


A background graphic consisting of a network of blue dots connected by thin lines, forming a complex, interconnected structure that resembles a molecular or data network. The dots and lines are in various shades of blue, and the overall effect is a sense of connectivity and technology.

# INVESTOR PRESENTATION



We live in an age with the  
highest level of consumption  
our planet has ever seen



Using more resources than ever before. More than our planet can continue to sustain.

# TOMRA IS WELL-POSITIONED TOWARDS MEGATRENDS

## 1 Solutions for optimal resource productivity



## 2 Leading market position – fit for growth

Collection Solutions  
#1

Food Sorting  
#1

Recycling Sorting  
#1

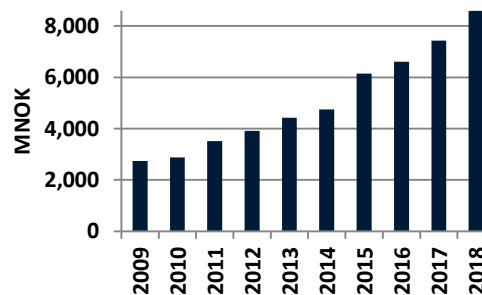
Mining Sorting  
#1

## 3 Pioneer in application of sensor-based technology

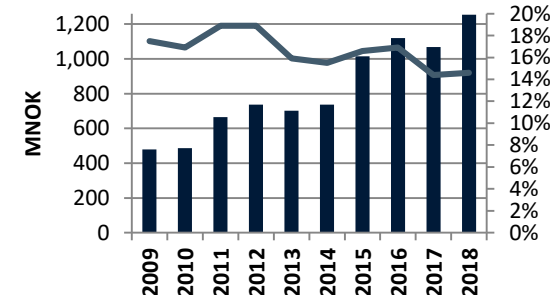


## 4 Strong financial performance and track record

Revenues



EBITA and margin

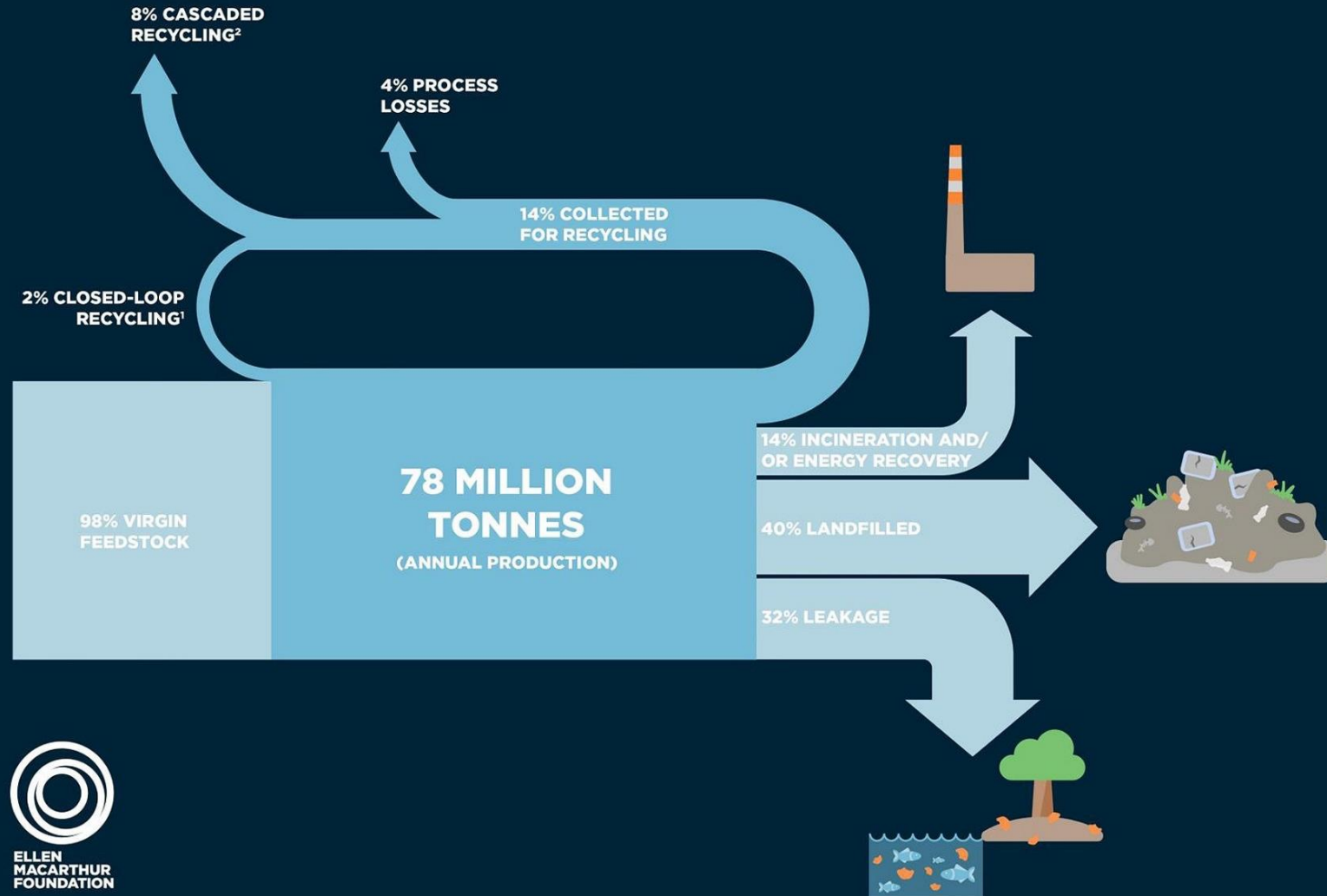


# DID YOU KNOW?

- By 2025 **solid waste generation** will **increase by 70%** compared to 2010 levels
- **32%** of all plastic packaging made **ends up in nature** every year
- **20%** of plastic packaging could be **profitably re-used** and **50%** could be **profitably recycled** if designed for after use systems
- Continuing current practices there will be **more plastic than fish** in the ocean by 2050

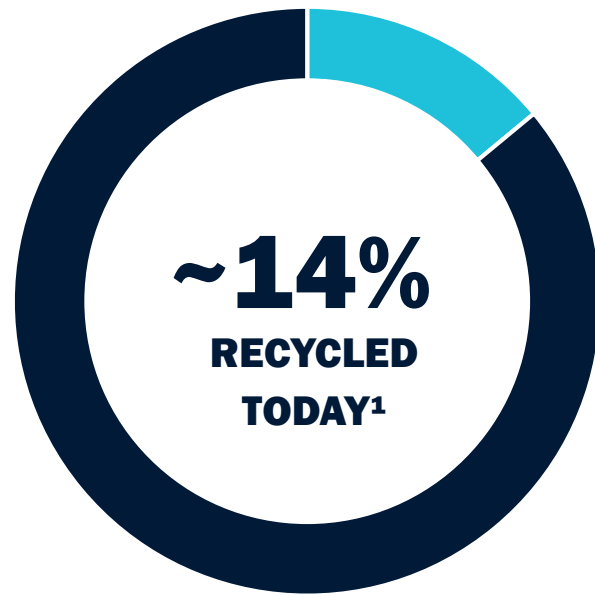


Only 2% of the planet's annual plastic packaging production is reused for the same/similar products



# SIGNIFICANT UNTAPPED POTENTIAL TO REUSE GOOD MATERIALS

## PLASTIC PACKAGING



**VALUE  
PROPOSITION\***  
**\$ 50–80 BN**

Total volume of plastic packaging is 78 mln tonne annually whereof ~14% is currently recycled, meaning ~67 mln tonne lost. With a volume yield of 72% and a weighted average price of 1,100–1,600 USD/t, the total value proposition is in the range of USD 50-80 bn. Please note that this is a conservative estimate based on a narrow definition of total annual plastic packaging volume. Applying a wider definition can increase the value proposition up to USD 170-190 bn.

## STEEL



**VALUE  
PROPOSITION\***  
**\$ 70–150 BN**

Worldwide steel production is currently about 1,600 mln tonne annually. 70-90% recycling means ~1,100-1,450 mln tonne recycled and 160-480 mln tonne lost. Assuming ~90% yield in process with market price of ~500 USD/t equals USD 70-220 bn, so conservative range USD 70-150 bn

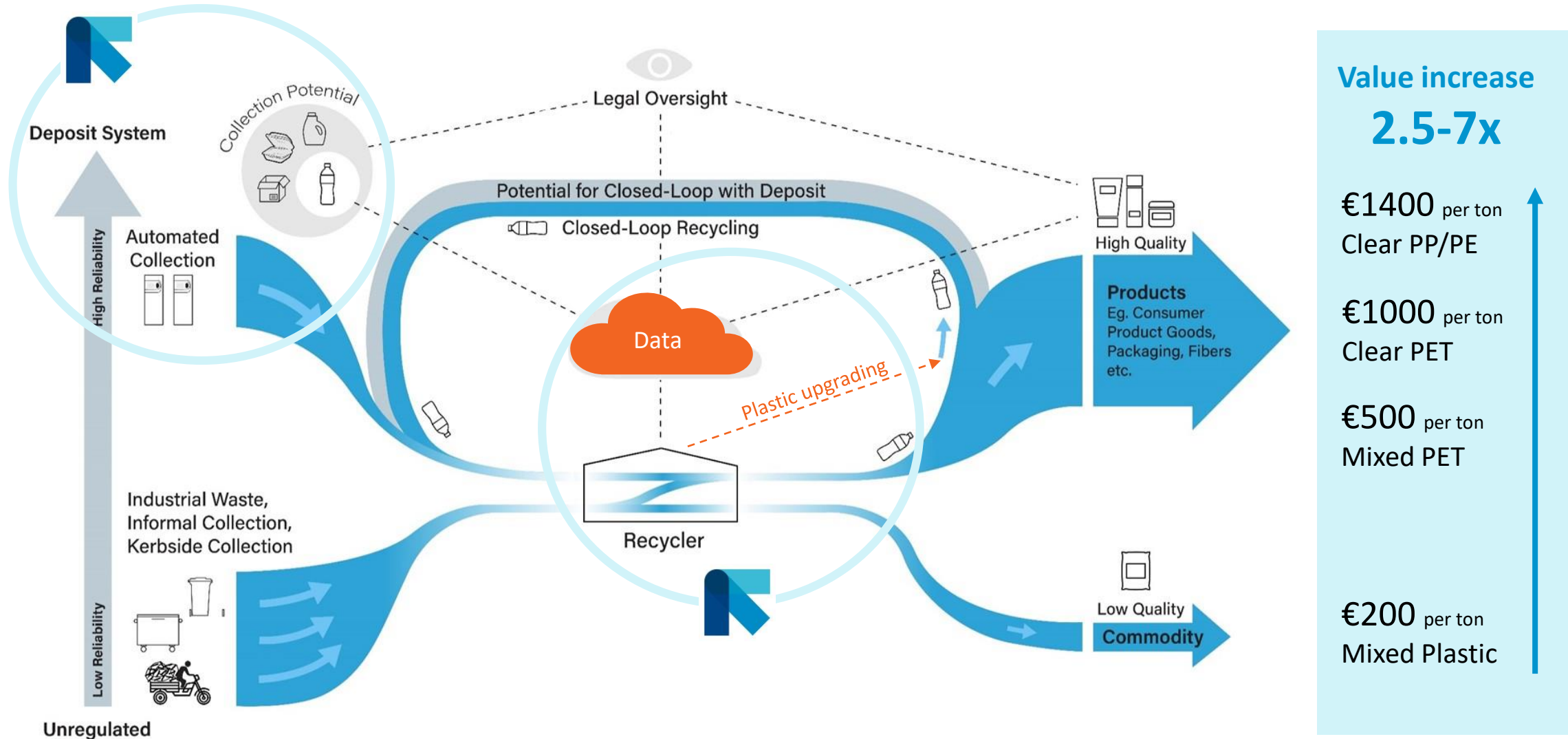
## PAPER



**VALUE  
PROPOSITION\***  
**\$ 30–40 BN**

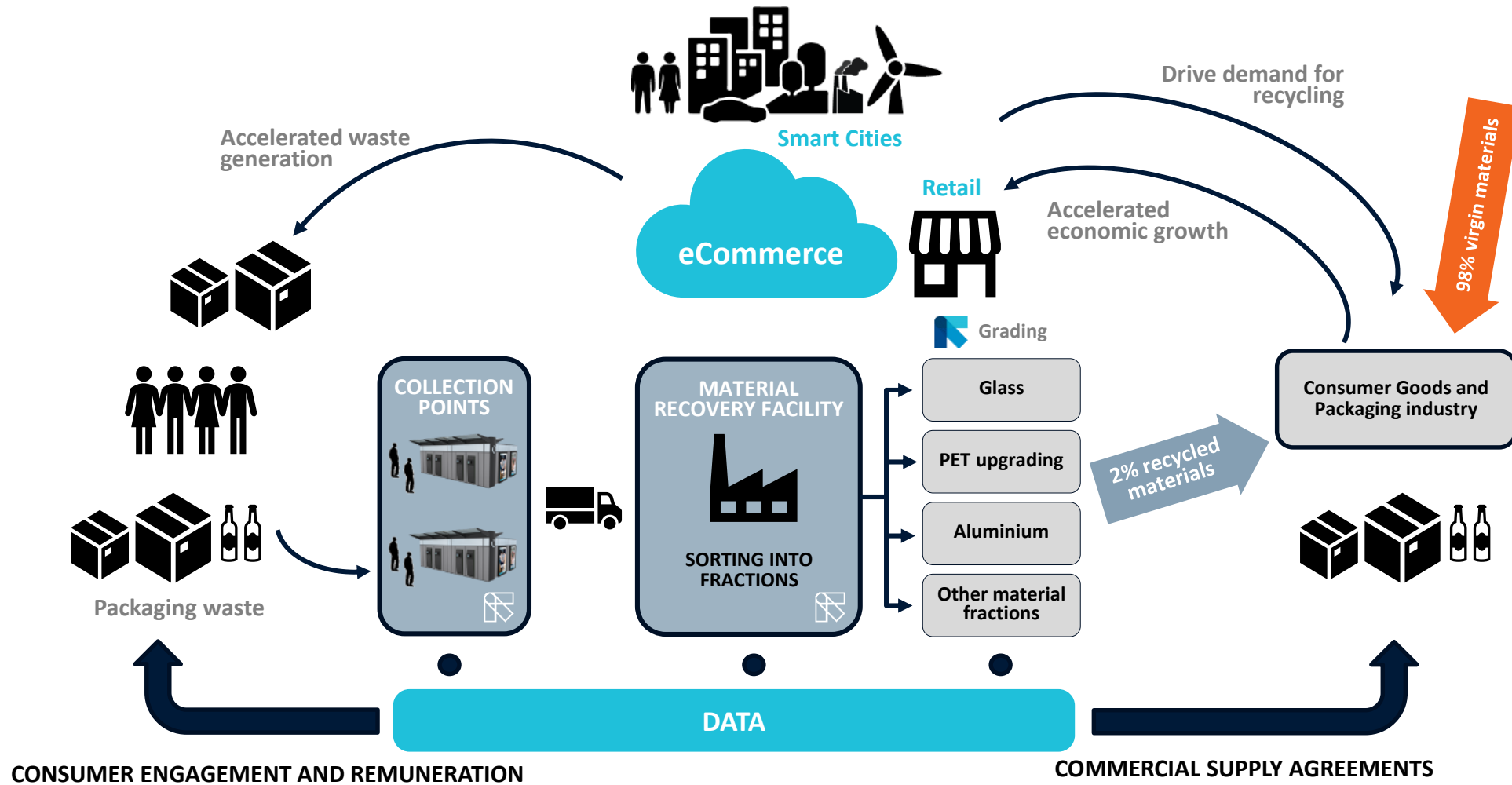
~80 % of produced paper is potentially recyclable, ~400 mln tonne annually x 80% = 320 mln t/a potentially recyclable paper in the market. Today, ~58 % or 230 mln t/a are recycled, means 90 mln tonnes are lost. If this is recovered and goes into the paper recycling process there will be between 10-30% fibre loss, assuming on average 20%. The value of newsprint paper is ~400-600 USD/t, let's assume 500 USD/t = ~90 mln t/a x 80% x 500 USD/t = USD36 bn

# CIRCULAR ECONOMY – REDEFINING VALUE CREATION





# THE CIRCULAR ECONOMY AND THE TOMRA CLOSED LOOP



TOMRA's solutions enable a more predictable offtake of high quality recycled materials for same purpose use: Creating the market

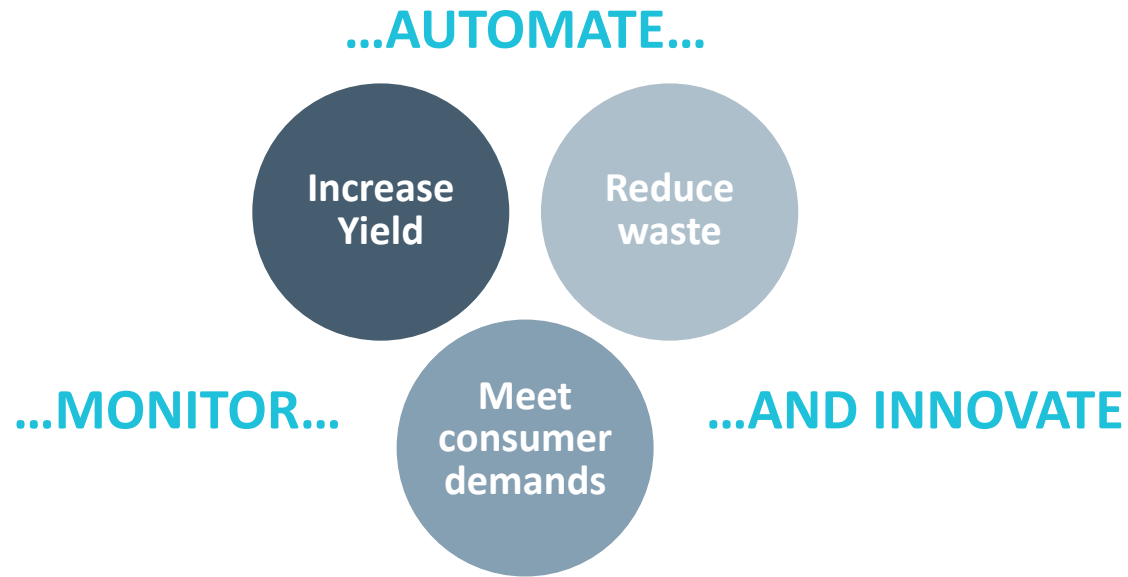


# DID YOU KNOW?

- By 2050, a global population of **9.8 billion will require 70%** more food than is consumed today
- We are currently **wasting 33%** of global food production
- The food industry accounts for around **10% of global GDP**
- Agriculture accounts for **20%** of **global greenhouse gas emissions**

# NEW WAYS OF FEEDING A FAST GROWING DEMANDING POPULATION...

To ensure an efficient food production there is an increased need to...



*Feeding a demanding, rapidly growing urbanized population brings opportunities for TOMRA*



**The digital consumer...**



**Increased buying power from a growing and wealthier middle-class...**

# FOOD VALUE CHAIN IS GETTING MORE COMPLEX AND DRIVES THE FOOD MARKET TOWARDS NEW SOLUTIONS

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Production

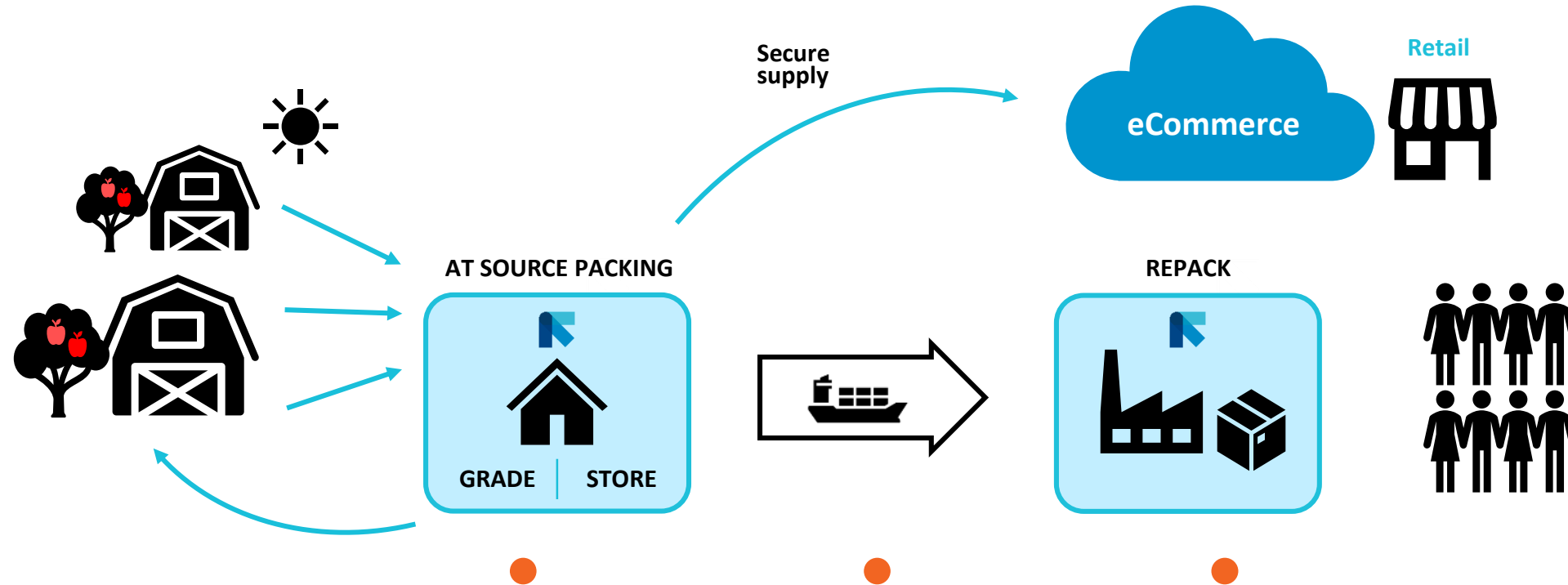


Distribution



Consumption

# TOMRA TO PLAY A DIFFERENCE IN THE FUTURE OF FOOD PRODUCTION



## DATA GENERATED THROUGH THE VALUE CHAIN SERVE MULTIPLE PURPOSES

Improved Farming	Determine taste, Ripeness & Defects	Reduce food waste	Traceability
Uniform Quality	Increase Yield	Optimise storage	Maximise use

# OUR BIGGEST GLOBAL CHALLENGES = OUR BUSINESS OPPORTUNITIES



## SUSTAINABLE DEVELOPMENT GOALS



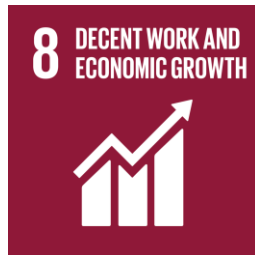
# MAKING MEANINGFUL CONTRIBUTION ALONG THE WAY

## Thematic Support: Future of Food & Circular Economy



**TOMRA's mission is to create sensor-based solutions for optimal resource productivity,**  
*making sustainability profitable*  
*– with increased relevance and meaning*

## The TOMRA Operations



**TOMRA's Corporate Responsibility Program will support the vision of leading the resource revolution,**  
*through the impact of our people, products & services*

Tangible actions to demonstrate our purpose of business

FROM PURPOSE INTO PROFITS AND  
PROFITS INTO PROGRESS, TOMRA IS  
**TRANSFORMING** WHAT IT MEANS  
TO BE RESOURCEFUL.



