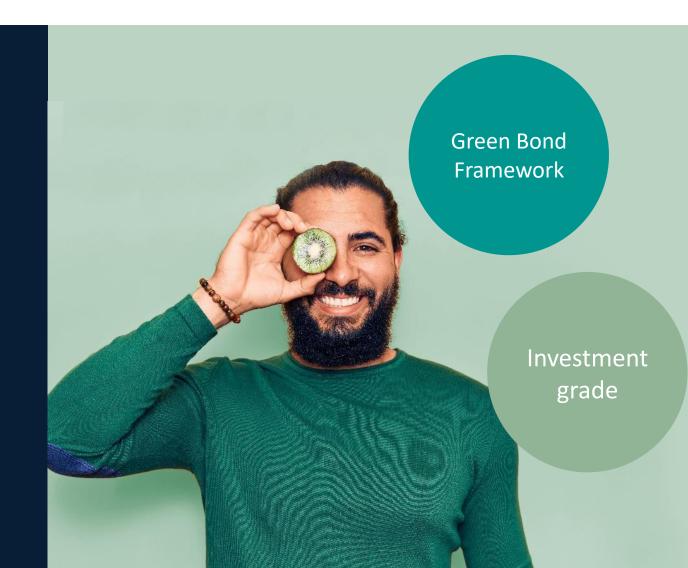
TOMRA is uniquely positioned along global megatrends





Our ambition is to keep an investment grade status





TOMRA Green Bond Framework





Use of proceeds

ICMA category: Pollution prevention and control

Expenditures related to:

Examples of eligible assets:

Collection, sorting and processing of beverage containers

- Manufacturing, installation, maintenance, and operation of reverse vending machines (RVMs)
- Sorting and processing facilities
- R&D related to the development and design of RVMs
- Collection systems for reusable packaging
- Outreach to raise awareness and support for deposit return schemes

Recovery and upgrading of valuable materials from waste streams for recycling

- Software development for waste sorting machines
- Assembly lines for manufacturing of sorting machines
- R&D to improve performance or enable sorting of new types of materials (e.g., textiles)
- Investments in the sorting and processing of postconsumer materials

Minimizing the carbon footprint of operations

- · Renewable energy equipment
- Clean transportation
- R&D to increase the use of sustainable materials.

Highlights form Cicero Second Party Opinion

"TOMRA's RVMs and waste sorting machines are **well-aligned with circular economy** solutions and a low-carbon future"

By improving material recovery for recycling and reuse, TOMRA's RVMs and waste sorting machines are an **important contribution to the climate transition**, a more circular economy, and improved waste management"

"RVM solutions have the potential to limit climate emissions, local pollution, and harmful biodiversity impacts"

"TOMRA has significantly strengthened its sustainability strategies"

"The overall assessment of TOMRA's governance structure and processes gives it a rating of Good."





Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.





Double the avoided emissions enabled by TOMRA products in use

Commitment to Net Zero emissions and setting Science Based Targets (to be externally verified by 2024)

100% renewable electricity

>80% reduction in operational transport emissions

>90% sustainable materials and components in all new products

>50% of our products are circular at their end of life

Strive for zero work-related injuries and illness in providing a safe place for people and the environment

Attract diverse talents from all facets of humanity, with a goal of 50% women and men joining annually

Grow female representation in senior management to >30%

Improve employee satisfaction and engagement with top quartile NPS Score

Supply Chain Sustainability targets will be announced in 2023















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