- Our solutions, in use around the globe, helped keep **~25 millions of tons of CO<sub>2</sub>** from being released into the atmosphere in 2018
- **~35 bn used beverage containers are captured every year** through our reverse vending machines
- Our steam peelers process **~15 million tons of potatoes per year with a 1% yield improvement** over other alternatives
- **~715,000 tons of metal are recovered** every year by our metal-recycling machines





# TOMRA AT A GLANCE



4000+

EMPLOYEES  
GLOBALLY

Publicly listed on Oslo Stock Exchange (OSEBX: TOM)



8.6

BILLION NOK  
REVENUES IN 2018



FOOD



RECYCLING



MINING



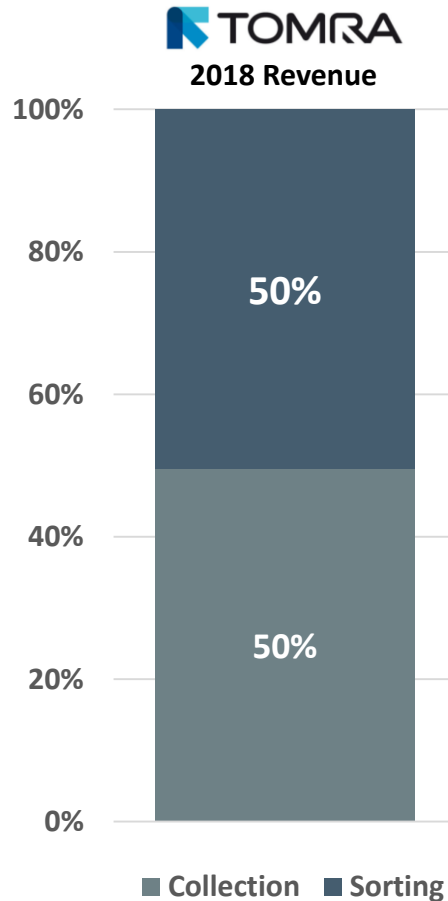
REVERSE VENDING



MATERIAL RECOVERY



# CREATING VALUE THROUGH TWO STRONG BUSINESS AREAS

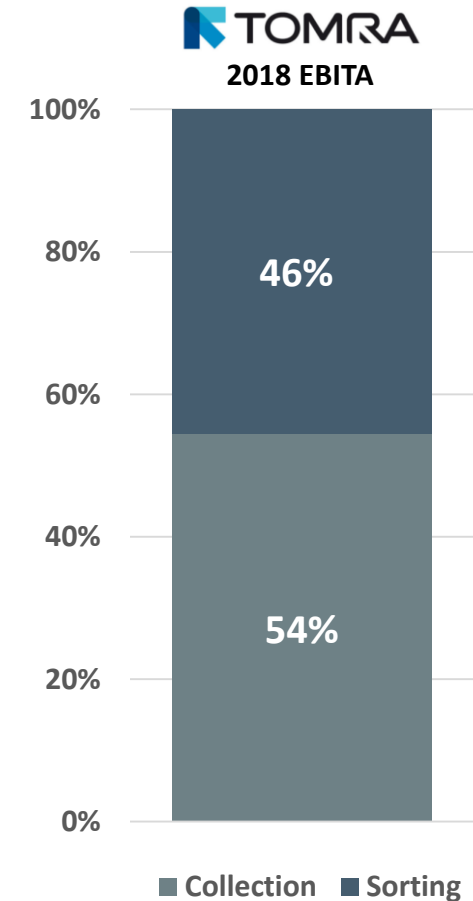


- High growth
- High margins
- Medium cyclicity

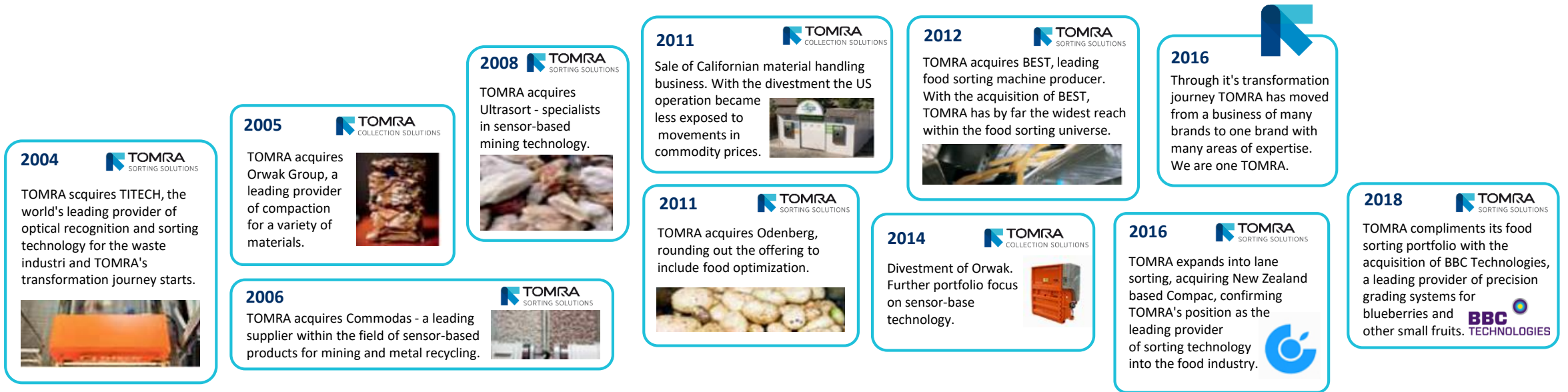
Technology leadership - sustainable business



- Stable
- High margins
- Low cyclicity



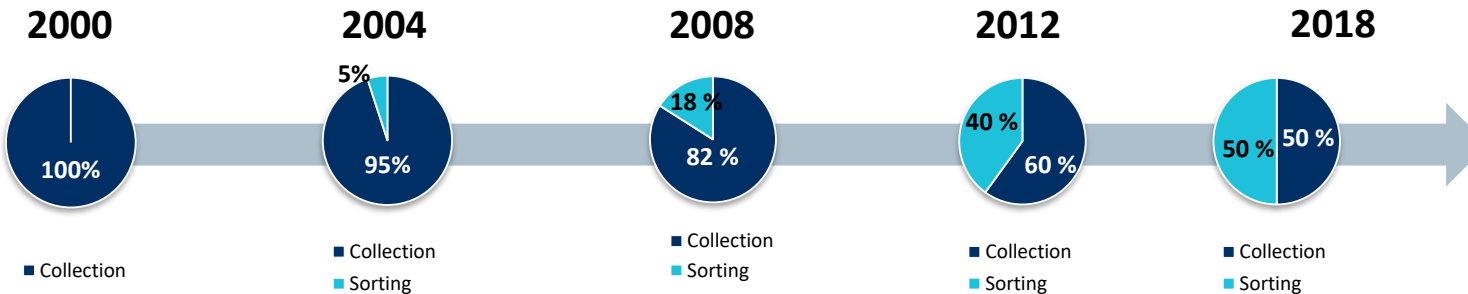
# THE TOMRA TRANSFORMATION JOURNEY



FROM:



Helping the world recycle



TO:



LEADING THE RESOURCE REVOLUTION

# TOMRA'S TWO BUSINESS AREAS



## FOOD

Share of '18 sales	~34%
Employees	1370
Customers	Food growers, packers and processors
Market share	<b>Bulk: ~25%    Lane: ~25%</b>

## RECYCLING

Share of '18 sales	~13%
Employees	240
Customers	Material recovery facilities, scrap dealers, metal shredder operators
Market share	<b>~55-65%</b>

## MINING

Share of '18 sales	~3%
Employees	80
Customers	Mining companies
Market share	<b>~40-60%</b>

## TOMRA SORTING GROUP FUNCTIONS & SHARED STAFF

Employees	245
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## REVERSE VENDING

Share of '18 sales	~38%
Employees	1,500
Customers	Grocery retailers
Market share	<b>~75%</b>

## MATERIAL RECOVERY

Share of '18 sales	~12%
Employees	590
Customers	Grocery retailers and beverage manufacturers
Market share	<b>~60% in USA (markets served)</b>



# INSTALLED BASE WORLDWIDE



## REVERSE VENDING

Nordic	~15,100
Germany	~30,000
Other Europe	~14,600
North America	~16,000
Rest of the world	~7,400

**TOTAL ~83,100**



## RECYCLING

EMEA	~4,250
Americas	~865
Asia	~820
Other	~25

**TOTAL ~5,960**

## MINING

Europe	~28
US / Canada	~41
Australia	~12
South Africa	~37
Other	~35

**TOTAL ~153**

## FOOD BULK

EMEA	~3,250
Americas	~2,950
Asia	~675

**TOTAL ~6,875**

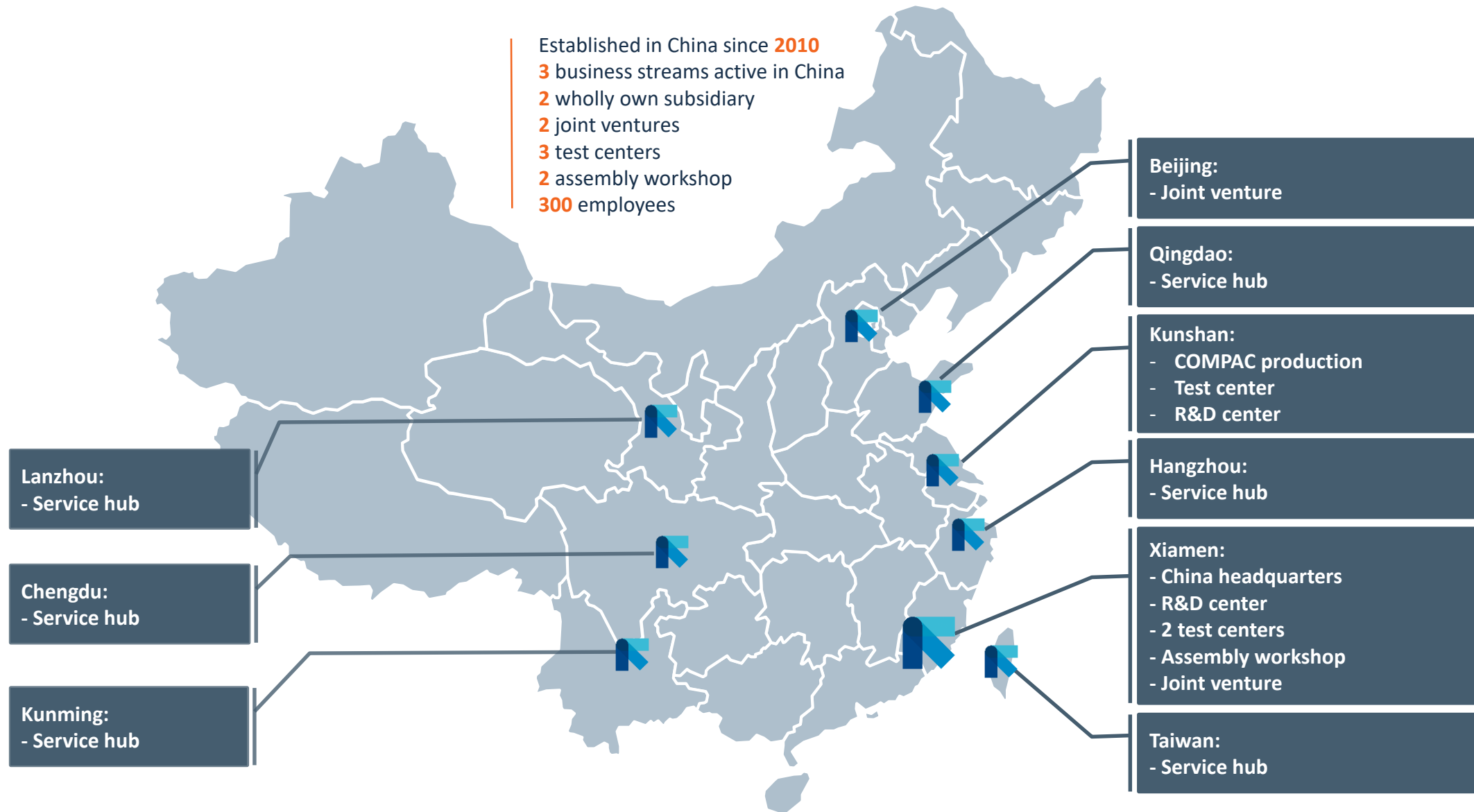
## FOOD LANE

EMEA	~790
Americas	~1,705
APAC	~840

**TOTAL ~3,335**

Food Lane includes Compac and BBC

# STRENGTHEN PRESENCE IN CHINA



The image features a futuristic, blue-toned industrial interior. The background shows a long, narrow corridor with a series of parallel, metallic-looking structures on either side, creating a sense of depth and perspective. The lighting is soft and diffused, highlighting the metallic surfaces. In the foreground, a large, circular, blue lens or sensor is mounted on a black stand, positioned centrally. The lens has a dark, circular opening in the center, and its surface reflects the surrounding environment. The overall aesthetic is clean, modern, and high-tech.

# TOMRA COLLECTION SOLUTIONS

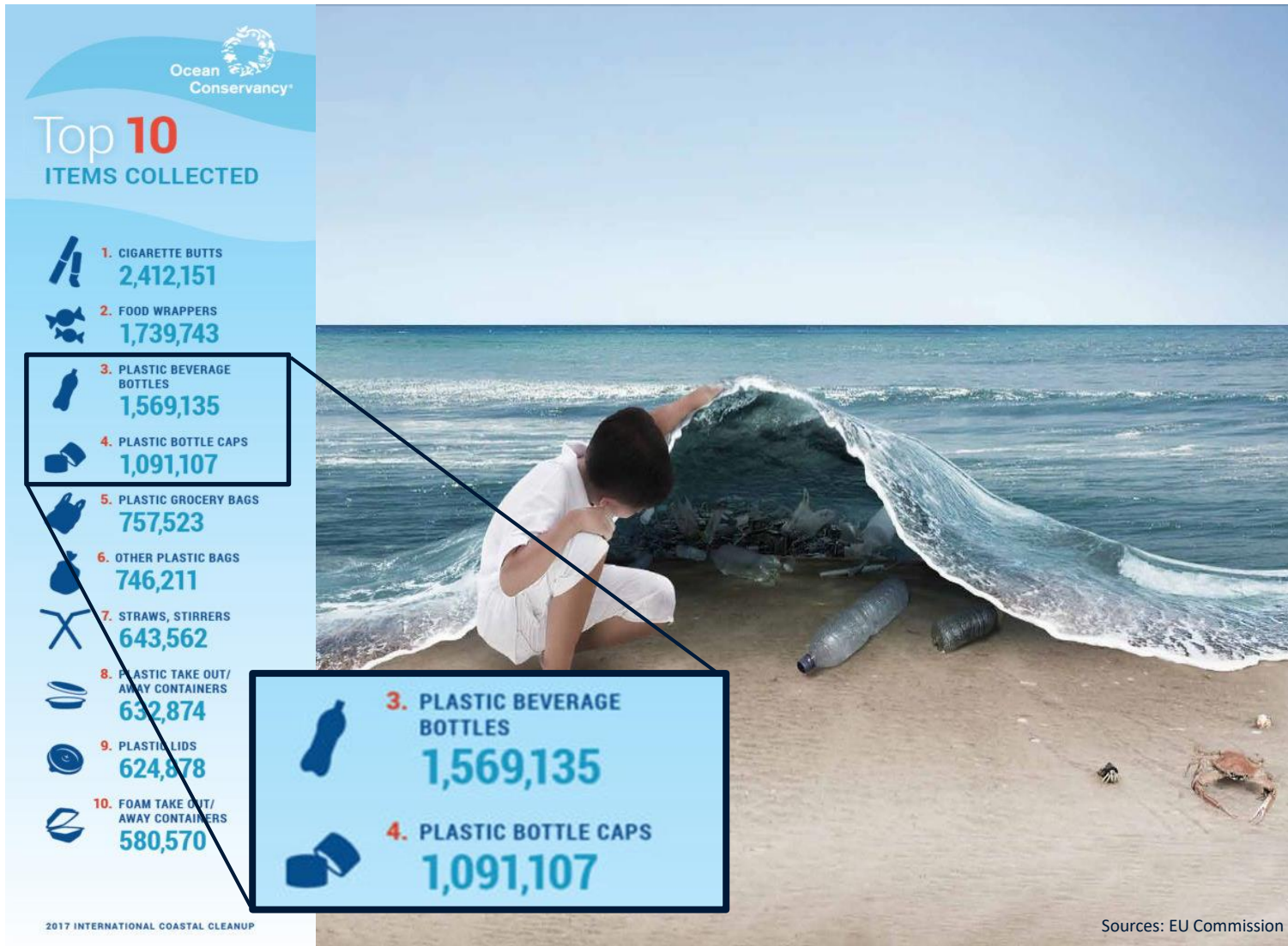


# RETURNS INTO VALUE

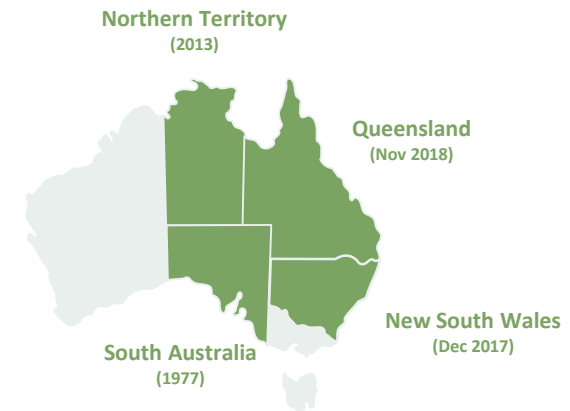
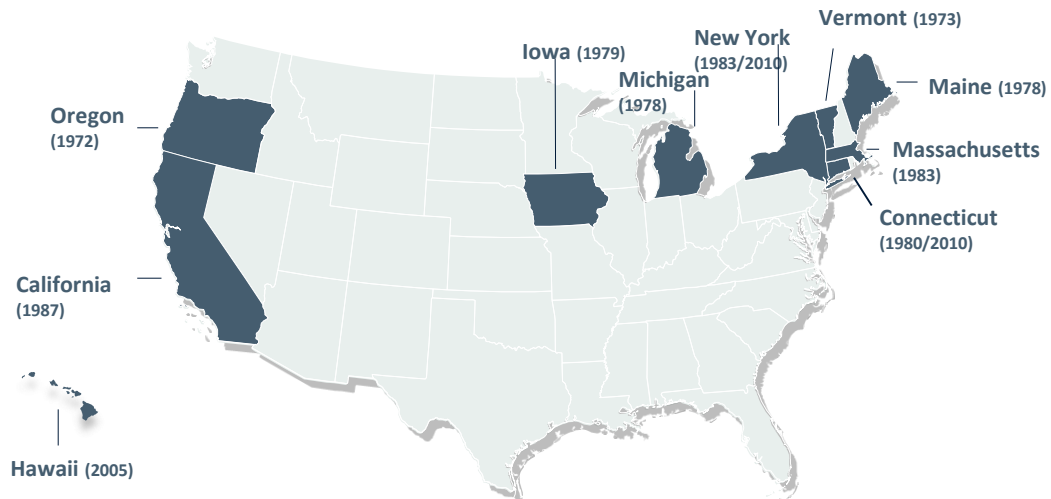
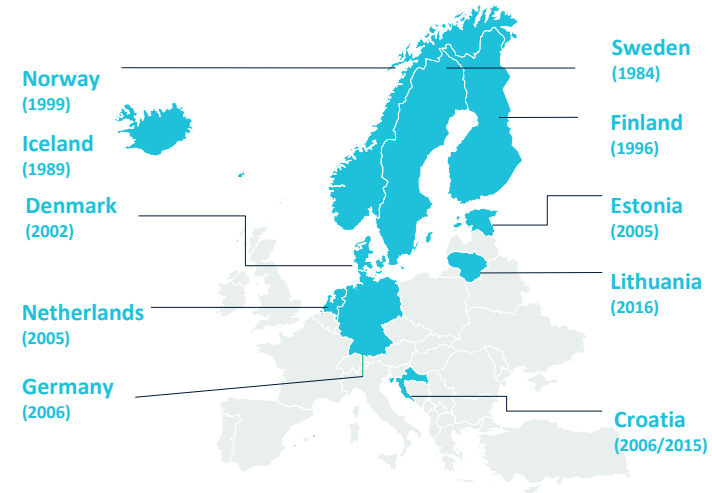
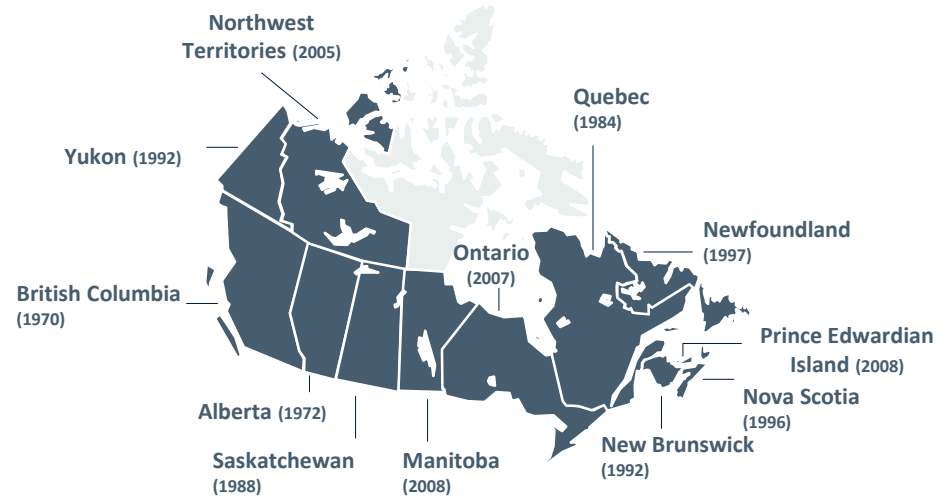
## DID YOU KNOW?

- **1 million** plastic bottles are bought around the world every minute
- **Less than half** of all purchased plastic bottles are collected for recycling
- **~ 35bn** beverage containers are captured by **TOMRA** every year...
- ...representing only **2.5%** of all beverage containers sold in 2017

# INCREASING PUBLIC PRESSURE TO REDUCE WASTE AND LITTERING



# AN OVERVIEW OF CURRENT DEPOSIT MARKETS\*



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

# UPCOMING DEPOSIT MARKETS ON THE MOVE

— Recently approved  
— In progress

**North America:**  
Possible expansion of existing deposit systems

**Scotland:**  
Commitment to a Container Deposit Scheme announced in party program

**England:**  
Announced plans for a deposit scheme to reduce plastic pollution. Ongoing consultation

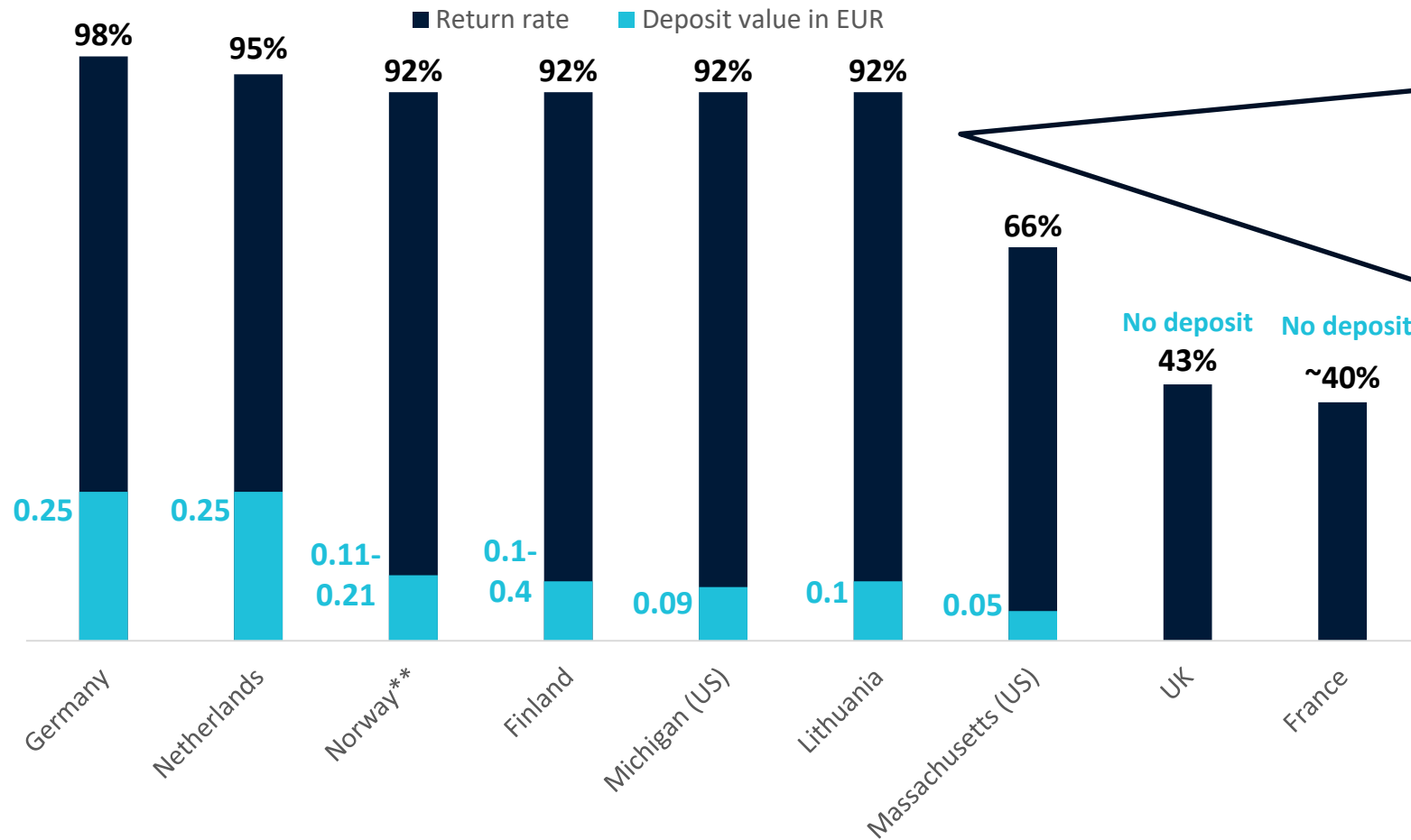
**Australia:**  
NSW introduced deposit from December 2017  
QLD introduced deposit from November 2018  
Western Australia might introduce in 2020

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



# A PROVEN SOLUTION TO ACHIEVE HIGH RETURN RATES

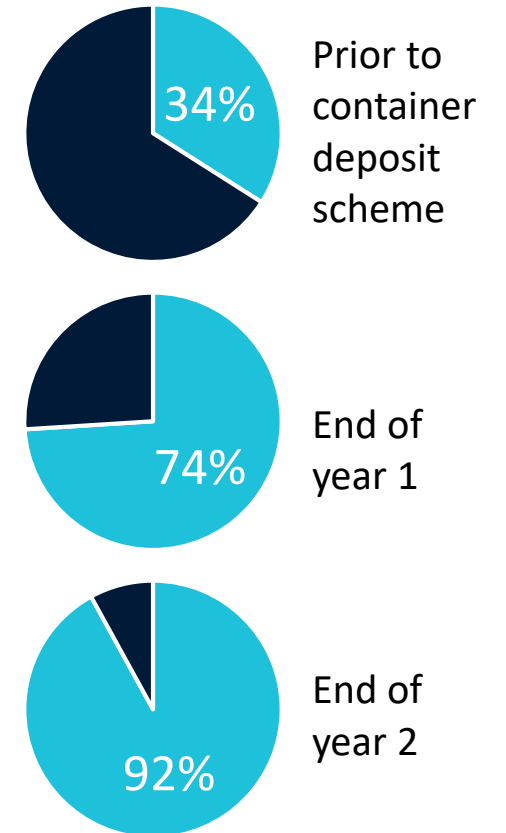
## Return rate and deposit value\* for various container deposit schemes



\*Deposit values converted to EUR for comparison purpose

\*\*Norway increased its deposit value to 0.21-0.31EUR since 01.09.2018

### Return rates in Lithuania

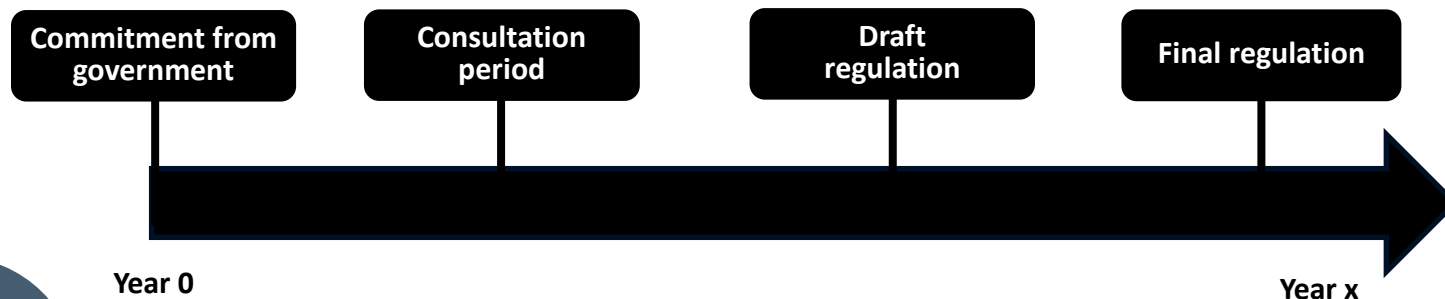


# DESIGNING A DEPOSIT SCHEME – LENGTHY PROCESS FROM IDEA TO LAW

## Many stakeholders around the table



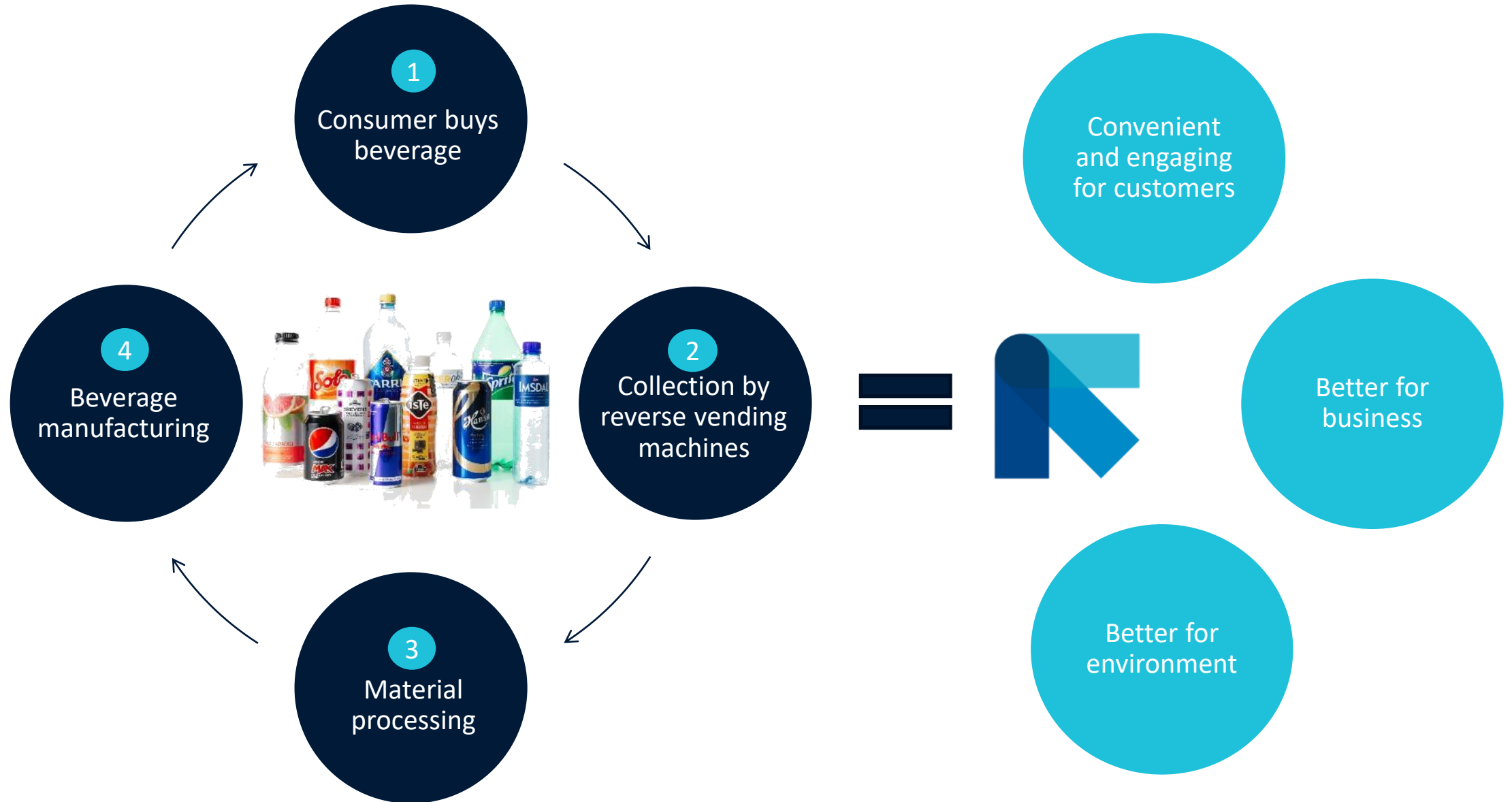
## Illustrative legislation process



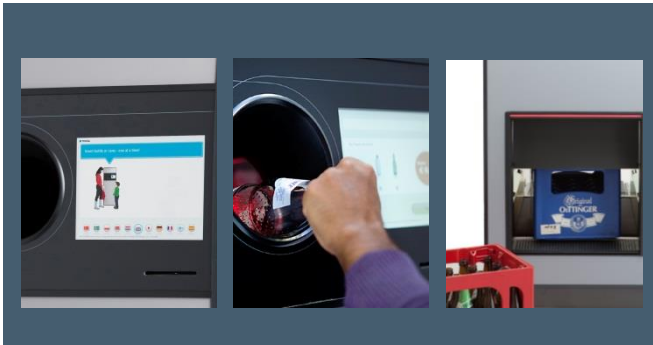
## Many questions to address:

- Types of material and product included
- Measurement of success and effectiveness
- Deposit value
- Participants and their role
- Financing of the scheme
- Deployment of infrastructure and logistics
- Fraud prevention
- System regulation and monitoring

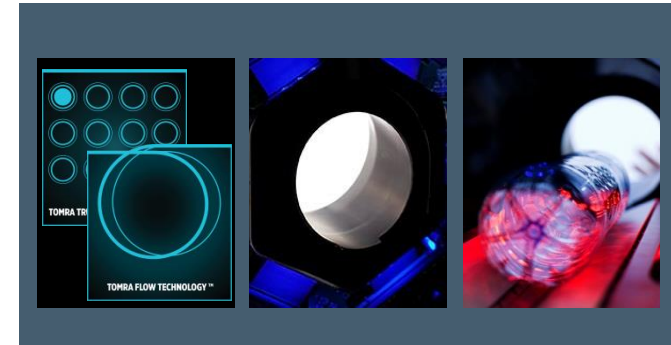
# THE BENEFITS OF REVERSE VENDING IN A CONTAINER DEPOSIT SCHEME



# ELEMENTS OF A MODERN REVERSE VENDING SYSTEM



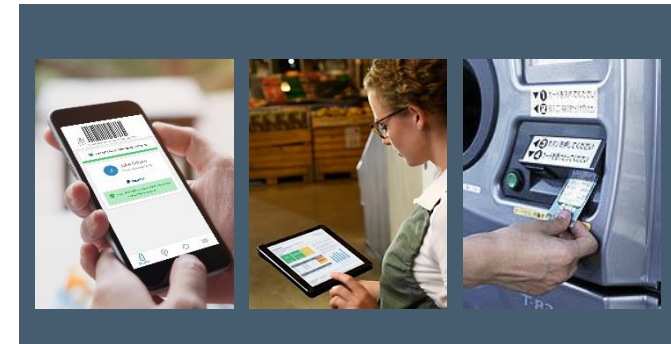
**User communication**



**Recognition system**



**Sorting & processing**



**Data administration**



# Key market and consumer trends drive structural changes...

## CONSUMER TRENDS



Bag drop solutions, reverse logistics from e-commerce

## RETAILER TRENDS



Bigger chains but smaller stores, self-service

## MATERIAL TRENDS



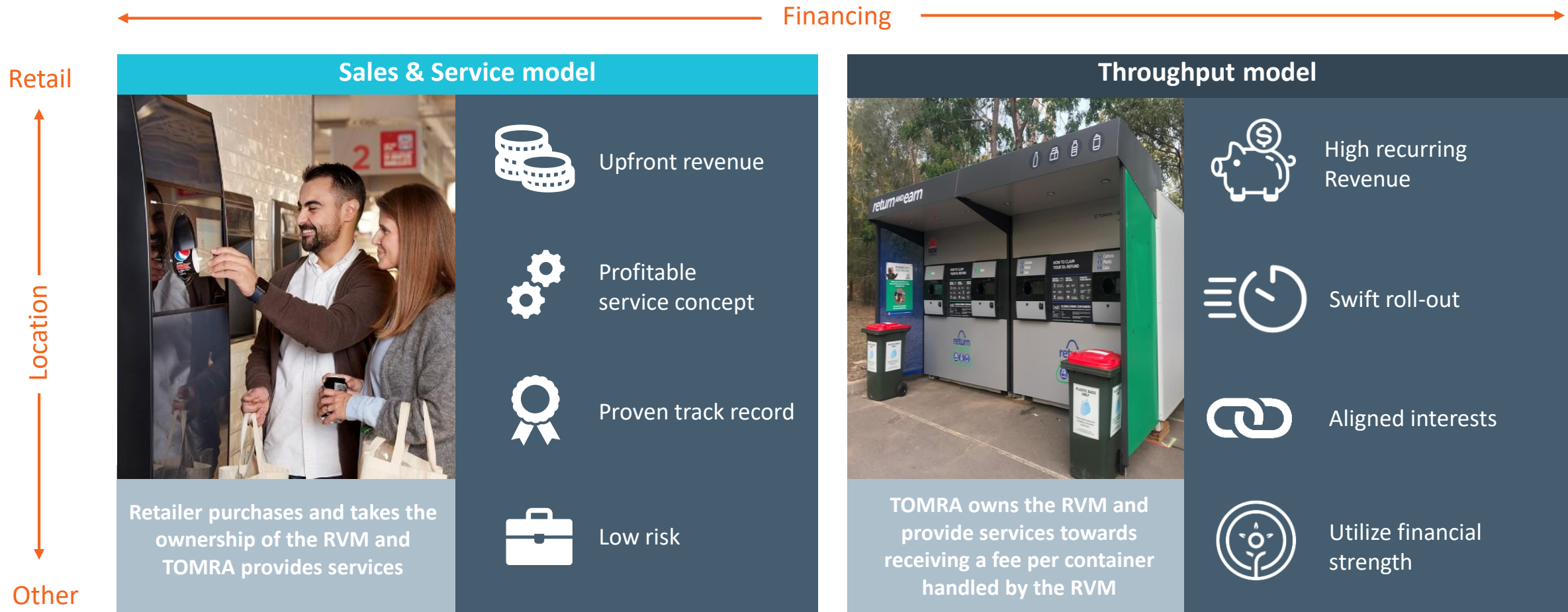
Biodegradable bottles

## STAKEHOLDER TRENDS



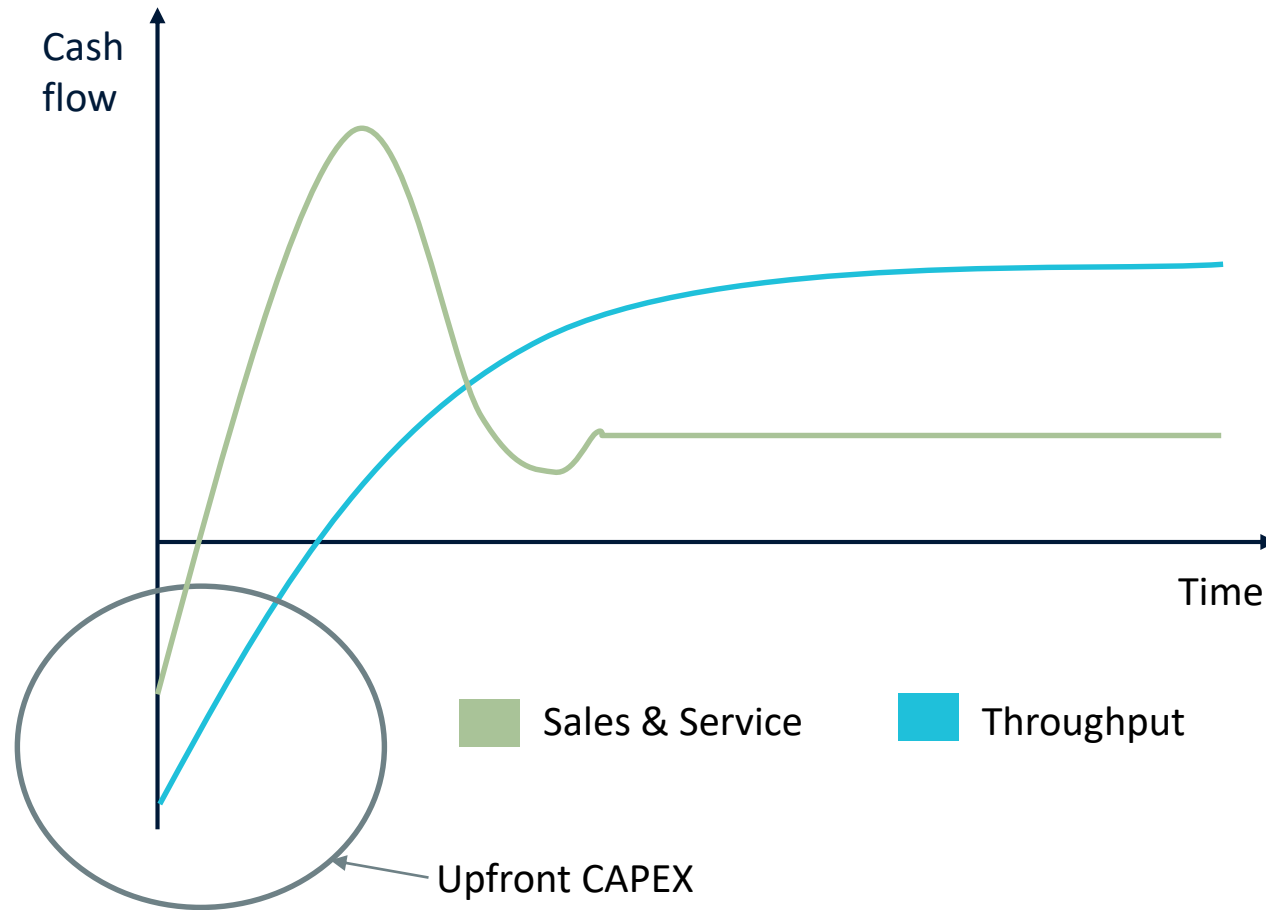
Beverage producers more proactive to set the scene

# ...REFLECTED IN SHIFTING BUSINESS MODELS AND STAKEHOLDERS



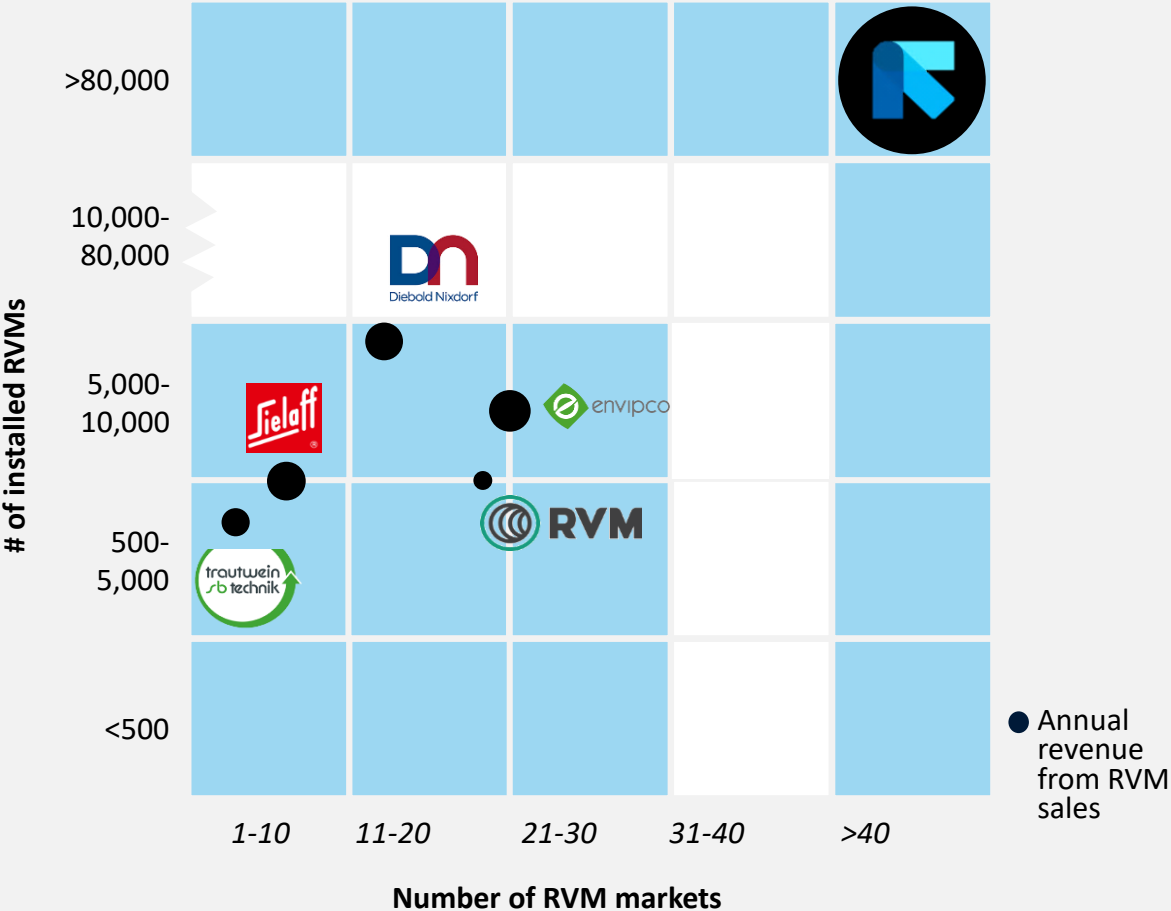
# A COMMENT ON THE CAPITAL EXPENDITURE NEEDS

## Illustrative cash flow profiles for the two main type of business models for Collection Solutions



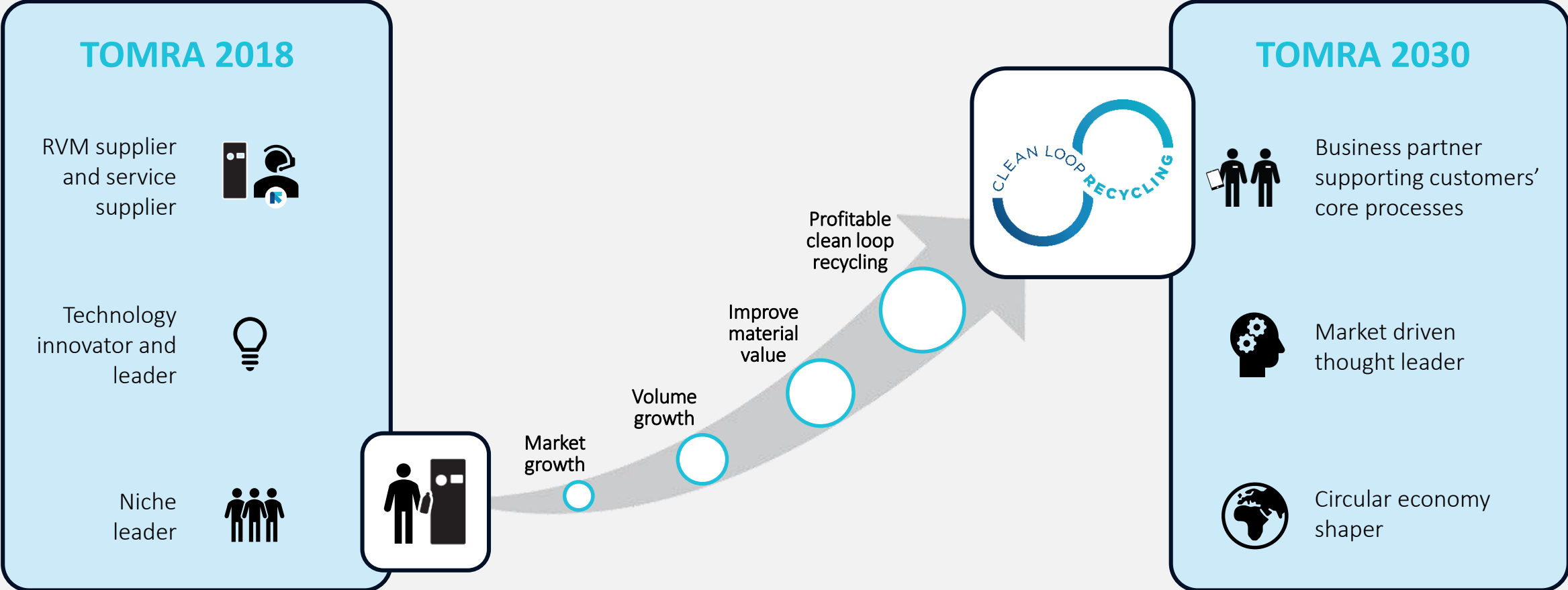
Uncertainties around timing and design of each new container deposit scheme can have significant impact on the revenue profile for Collection Solutions.

# Undisputed market leader within reverse vending technology



**The smarter TOMRA system.**

# Moving from a RVM supplier to global frontrunner and thought leader within circular economy



# Strong competitive advantages and growth focus

## KEY STRENGTHS



Product and service leadership



Production capacity and supply chain



Efficient new market entry



Financial strength to support throughput business models



Human resources to support the growth



Strong brand awareness

## PLAYING FIELD

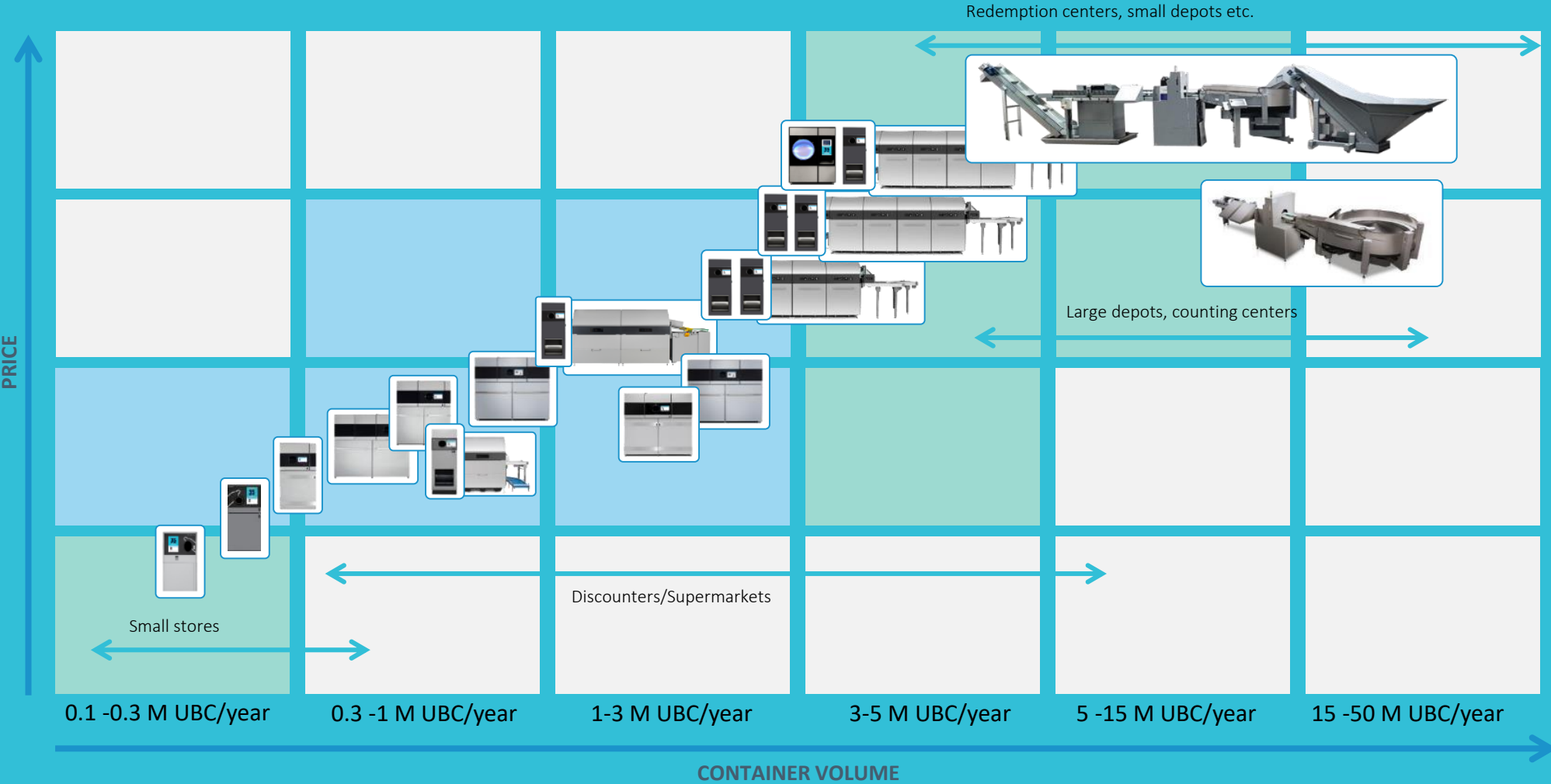


BASE MARKETS



GEOGRAPHICAL EXPANSION

# Flexibility and scalability to enable new business models and new market entry



# A complete digital portfolio designed to win

1. Win in new markets

2. Drive solutions for volume and throughput growth initiatives

3. Support growth and increase TOMRA's relevance in base markets

4. Industry leading fleet service & operations

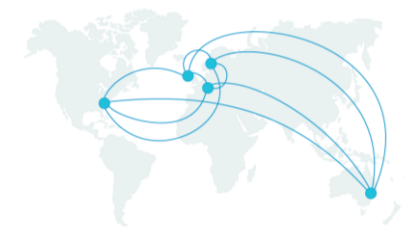
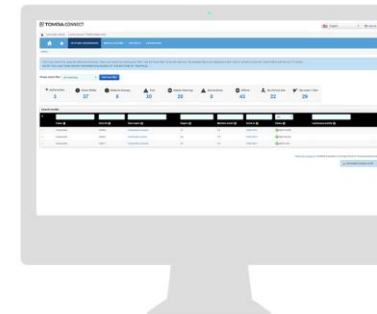
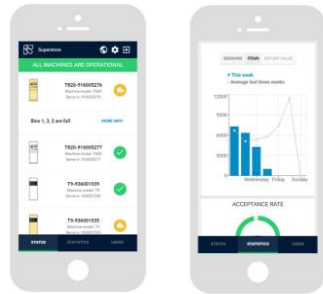
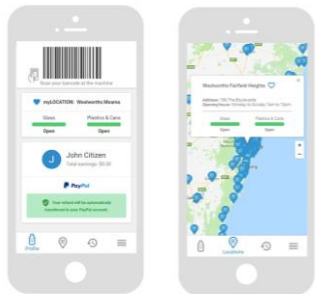
▲  
Consumer  
Services

▲  
Applications  
and SaaS

▲  
Data  
Solutions

▲  
Service and  
Operational  
Tools

▲  
IoT Platform





# Engage consumers to drive volume in throughput markets

Deliver a convenient and engaging recycling experience for consumers that increase the participation and drive volume through our installations.



Partner with relevant players



Facilitate and educate



Modernize and enhance the consumer journey



Share stories and inspire change



Drive community engagement



Keep track of your recycling rewards with the myTOMRA app.













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follow us to stay in the Loop



# A dynamic organization catered for growth

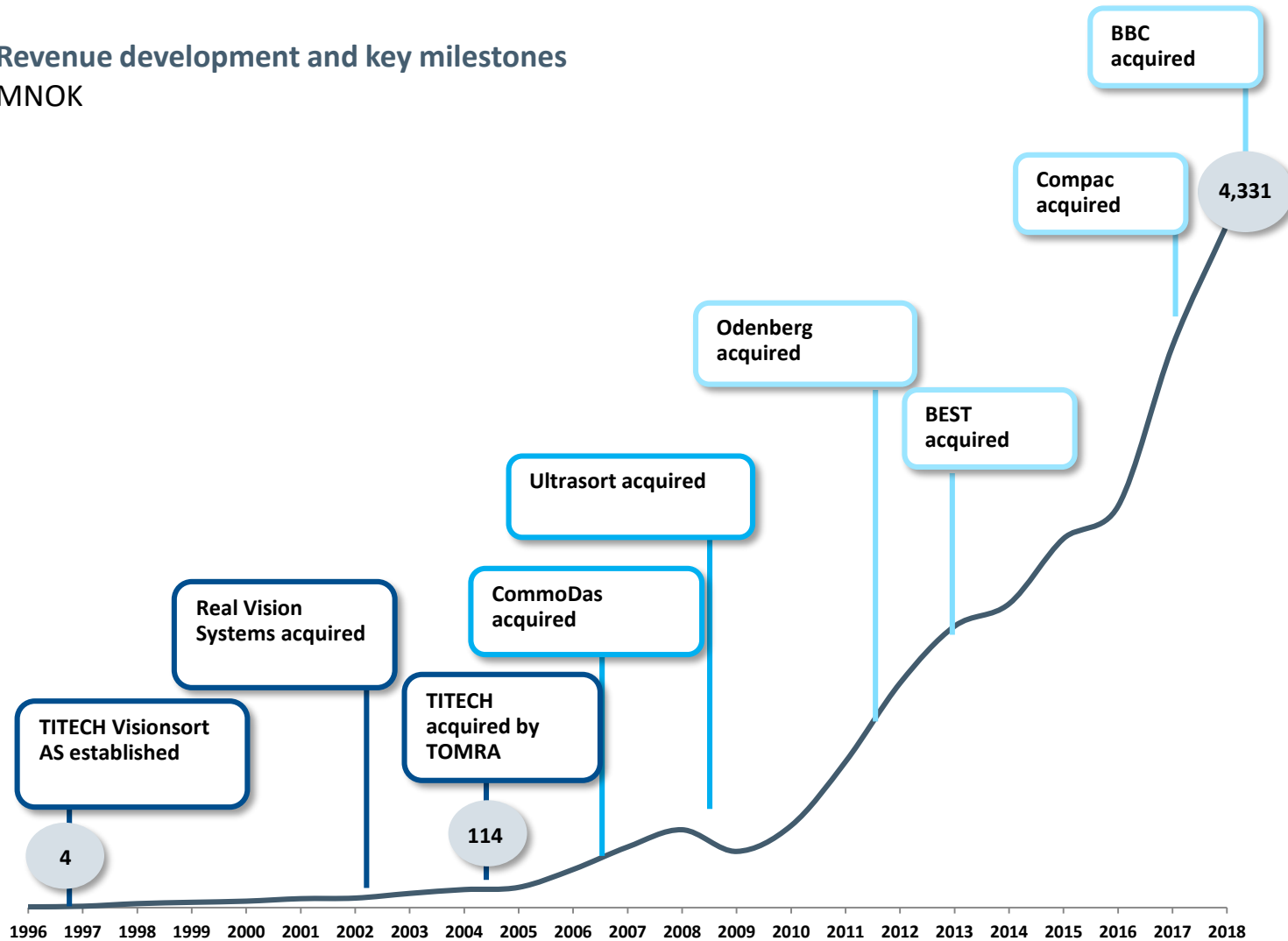
Products and services	FROM	 Machine centric	TO	 Holistic solution partner
Production and supply chain	FROM	 Supplemented by third parties	TO	 Scalable with third parties
New market entry	FROM	 HQ Regions	TO	 HQ Regions New Markets
Financials	FROM	 Sales & Services	TO	 S&S + TP Recurring revenues
Human resources	FROM	 Basic activities	TO	 People development
Brand & marketing	FROM	 B2B	TO	 B2H



# TOMRA SORTING SOLUTIONS

# STRONG REVENUE GROWTH SINCE INCEPTION IN 1996

## Revenue development and key milestones MNOK

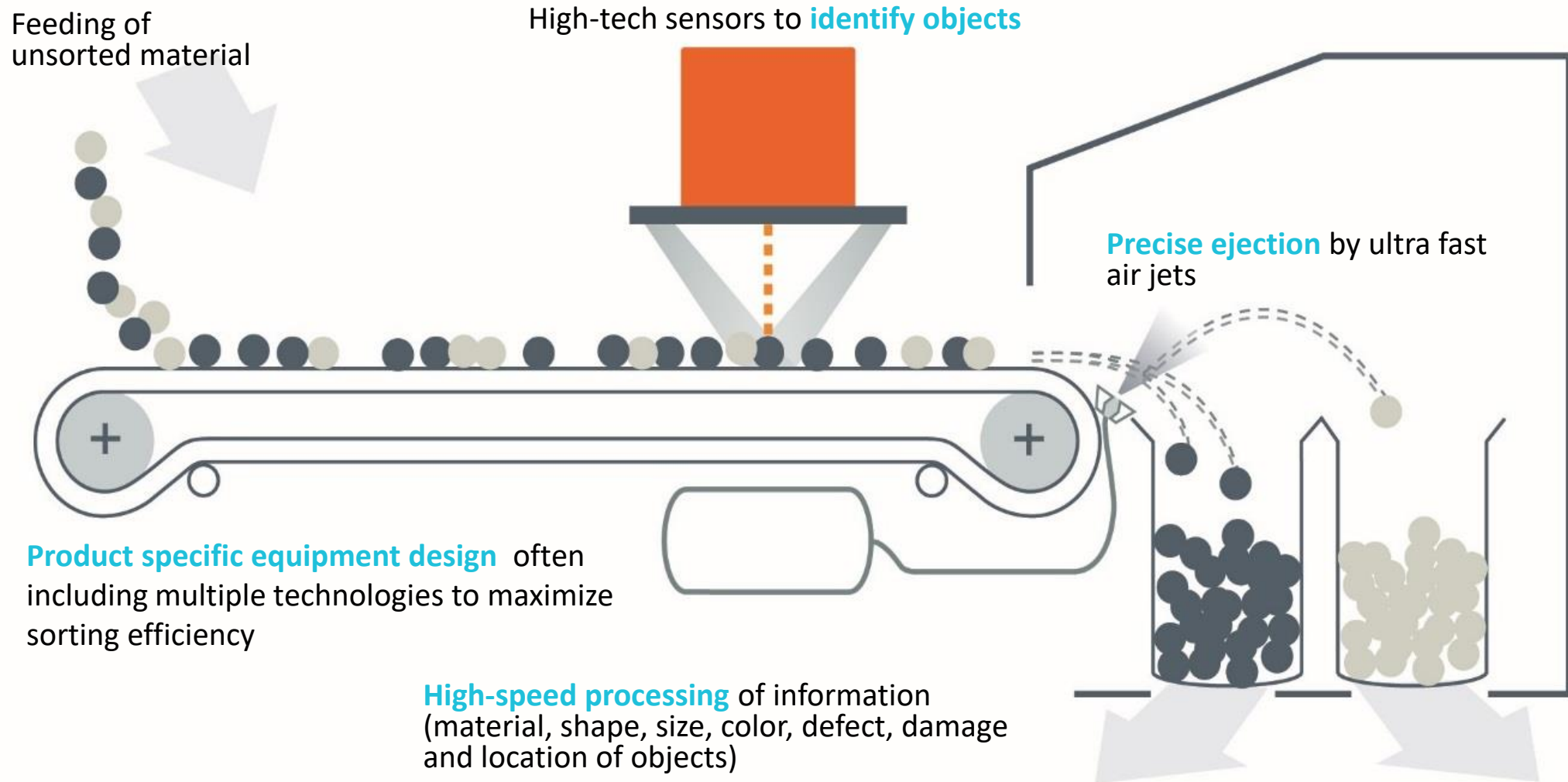


- Total revenue growth (organic plus inorganic) CAGR of ~30% per year from 2004-2018

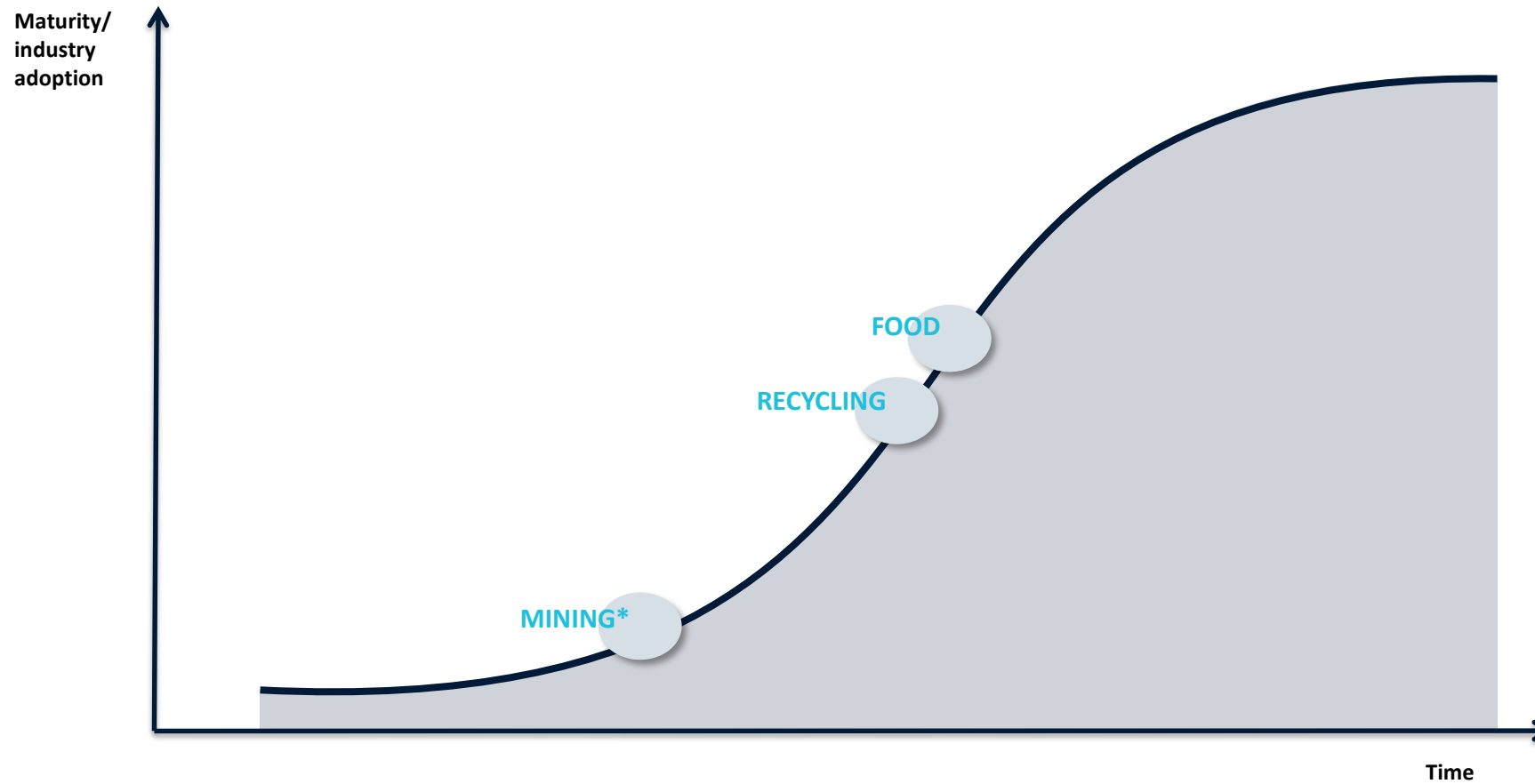
- Average annual organic growth for the same period was ~16%

- Technology base and segment/application knowledge expanded both through acquisitions and in-house ventures

# HOW DOES SENSOR BASED SEPARATION WORK?

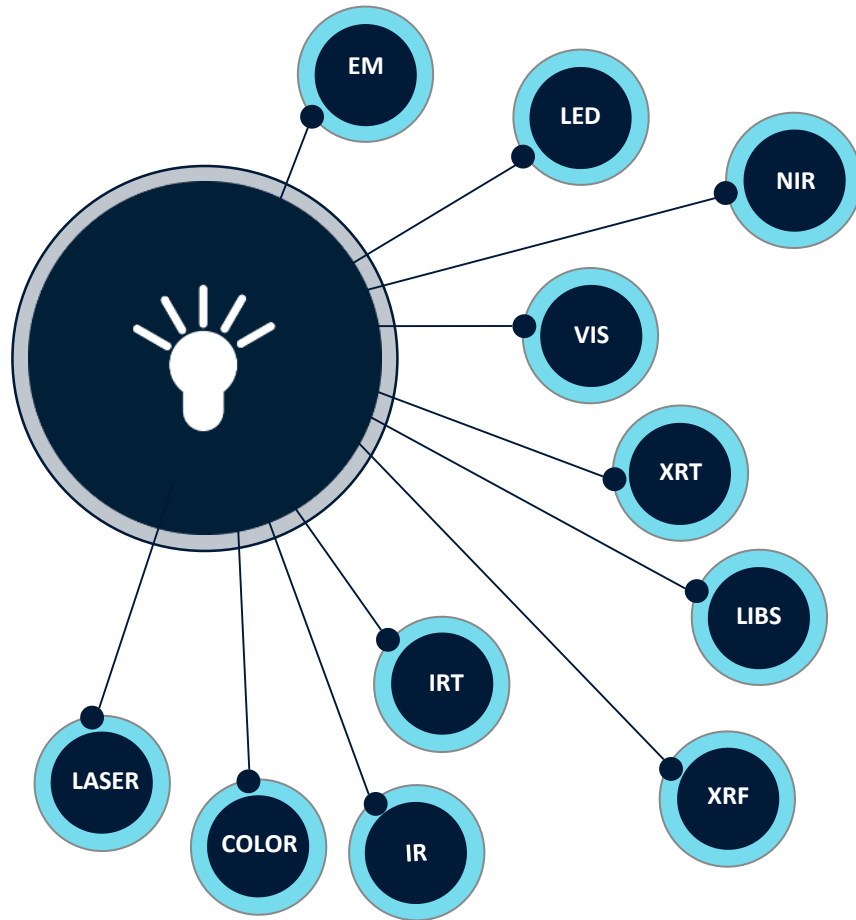


# ADOPTION OF SENSOR-BASED SORTING AT DIFFERENT MATURITY LEVELS



\* In certain mining sub-segments, such as industrial minerals and diamonds, sensor-based sorting is a more mature technology

# A COMMON SENSOR-BASED TECHNOLOGY PORTFOLIO



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

	RECYCLING	MINING	FOOD
ELECTROMAGNETIC SENSOR (EM)	X	X	X
LED SPECTOMETRY (LED)	X	X	X
NEAR-INFRARED SPECTROSCOPY (NIR)	X	X	X
VISIBLE LIGHT SPECTROMETRY (VIS)	X	X	X
X-RAY TRANSMISSION (XRT)	X	X	X
LASER INDUCED BREAKDOWN SPECTROSCOPY (LIBS)	X		
X-RAY FLUORESCENCE (XRF)	X	X	
INFRARED TRANSMISSION (IRT)			X
IR CAMERA (IR)			X
COLOR CAMERA (COLOR)	X	X	X
LASER REFLECTION/FLUORESCENCE (LASER)	X	X	X

# OUR PRODUCTS ARE DETECTING A WIDE RANGE OF PARAMETERS



## Color

Removal of discolorations in mono- and mixed-color material



## Blemishes

Objects with spots or other (small) blemishes are removed



## Defects

Removal of visible and invisible small and substantial defects



## Structure

Removal of soft, molded or rotten food



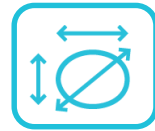
## Density

Detection of density differences



## Damage

Broken, split and damaged objects are detected and removed



## Shape & Size

Sort on length, width, diameter, area, broken-piece recognition, ...



## Biometric Characteristics

Sort based on water content and removal of micotoxyn contaminations



## Foreign Material

Removal of foreign material in a material stream, e.g. insects, worms, snails or plastics in food applications



## Fluo

Based on the chlorophyll level present in produce defects are removed



## X-RAY

Analysis of objects based on their density and shape



## Detox

Removal of produce contaminated with aflatoxin

 Visible

 Invisible

 Both



# EXAMPLES OF CROSS UTILIZATION OF OUR SENSOR TECHNOLOGIES



## TITECH NIR + ODENBERG platform

### Field Potato Sorter

- The NIR technology allows efficient removal of rocks, dirt and rotten potatoes before the potatoes are stored
- The solution opens up sorting of unwashed potatoes in a way that previously was not possible



## BEST LASER + TOMRA mining platform

### PRO Laser Duo

- The LASER technology allows detection of quartz of all colors. This opens for sorting of quartz itself, and gold bearing quartz mineralization
- The solution is unique in the market and further underlines our technological leadership



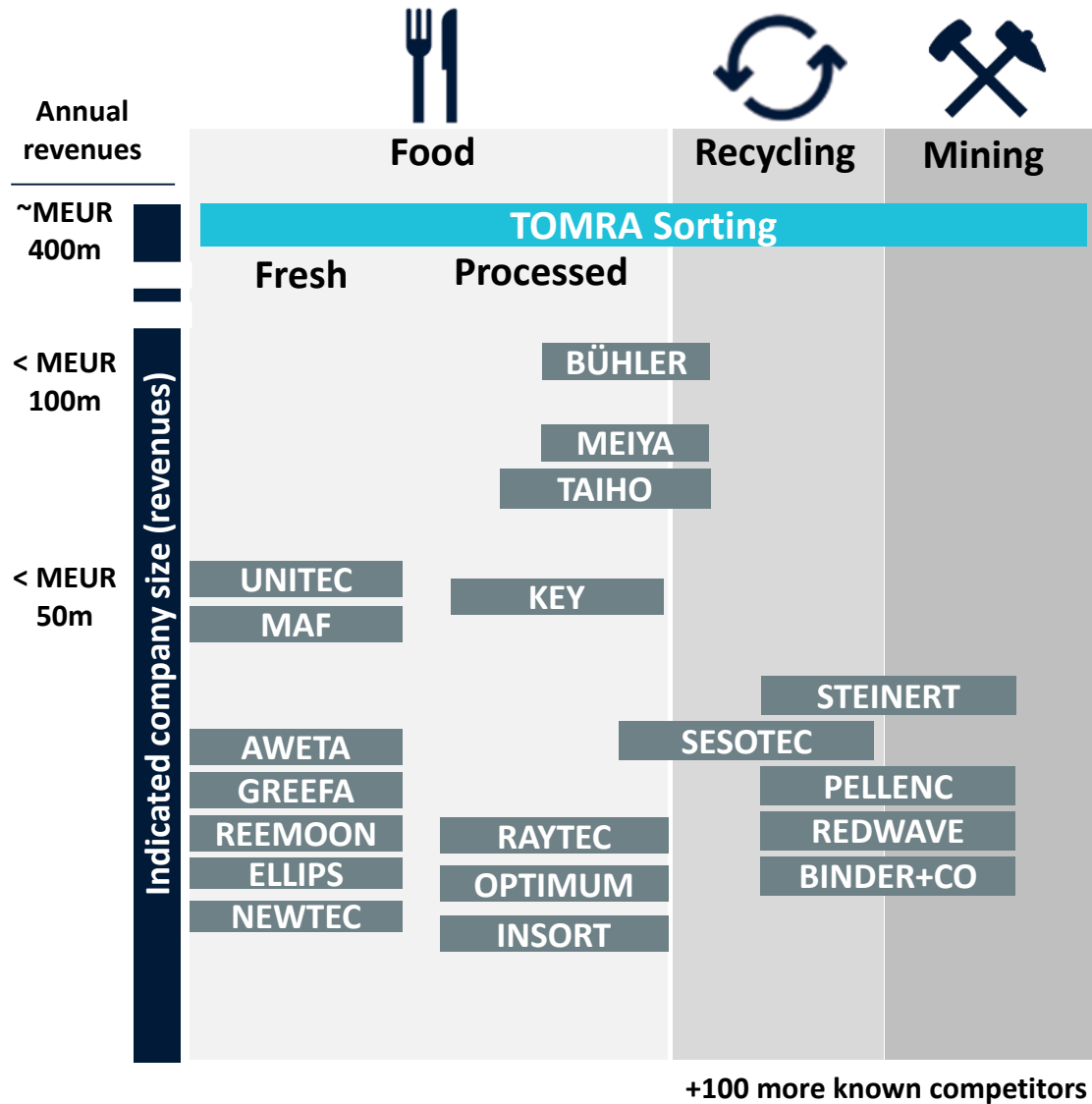
## TITECH NIR + BEST LASER

### Nimbus BSI

- An NIR sensor has been added to the NIMBUS machine platform
- The new machine increases our competitiveness in the nuts segment

Several more projects on combining technologies into new products in the pipeline

# THE BENEFITS OF BEING TOMRA SORTING

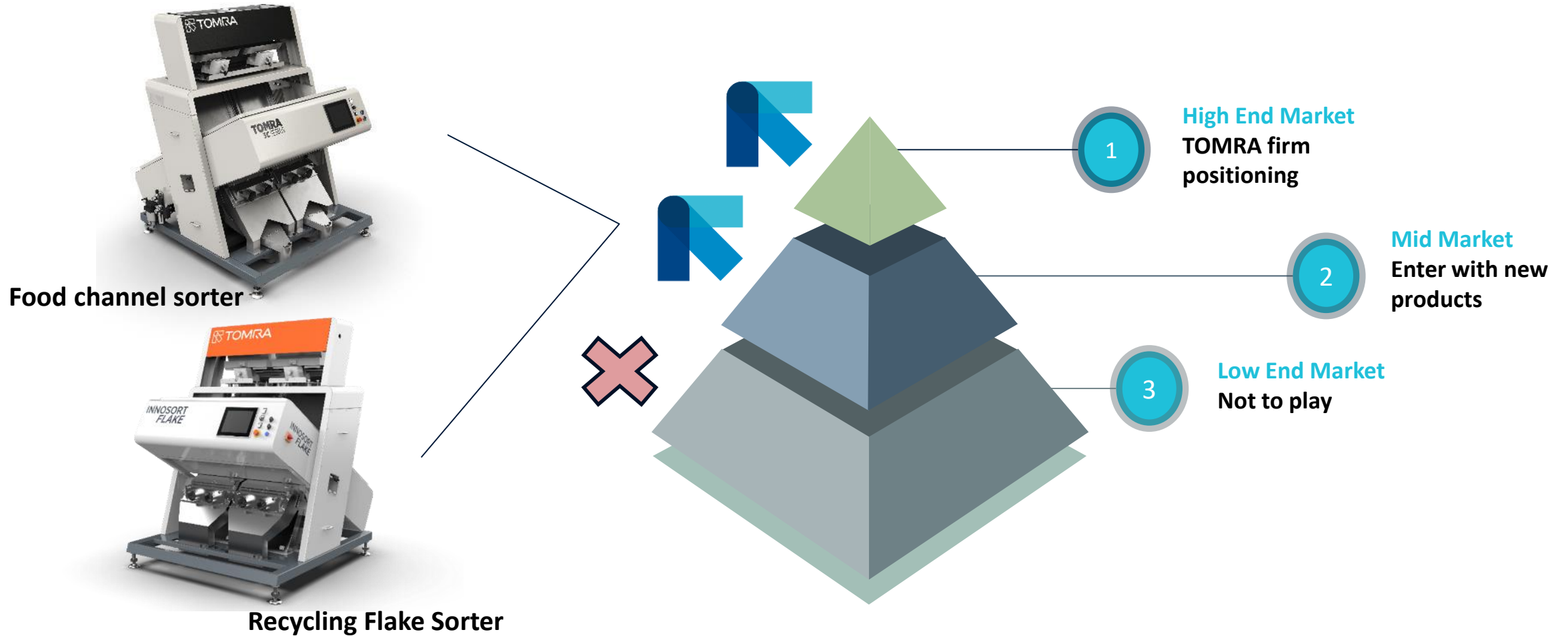


**Our position: A solid platform for further growth**



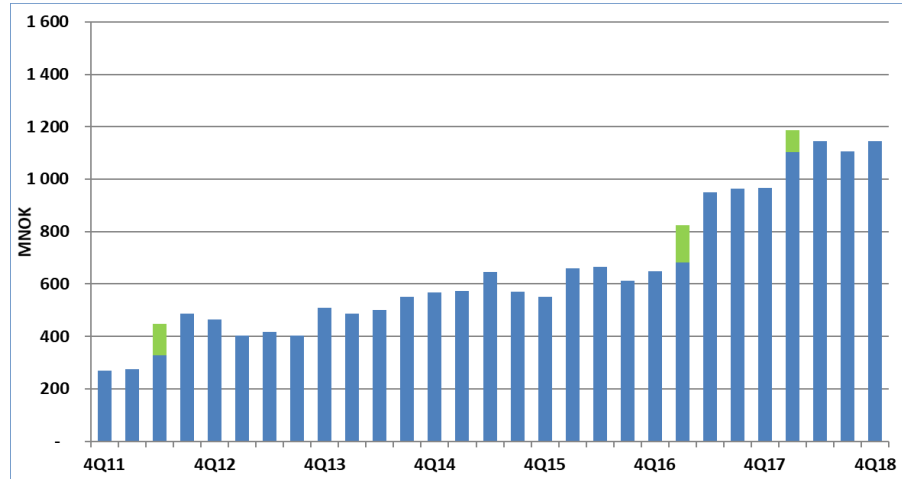
# ENTERING NEW MARKETS THROUGH MID-MARKET STRATEGY

Creating competitive offering to fast growing mid-market

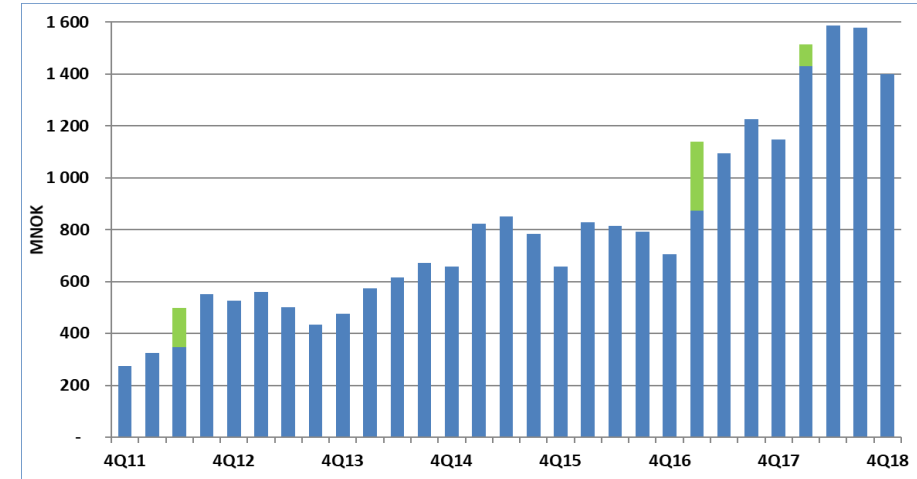


# DEVELOPMENT IN ORDER INTAKE AND ORDER BACKLOG

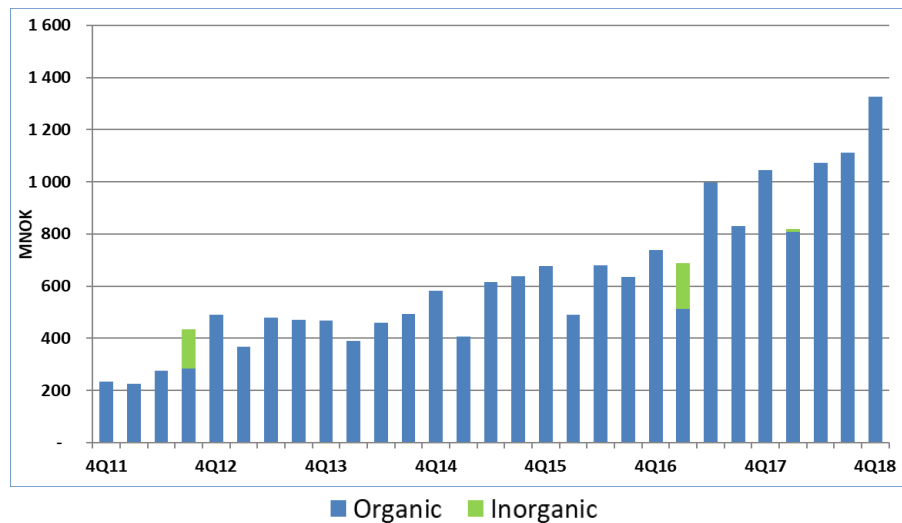
## ORDER INTAKE



## ORDER BACKLOG



## REVENUES



- TOMRA Sorting Solutions (TSS):
  - Revenues of 1,326 MNOK, up from 1,046 MNOK last year
  - Order intake of 1,146 MNOK in the quarter, compared to 967 MNOK last year
  - Despite all time high revenues in the quarter, a strong order intake led to healthy order backlog of 1,399 MNOK by the end of fourth quarter
- Estimated backlog conversion ratio in 1Q19: 75%\*

# FOOD FOR THOUGHT

- By 2050 we will be close to **10bn** people
- We will need more food in the next 40 years than **all the harvests in history combined**
- But **farmland is constant** – at best
- The food you eat will have **travelled more than you have**

**YIELD  
INTO   
USAGE**

# AUTOMATION CONTINUES ON A STRONG GROWTH TRAJECTORY

From...



To...



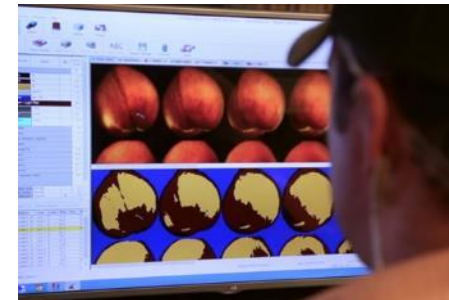
Robotics become cheaper, more advanced and user-friendly

Higher labor cost and labor shortages



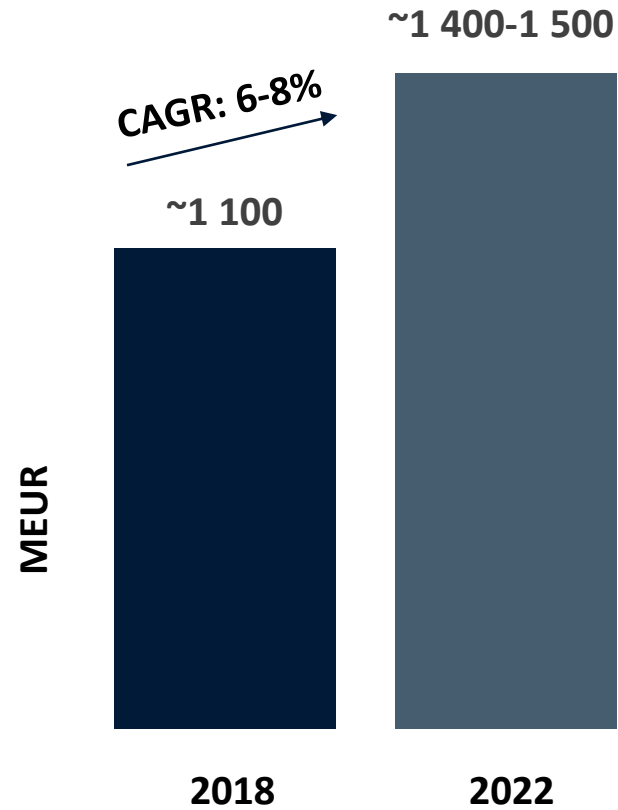
Ensure quality and safety

Improve efficiency



Leverage data insight

# MARKET GROWTH EXPECTATIONS – FOOD



## MARKET DEFINITION FOOD

### Sensor-based sorting and grading equipment

- Including color sorting
- Excluding peripheral equipment and turn-key solutions

### Fresh and processed segment

## AFFECTING FACTORS

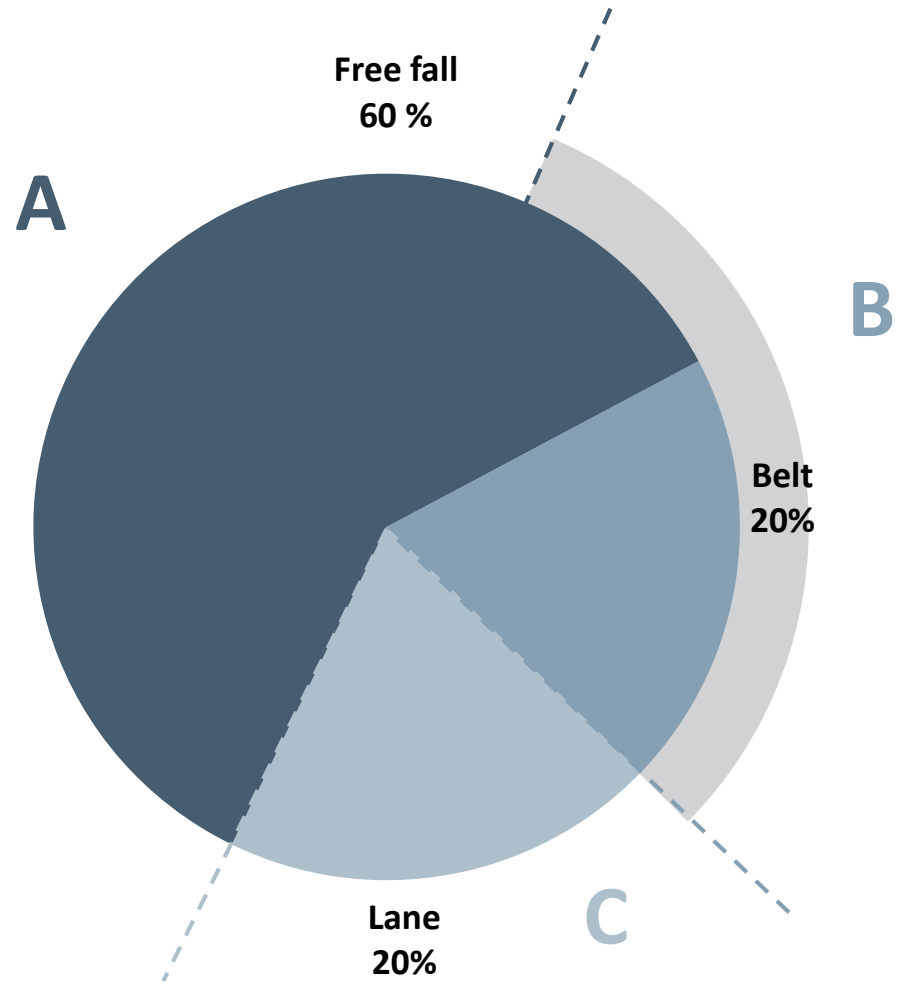
Weather conditions

Raw material pricing

Manual labor cost

Living standards

# THREE WAYS OF SORTING WITHIN THE FOOD SEGMENT



Free fall (Channel / Chute)	
Application	Seeds, rice, grains
Companies	Buhler, Key, <b>Best</b> , Satake, Daewon, Hefei, Orange
Sensor tech.	Camera (simple)

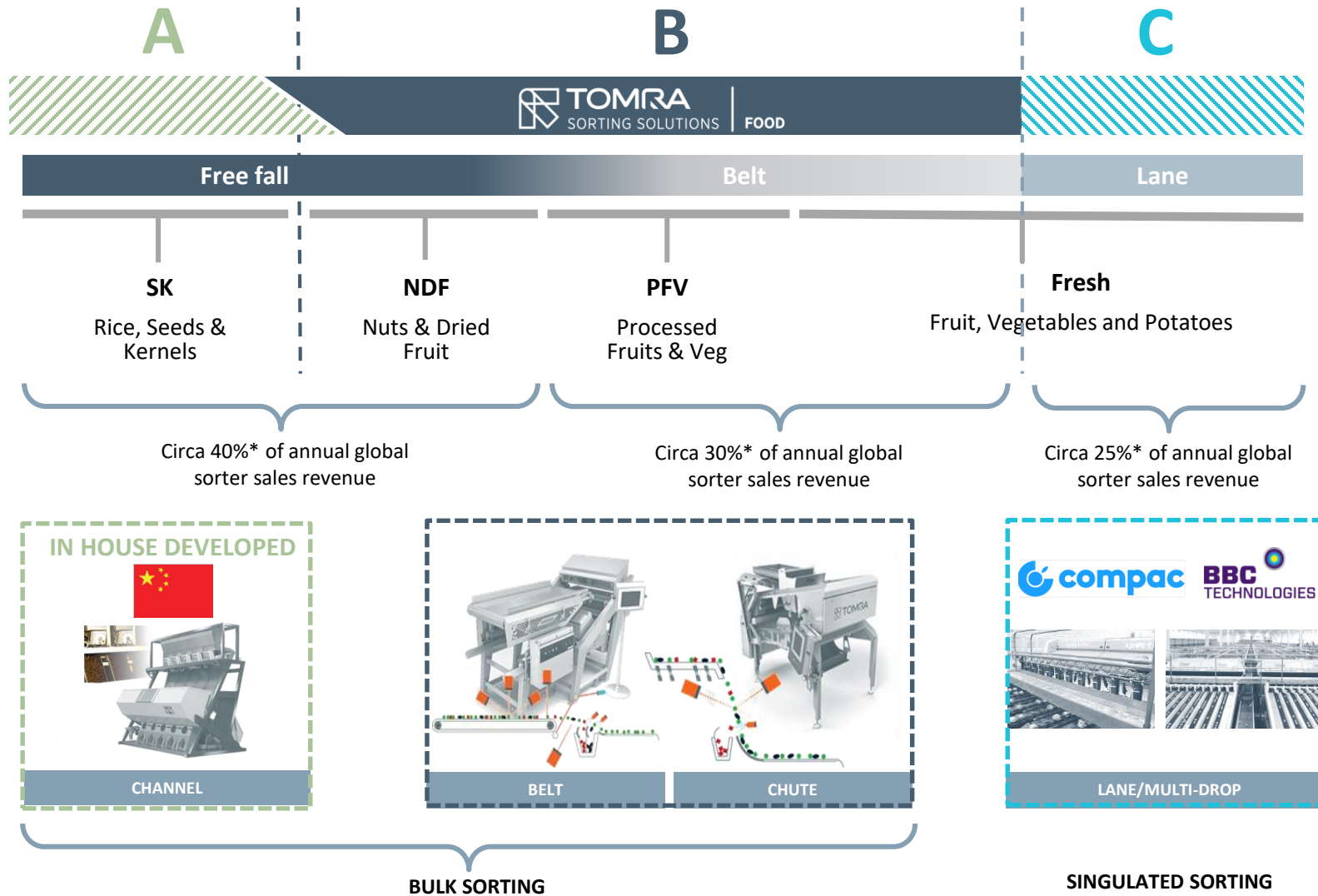
Belt	
Application	Prepared /preserved veg. and fruit
Companies	<b>Best</b> , Key, <b>Odenberg</b> , Raytec
Sensor tech.	Several (complex)

Lane	
Application	Fresh produce
Companies	MAF, Aweta, Greefa, Compac
Sensor tech.	Several (medium)

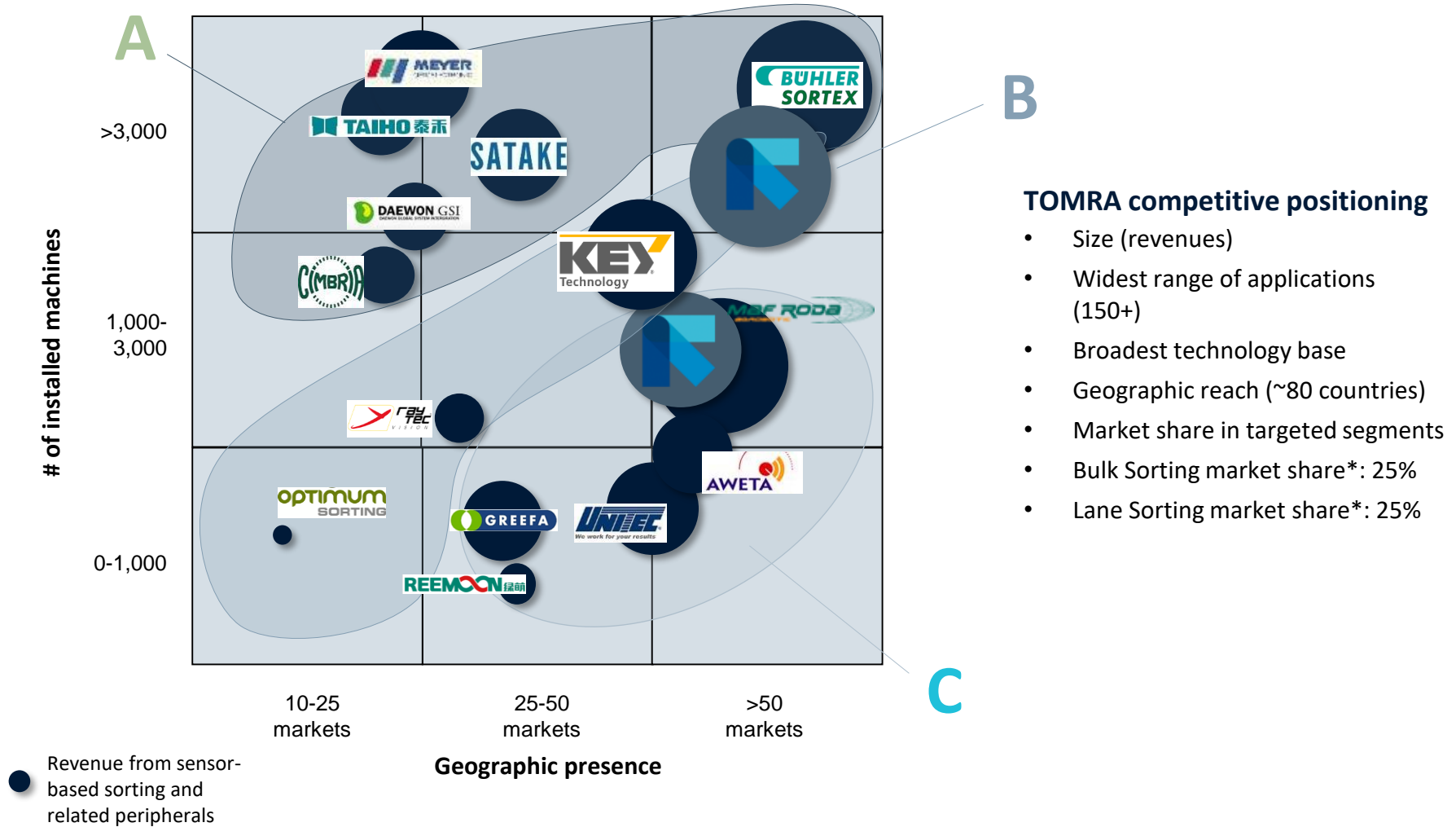
Note: Piechart showing estimated total revenue within the food sorting segment



# TOMRA HAS ESTABLISHED THE BROADEST FOOTPRINT WITHIN FOOD SORTING



# FOOD COMPETITIVE LANDSCAPE



# FOOD: APPLICATIONS AND SENSOR TECHNOLOGY

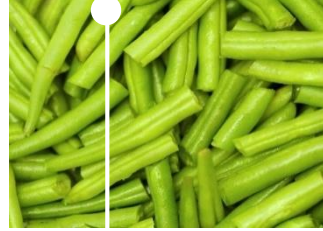
## POTATOES



Chips, French fries, peeled, specialty products, sweet potatoes, unpeeled, washed

**LASER, CAMERA, BSI, PULSED LED**

## VEGETABLES



Beans, beets, broccoli, carrots, corn, cucumbers, industrial spinach, IQF vegetables, jalapenos/peppers, onions, peas, pickles

**LASER, CAMERA, BSI, PULSED LED**

## NUTS



Almonds, cashews, hazelnuts, macadamias, peanuts, pecans, pistachios, walnuts

**LASER, CAMERA, X-RAY**

## DRIED FRUIT



Apricots, cranberries, dates, figs, prunes, raisins

**LASER, CAMERA, BSI, X-RAY**

## SEEDS & GRAINS



Barley, coffee, corn, dry beans, lentils, oat, pulses, pumpkin, sunflower and watermelon seeds, wheat

**LASER, CAMERA, BSI, X-RAY**

## FRUIT



Apples, blackberries, blueberries, cherries, cranberries, peaches & pears, raspberries, strawberries, tomatoes

**LASER, CAMERA, BSI, PULSED LED**

## FRESH CUT



Baby leaves, iceberg lettuce, spinach, spring mix

**LASER, CAMERA**

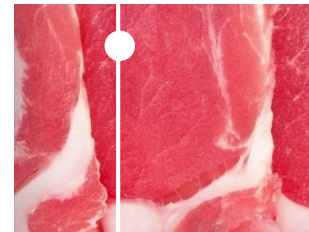
## SEAFOOD



Mussels, scallops, seaweed, shrimps, tuna, pet food

**LASER, CAMERA, BSI, X-RAY, INTERACTANCE SPECTROSCOPY**

## MEAT



Bacon bits, beef, chicken breasts, hot dogs, IQF meat, pork, pork rind, sausages, pet food

**LASER, CAMERA, BSI, INTERACTANCE SPECTROSCOPY**

## GUMMIES



**LASER, CAMERA**

## TOBACCO

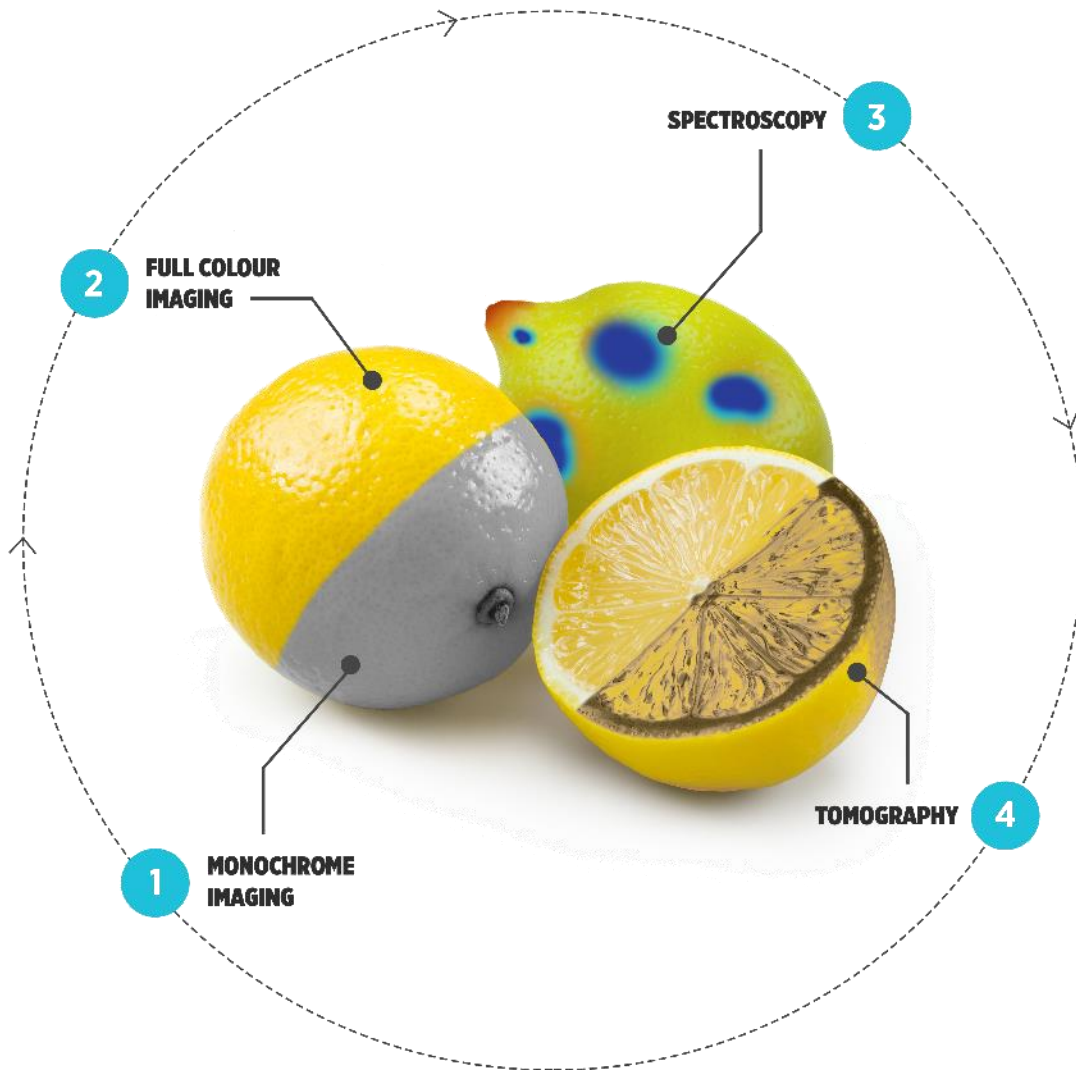


**LASER, CAMERA**

# OUR FOOD SORTING CUSTOMERS



# NEW SENSOR TECHNOLOGIES WILL UNLOCK NEW OPPORTUNITIES...



From measuring visual appearance...

... to measuring

Internal defects

Taste

Shelf life / Freshness

Food hazards

# RESOURCES ARE FINITE

- **Today:** we are paying to get rid of our waste through landfill fees and incineration
- We are wasting perfectly good materials that can be reused
- **Tomorrow:** The Circular Economy is a driver for change
- Creating **value out of waste**
- That is what the **Circular Economy** is all about



**WASTE  
INTO   
VALUE**

# THE CIRCULAR ECONOMY DRIVES A LEGISLATIVE PUSH...

Continued ambitious EU regulations and recycling targets:  
Attracts capital and drives investments



**“A common EU target for recycling 70% of packaging waste by 2030”**

The Strategy also highlights the need for specific measures, possibly a legislative instrument, to reduce the impact of single-use plastics, particularly in our seas and oceans

From Green Fence to National Sword: **Short-term demand for recycling solutions in waste exporting countries**



- Limits the import of contaminated recyclable commodities and increases inspections of recyclable commodity imports
- Purity level set to 99.5%

# ...PROMOTING RECYCLING



## 2018 CIRCULAR ECONOMY PACKAGE

### Description

### Targets and measures

Directive	Description	Targets and measures
<b>Waste Framework Directive</b>	<ul style="list-style-type: none"> <li>Rules on how waste should be managed in the EU. It provides general principles for doing so, such as the Waste Hierarchy, Polluter Pays Principle and Extended Producer Responsibility.</li> </ul>	<ul style="list-style-type: none"> <li>A common EU target for recycling 60% of municipal waste by 2030</li> </ul>
<b>Packaging and Packaging Waste Directive</b>	<ul style="list-style-type: none"> <li>Rules on the production, marketing, use, recycling and refilling of containers of liquids for human consumption and on the disposal of used containers</li> <li>2015 revision includes lightweight plastic carrier bags</li> </ul>	<ul style="list-style-type: none"> <li>A common EU target for recycling 70% of packaging waste by 2030</li> </ul>
<b>Waste Electrical and Electronic Equipment (WEEE) Directive</b>	<ul style="list-style-type: none"> <li>Collection, recycling and recovery targets for all types of electrical goods</li> <li>10 categories: Large household appliances, Small household appliances, IT and telco equipment, Consumer equipment, Lighting equipment, Electrical and electronic tools, Toys, Leisure and sports equipment, Medical devices, Monitoring and control instruments, Automatic dispensers</li> </ul>	<ul style="list-style-type: none"> <li>A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030</li> </ul>
<b>Landfill Directive</b>	<ul style="list-style-type: none"> <li>The objective of the Directive is to prevent or reduce as far as possible negative effects on the environment from the landfilling of waste</li> <li>In particular: impact on surface water, groundwater, soil, air, and on human health by introducing stringent technical requirements for waste and landfills.</li> </ul>	<ul style="list-style-type: none"> <li>Separate collection of textiles and hazardous waste by 2025</li> </ul>
<b>End of Life Vehicle (ELV) Directive</b>	<ul style="list-style-type: none"> <li>Aims at reduction of waste arising from end-of-life vehicles</li> <li>The scope of the directive is limited to passenger cars and light commercial vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Simplified and improved definitions and harmonized calculation methods for recycling rates</li> <li>Concrete measures to promote re-use and stimulate industrial symbiosis</li> <li>Economic incentives for producers to put greener products on the market and support recovery and recycling schemes</li> </ul>





...and a market pull

**100%** reusable, recyclable or  
compostable **plastic packaging**  
**by 2025**

Follow their lead



Large companies committing to use recycled raw materials = increased demand for recycled offtake

# RECYCLING: MARKET GROWTH EXPECTATIONS

## MARKET DEFINITION RECYLING

### Sensor-based sorting equipment

- Excluding cullet glass sorting
- Excluding peripheral equipment and turn-key solutions

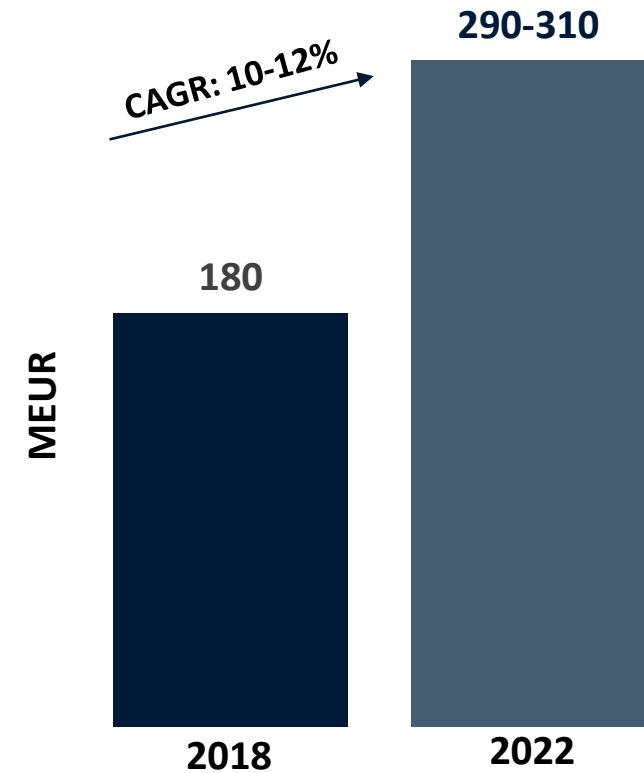
## AFFECTING FACTORS

Tightening regulation

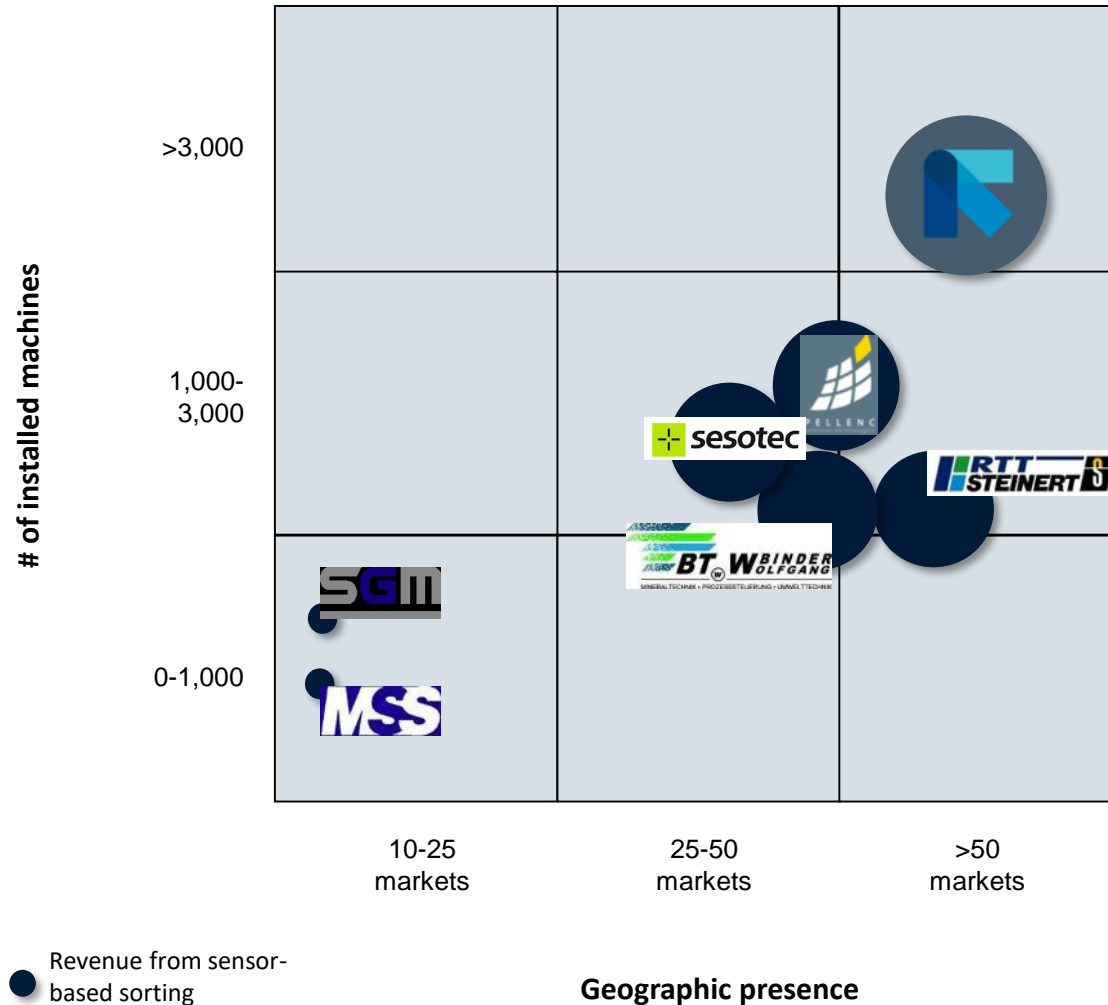
Access to capital

Consumer awareness

Commodity price fluctuations



# RECYCLING: COMPETITIVE LANDSCAPE



## TOMRA competitive positioning

- Largest installed base
- Highest revenues
- Broadest technology platform
- Highest number of applications and markets served
- Leading brand
- **Market share: 55-65%**

# RECYCLING: APPLICATIONS AND SENSOR TECHNOLOGY

## MUNICIPAL SOLID WASTE



Hard plastics, plastic film,  
mixed paper, RDF,  
metals,  
organics/biomass

**NIR, VIS, XRT, LASER**

## PACKAGING



Plastics, plastic film,  
cardboard, mixed paper,  
deinking paper, metal

**NIR, VIS, EM**

## UPGRADING PLASTICS



PET, PE, PP, flakes

**NIR, VIS, EM**

## POST-SHREDDER



NF metal, stainless steel,  
copper cables, copper,  
brass,  
aluminum

**NIR, VIS, XRT, XRF, EM,  
COLOR**

## ELECTRONIC SCRAP



Printed circuit boards,  
non-ferrous metal  
concentrates,  
cables, copper, brass,  
stainless steel

**XRT, XRF, EM, NIR,  
COLOR**

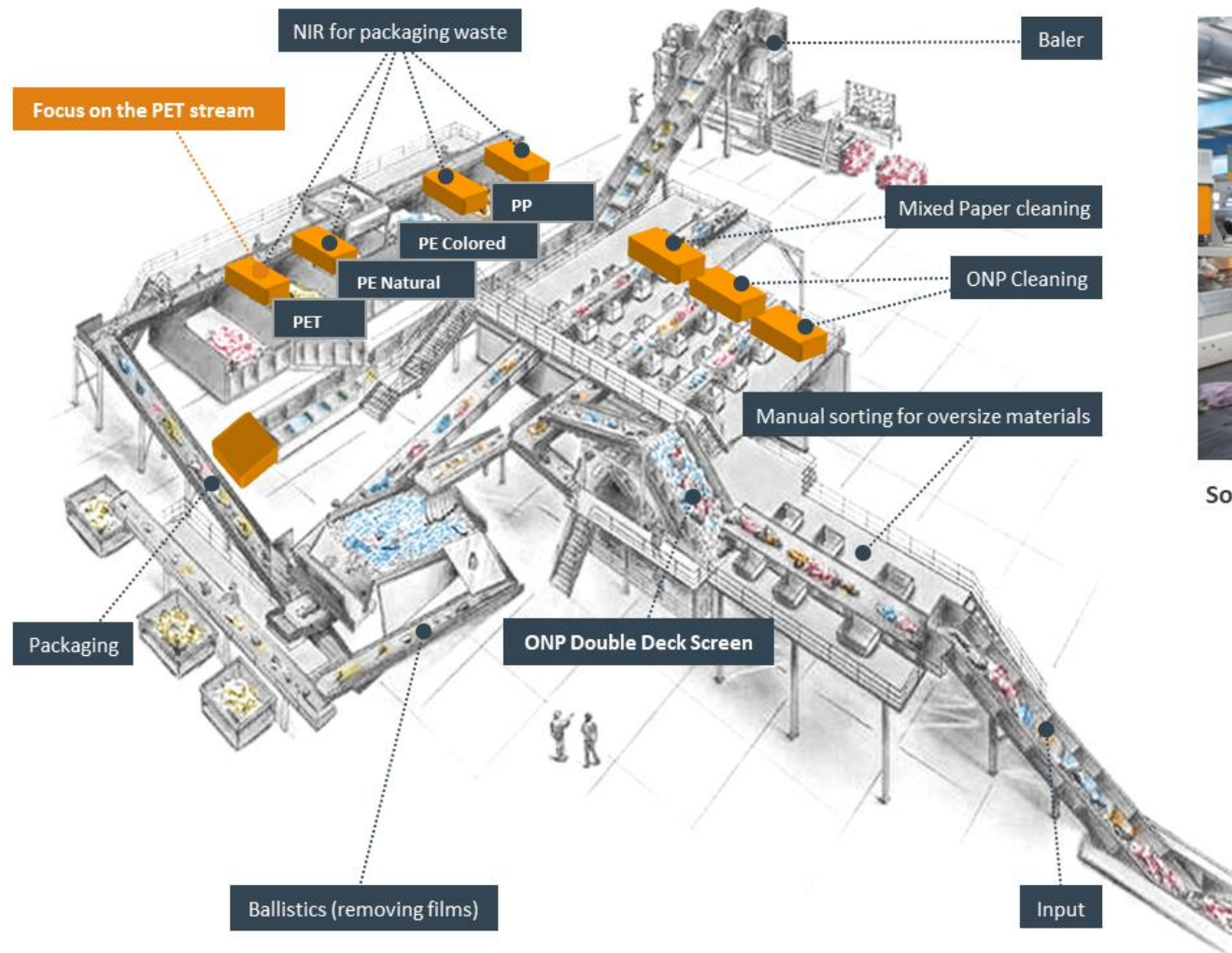
## PAPER



Deinking, cardboard,  
carton

**NIR, VIS, EM**

# AUTOMATION WITH TOMRA SORTING UNITS

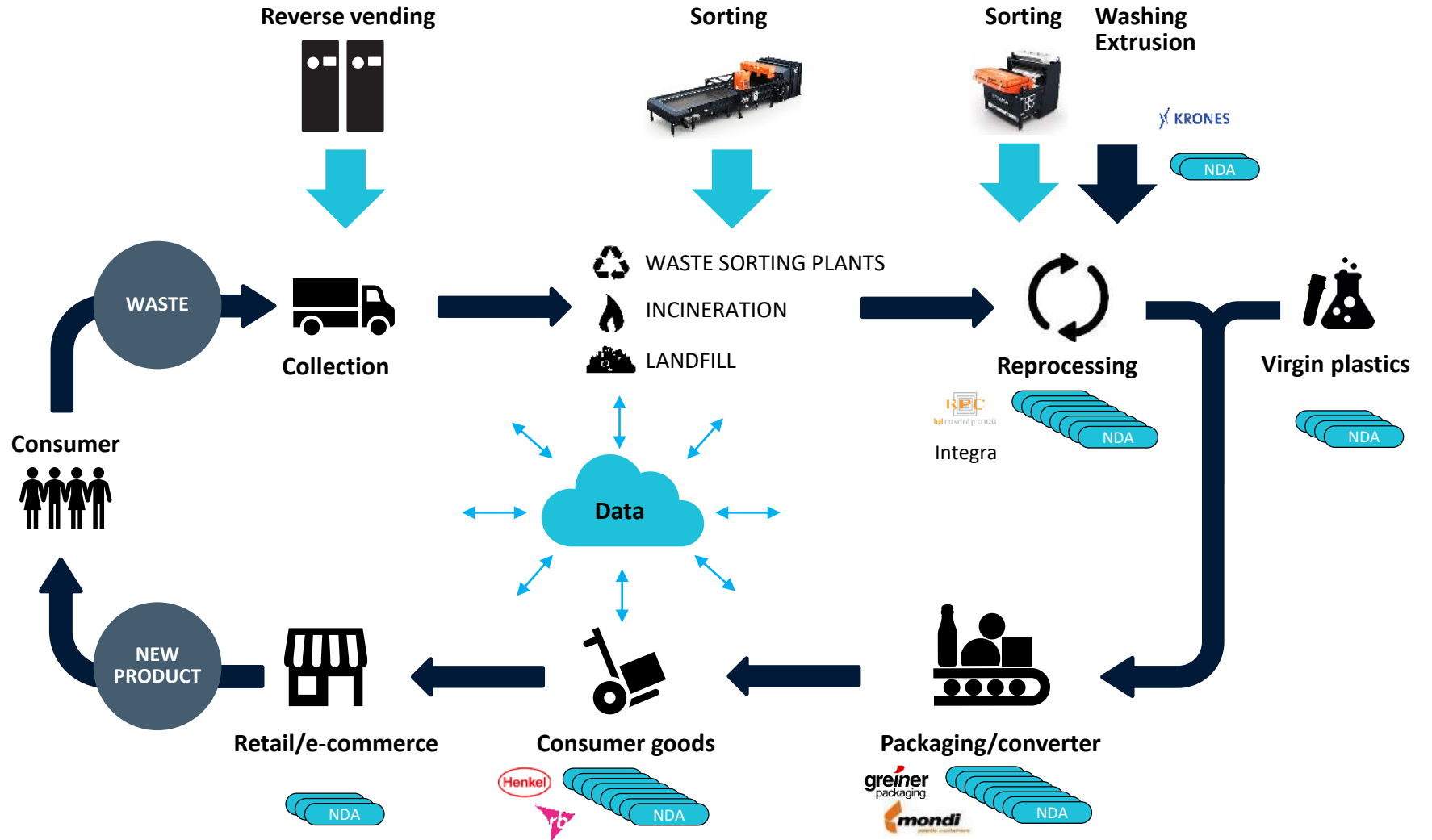


Sorting of Municipal Solid Waste, Cyprus

# INDUSTRIALIZING THE PROCESS FOR RECYCLED PLASTIC

## SUCCESS FACTORS

- **Sufficient demand** for the recycled material
- Output to be of **high quality** and **stable quantity** in order to replace virgin material
- **Political leadership** that sets targets and monitors
- **Access to capital** and willingness to invest
- **Collaboration with multiple partners** on commercialization



# INTELLIGENT MINE

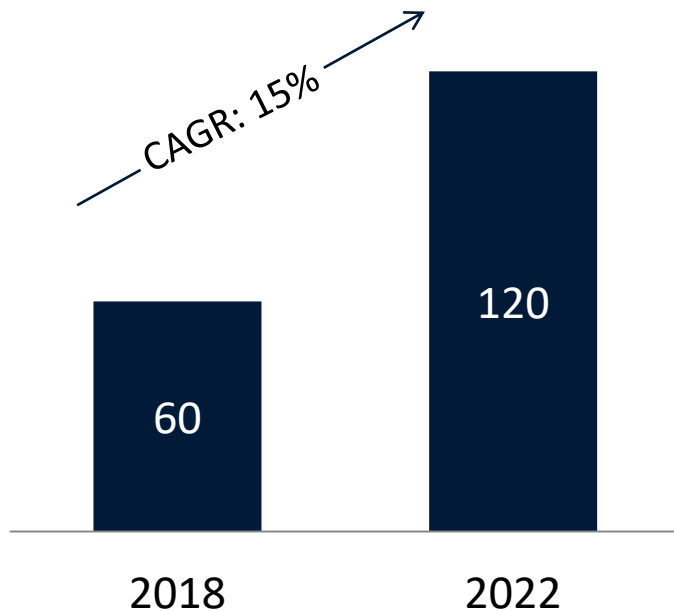
- **Mining** is an old industry. But chances are that it will **look very different** in 10 years time
- Energy intensity and water stress are major drivers...
- **...for disruptive technology forces to reshape the industry**
- Commodity prices and capex impact the investment sentiment

**SOURCE**  
**INTO**   
**RESOURCE**

# MINING: MARKET GROWTH EXPECTATIONS

Total annual market size

EUR million



## MARKET DEFINITION MINING

### Sensor-based sorting equipment

- is still a technology to be accepted
- Growth is conditional on new applications and technologies being developed

## AFFECTING FACTORS

Political climate

Access to capital

Cost drivers

Commodity price  
fluctuations



# MINING: APPLICATIONS AND SENSOR TECHNOLOGY

## INDUSTRIAL MINERALS



Phosphate-silica removal, limestone-silica removal, quartz upgrade,  $MgO_2$ -silica removal, fluorite pre-conc., talc pre-conc., lithium pre-conc., barite pre-conc.,

**COLOR, XRT, NIR**

## NON-FERROUS METALS



Copper, zinc, gold, nickel, tungsten, silver, platinum group metals

**XRT, COLOR, EM, NIR**

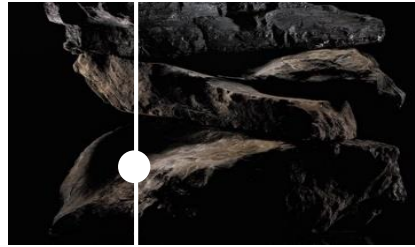
## DIAMONDS



Kimberlite-waste removal, diamond ROM conc., diamonds final recovery, emeralds ROM conc., rubies ROM conc.

**COLOR, XRT, NIR**

## FUEL



Coal waste dumps

**XRT**

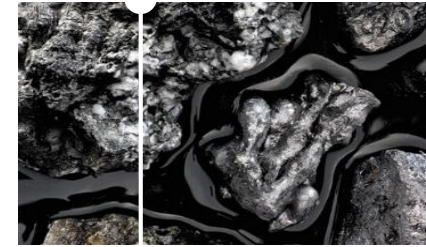
## FERROUS METALS



Iron ore grading, hematite pre-conc., manganese pre-conc., chromite pre-conc.

**XRT, EM, NIR**

## SLAG

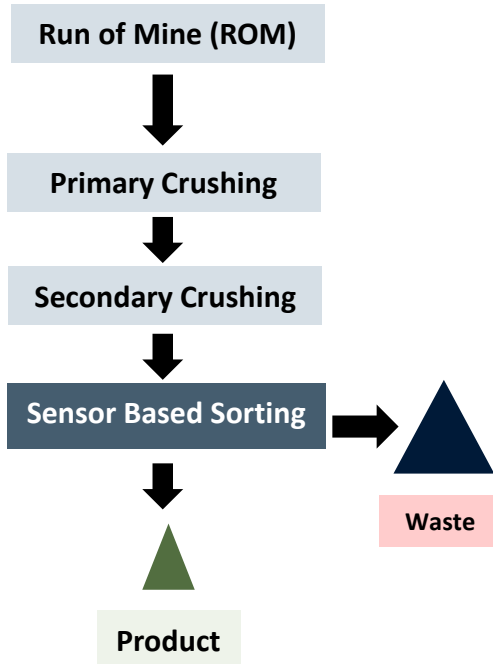


Stainless steel slag, ferro silica slag, ferro chrome slag

**XRT, EM**

# THE CONCEPT OF SENSOR-BASED SORTING IN MINING

## Mining process: Industrial minerals

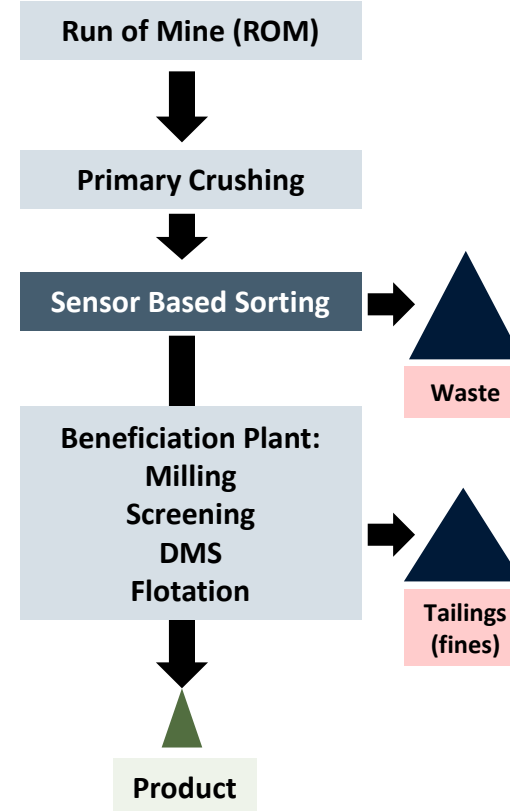


Current segment



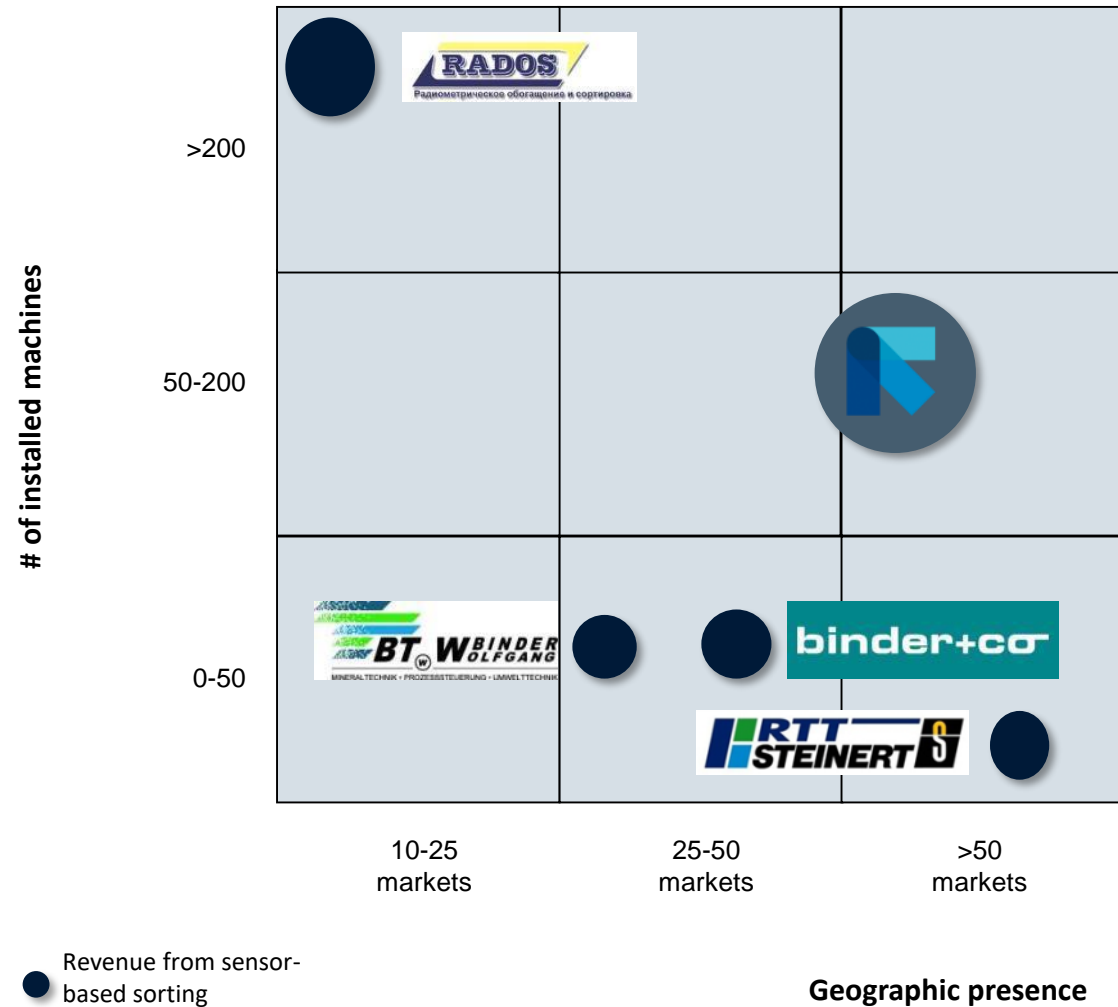
- 15% to 50% of the ROM can be rejected in an early stage of the process (application dependent)
- These low grade waste rocks don't need to be transported, crushed, grinded or further treated

## Mining process: Metal mining



Potential new segment

# MINING: COMPETITIVE LANDSCAPE



## TOMRA competitive positioning

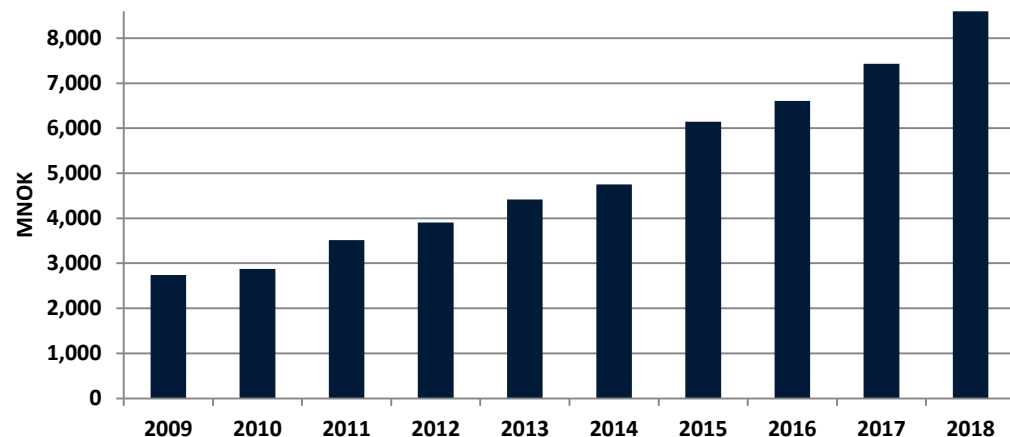
- Wide geographical coverage
- Broadest technology platform
- Leading brand
- **Market share: 40-50%**



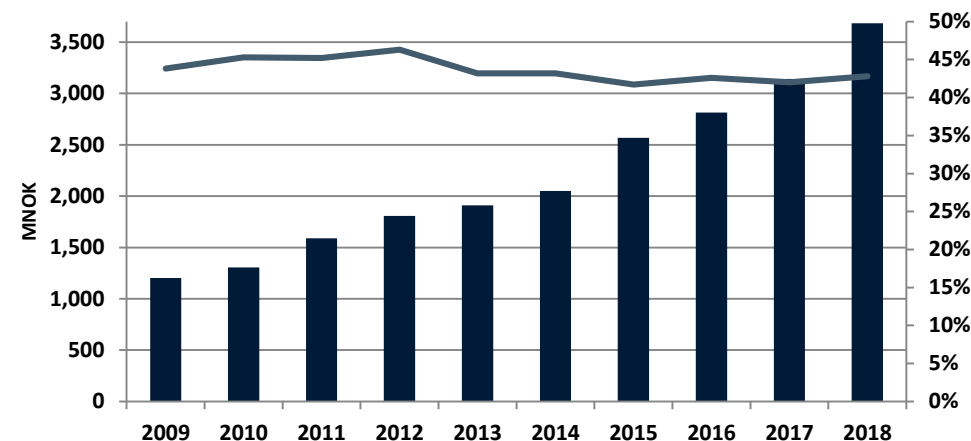
# HISTORICAL GROUP FINANCIALS AND TARGETS

# GROUP FINANCIALS DEVELOPMENT – SOLID TRACK RECORD

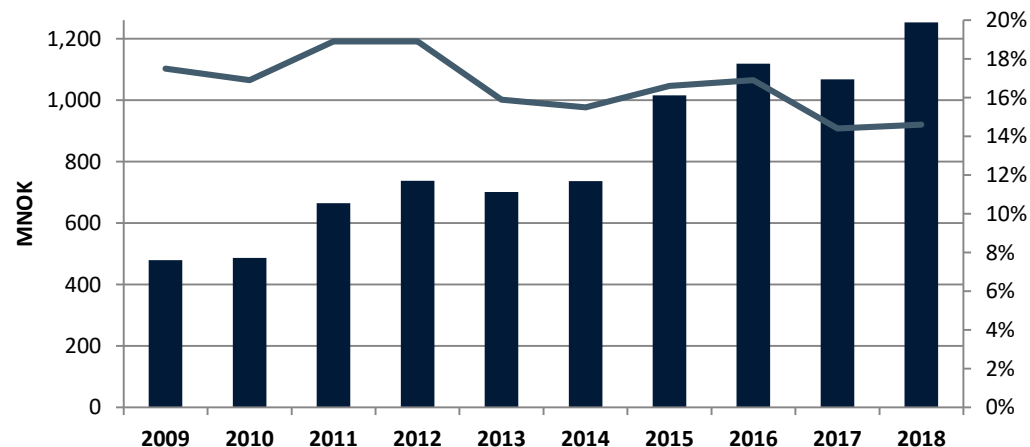
## Revenues



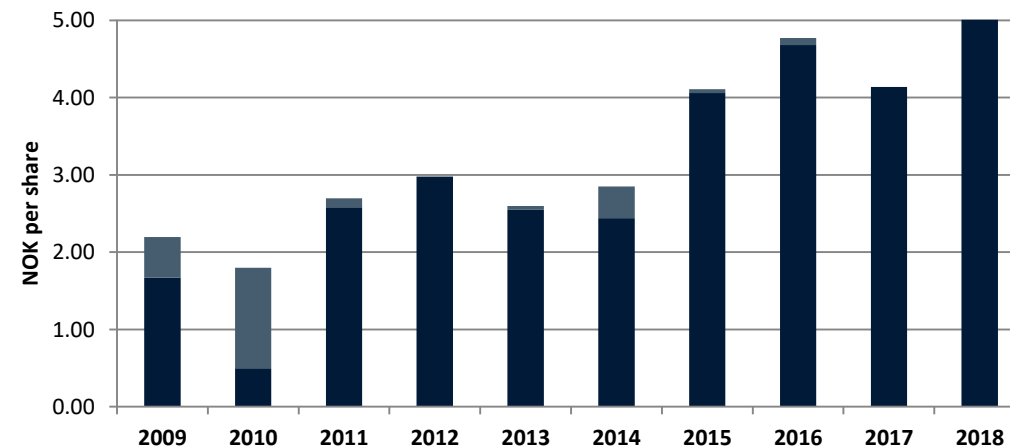
## Gross contribution and margin



## EBITA and margin

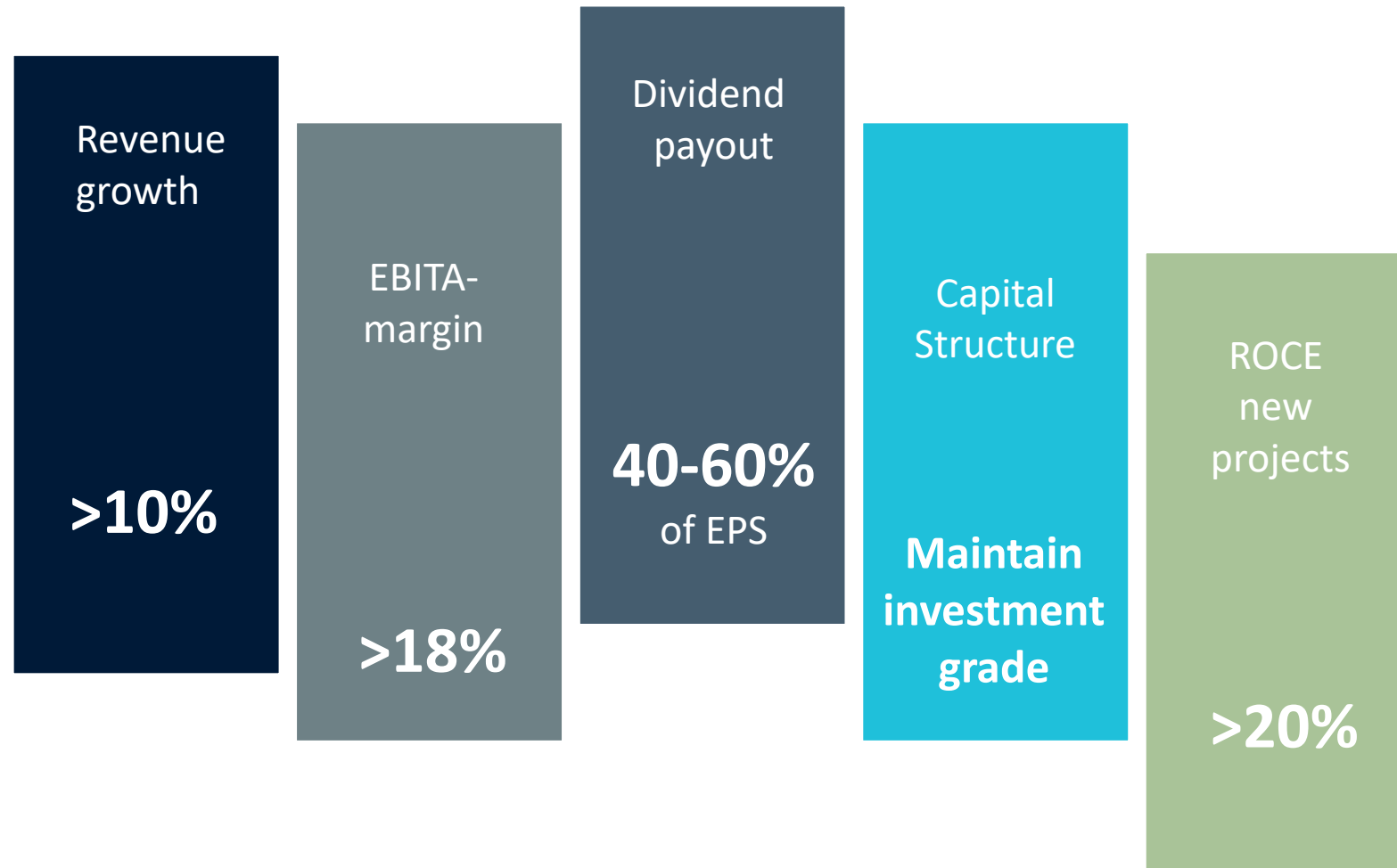


## Earnings per share



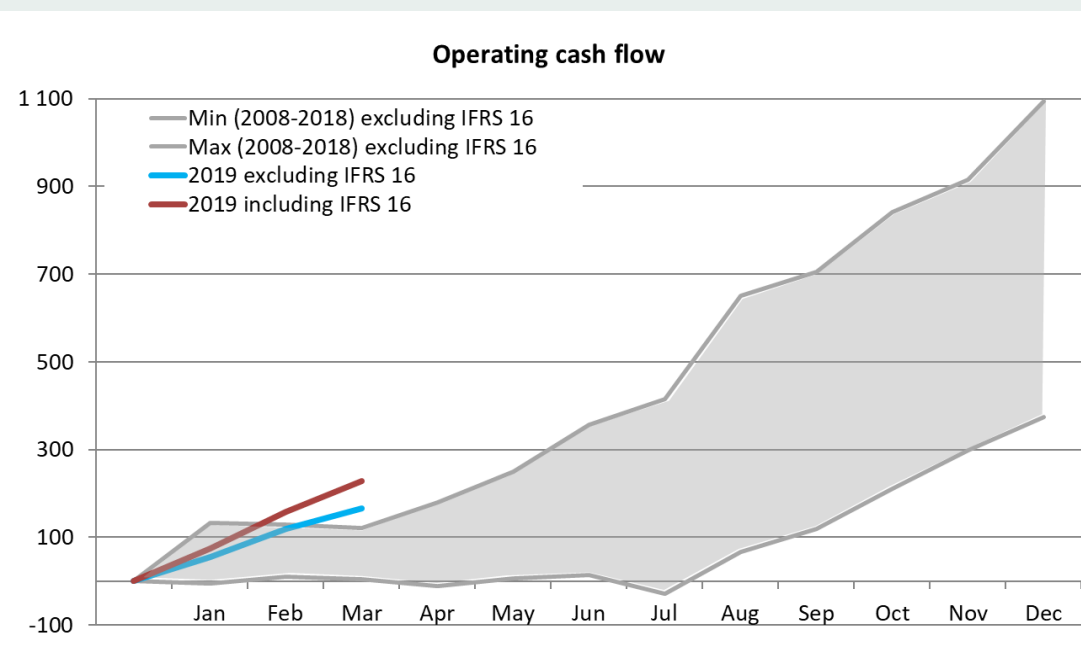
# GROUP FINANCIAL TARGETS 2018-2023 – OUR AMBITIONS AFFIRMED

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# FINANCIAL HIGHLIGHTS | BALANCE SHEET, CASH FLOW AND CAPITAL STRUCTURE

Amounts in NOK million	31 Mar 2019	31 Mar 2018 *	31 Dec 2018 *
<b>ASSETS</b>	<b>10,695</b>	<b>8,808</b>	<b>9,595</b>
Intangible non-current assets	3,765	3,673	3,821
Tangible non-current assets	2,281	996	1,276
Financial non-current assets	343	350	340
Inventory	1,563	1,276	1,447
Receivables	2,267	1,917	2,314
Cash and cash equivalents	476	596	397
<b>LIABILITIES AND EQUITY</b>	<b>10,695</b>	<b>8,808</b>	<b>9,595</b>
Equity	5,060	4,493	5,077
Minority interest	161	143	159
Interest bearing liabilities	2,588	1,668	1,524
Non-interest bearing liabilities	2,886	2,504	2,835



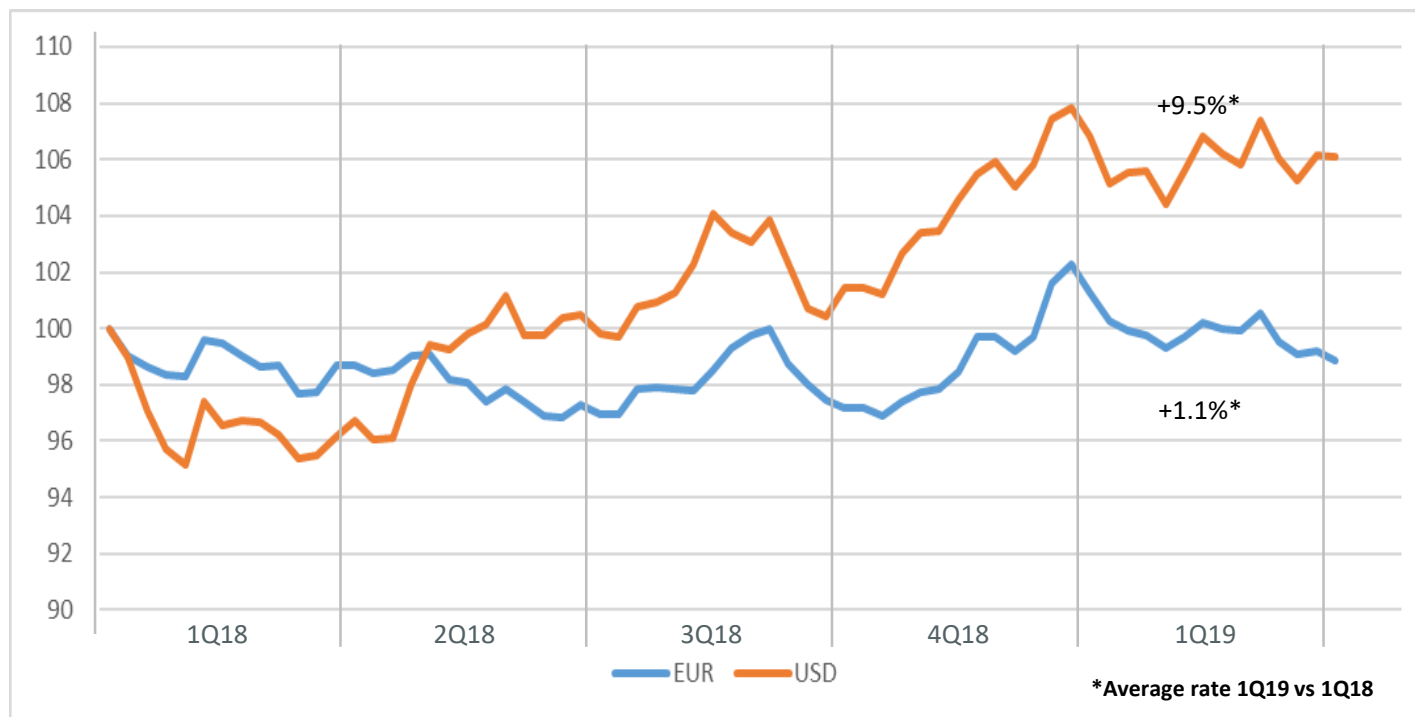
## Ordinary cashflow from operations

- 229 MNOK (120 MNOK in first quarter 2018)
  - Positive effect from IFRS 16 of 64 MNOK

## Solidity

- 47% equity
- NIBD/EBITDA = 0.7x (Rolling 12 months), ex IFRS 16 effects

# CURRENCY RISK AND HEDGING POLICY



**10% change in NOK towards other currencies will impact:**

	Revenues	Expenses	EBITA
EUR*	4.5%	4.0%	5.0%
USD	4.5%	3.0%	10.0%
NZD	0.0%	0.5%	-2.0%
OTHER	1.0%	2.0%	-1.0%
<b>ALL</b>	<b>10.0%</b>	<b>9.5%</b>	<b>12.0%</b>

\* EUR includes DKK

**Revenues and expenses per currency:**

NOTE: Rounded figures

	EUR*	USD	NOK	NZD	OTHER	TOTAL
Revenues	45 %	45 %	0 %	0 %	10 %	100 %
Expenses	40 %	30 %	5 %	5 %	20 %	100 %
EBITA	50 %	100 %	- 20 %	- 20 %	-10 %	100 %

\* EUR includes DKK

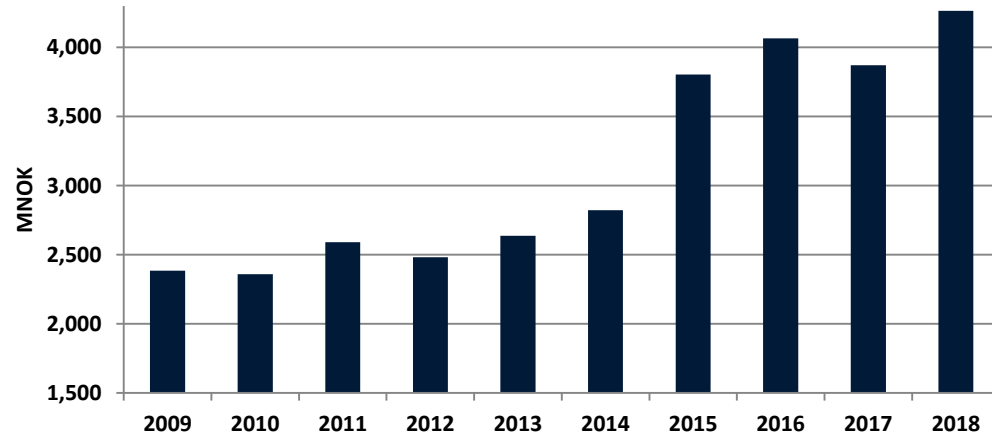
## HEDGING POLICY

- TOMRA hedges B/S items that will have P/L impact on currency fluctuations
- TOMRA can hedge up to one year of future predicted cash flows. Gains and losses on these hedges are recorded in the finance line, not influencing EBITA

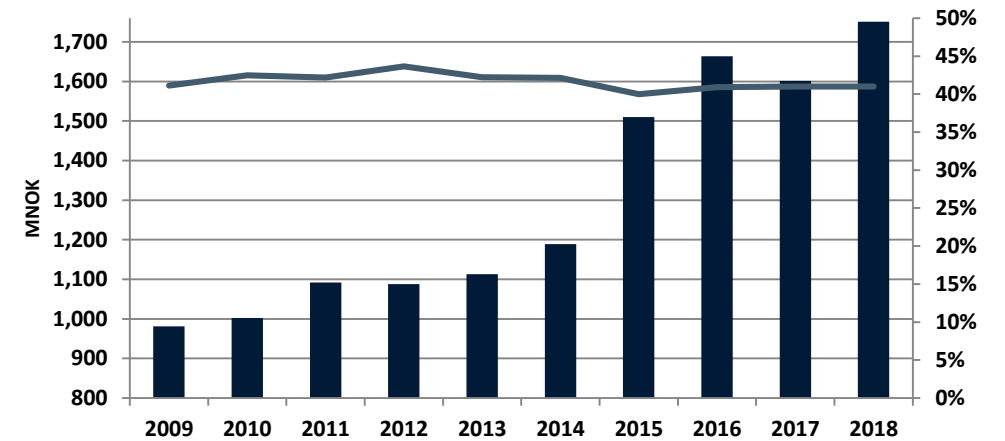


# COLLECTION SOLUTIONS – SEGMENT FINANCIALS

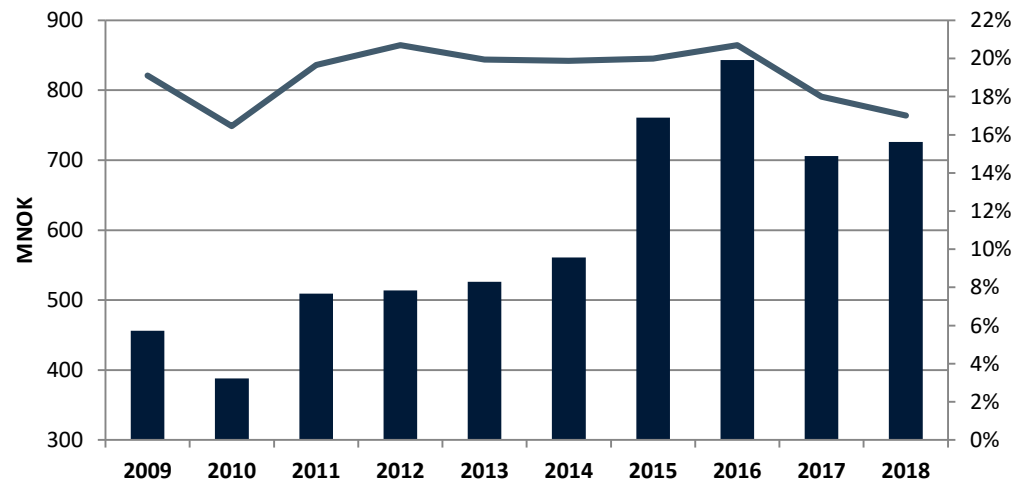
## Revenues



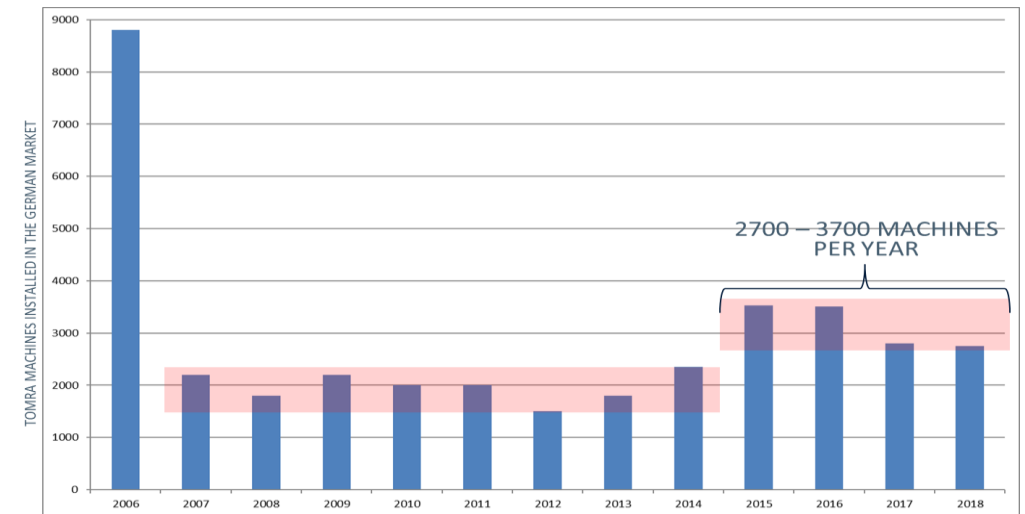
## Gross contribution and margin



## EBITA and margin

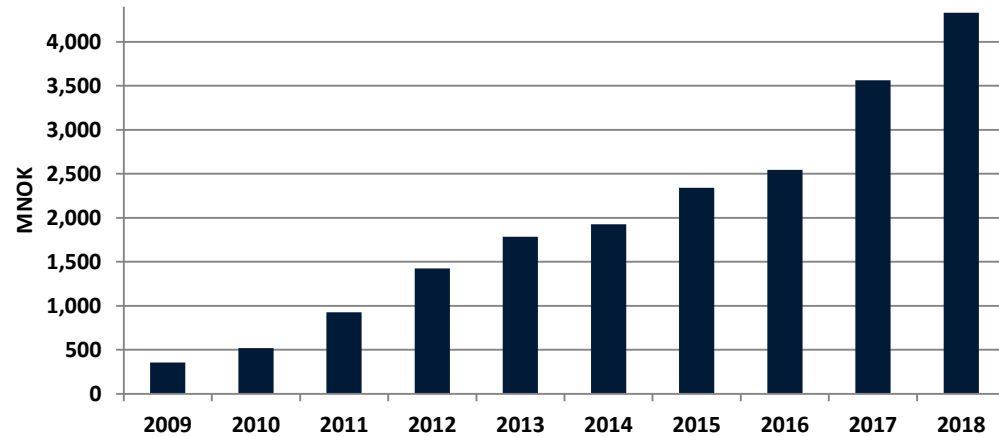


## TOMRA machines installed in the German market

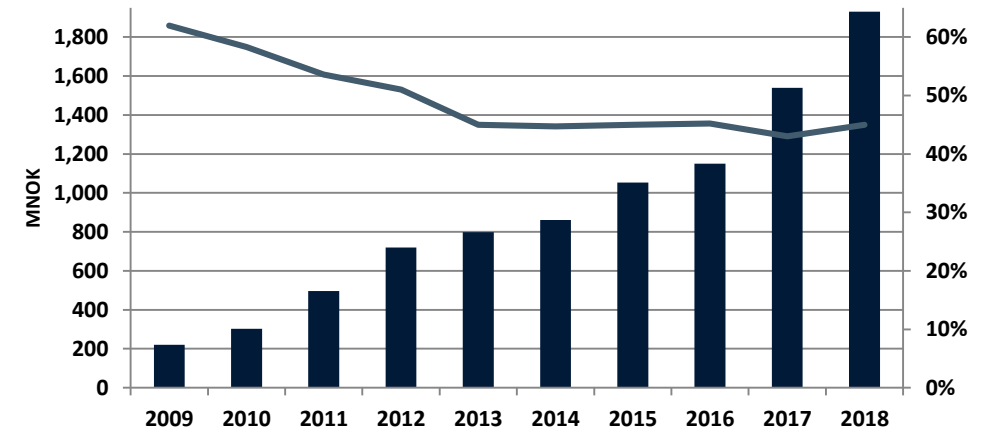


# SORTING SOLUTIONS – SEGMENT FINANCIALS

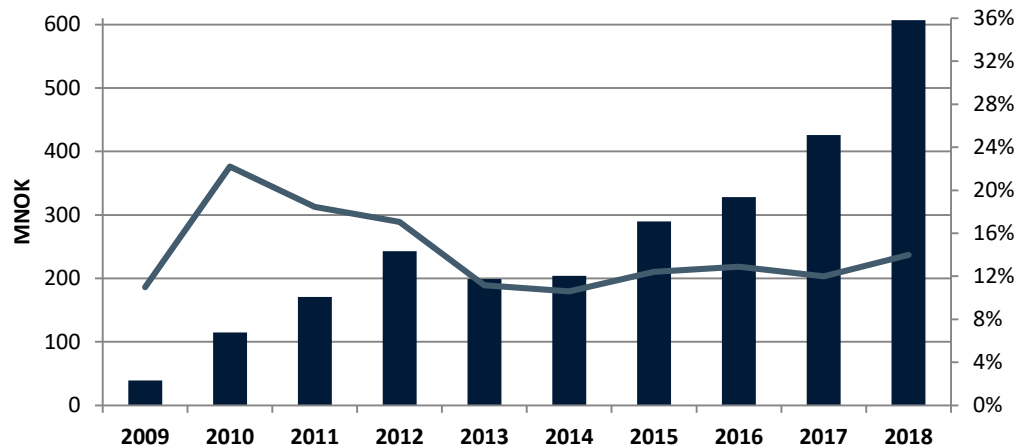
## Revenues



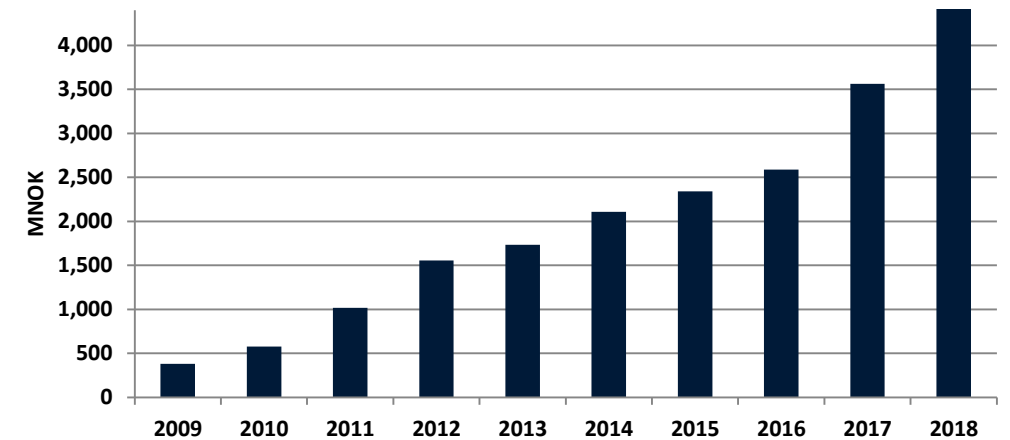
## Gross contribution and margin



## EBITA and margin



## Order Intake

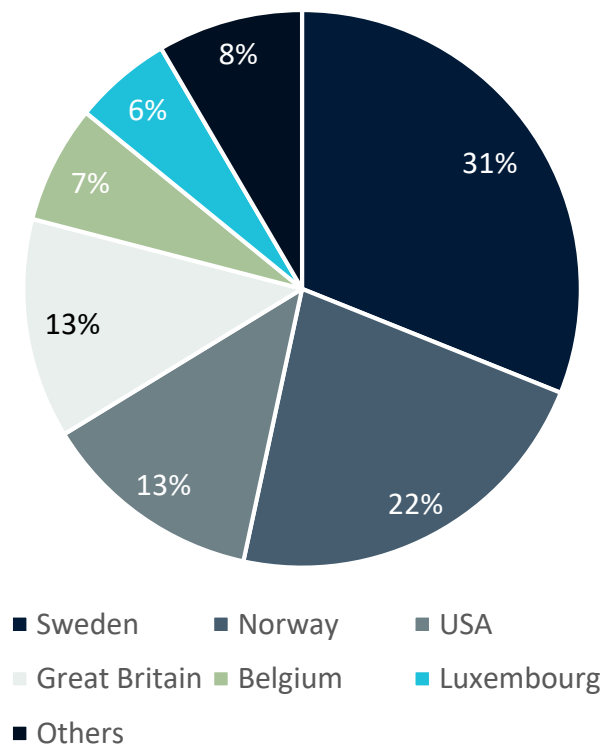


# SHAREHOLDER STRUCTURE

## Top 10 shareholders as of 01 April 2019

1	Investment AB Latour	39 000 000	26,3 %
2	Folketrygdfondet	11 685 490	8,1 %
3	The Bank of New York Mellon	7 845 000	5,3 % (NOM)
4	State Street Bank	4 533 615	3.5 % (NOM)
5	Clearstream Banking	3 731 437	2.8 % (NOM)
6	Goldman Sachs & Co	3 570 804	2.4 % (NOM)
7	Danske Invest Norske Instit. II.	2 064 233	1.2 %
8	JPMorgan Chase Bank	1 848 242	1.2 % (NOM)
9	Nordea 1 Sicav	1 843 304	1.0 %
10	Odin Norge	1 659 690	1.0 %
<b>Sum Top 10</b>		<b>78 116 361</b>	<b>52.8%</b>
<b>Other shareholders</b>		<b>69 903 717</b>	<b>47.2%</b>
<b>TOTAL (8,247 shareholders)</b>		<b>148 020 078</b>	<b>100.0%</b>

## Shareholders by country



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