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Innovation by Chemistry

TORAY IR Day

Medium-Term Management Program Project AP-G 2025

Water Treatment Business

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Toray Industries, Inc.

Contents

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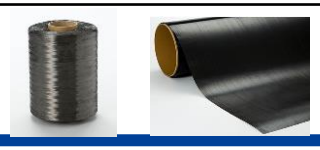
Overview of the Water Treatment Business

Positioning of the Water Treatment Business

FY2022 Result

Billion yen

Segments	Major Products	Revenue	Core Operating Income
Fiber & Textiles		999.2	51.5
Performance Chemicals		909.4	35.0
Carbon Fiber Composite Materials		281.7	15.9
Environment & Engineering		228.8	19.7
Life Science		53.8	0.2
Others		16.4	2.5
Adjustment			▲23.9
Total		2,489.3	96.0

Growth Business Fields under AP-G 2025

SI Business
Sustainability Innovation Business

1. Products that accelerate measures to counter climate change
2. Products that facilitate sustainable, recycling-based use of resources and production
3. Products that help provide clean water and air and reduce environmental impact
4. Products that help deliver better medical care and hygiene for people worldwide

DI Business
Digital Innovation Business

Materials, equipment, technologies, and services that help improve convenience and productivity by supporting the widespread adoption of digital technology

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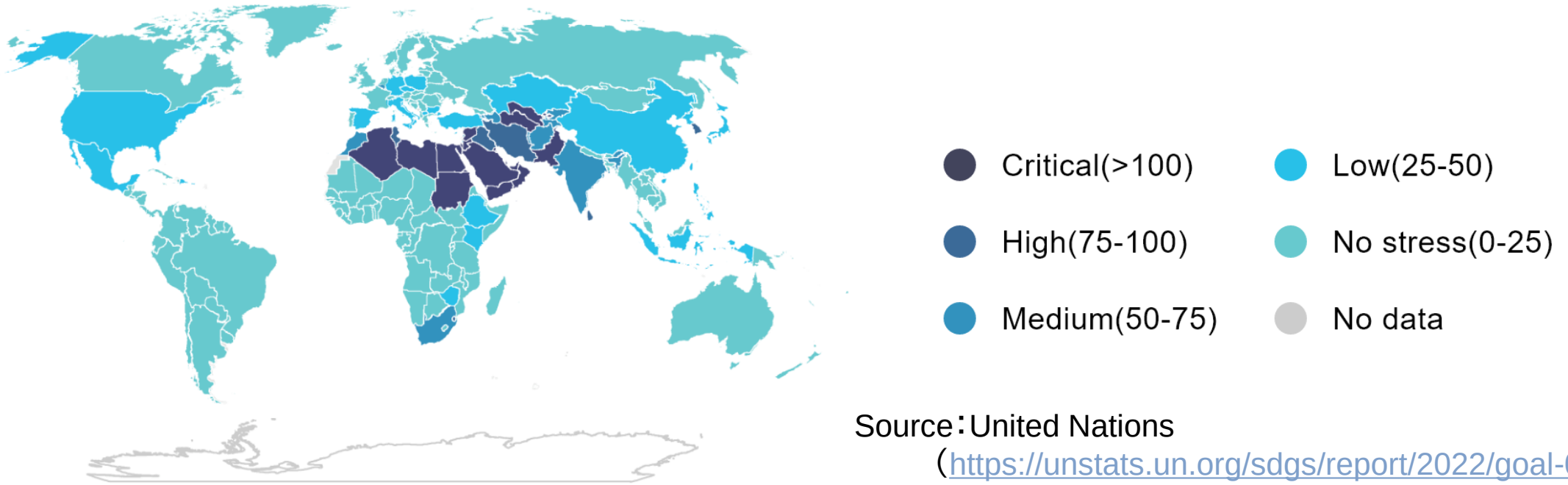
Global Water Resources & Current Environment Conditions

Rapid population growth accelerates global water shortages and deterioration of water quality

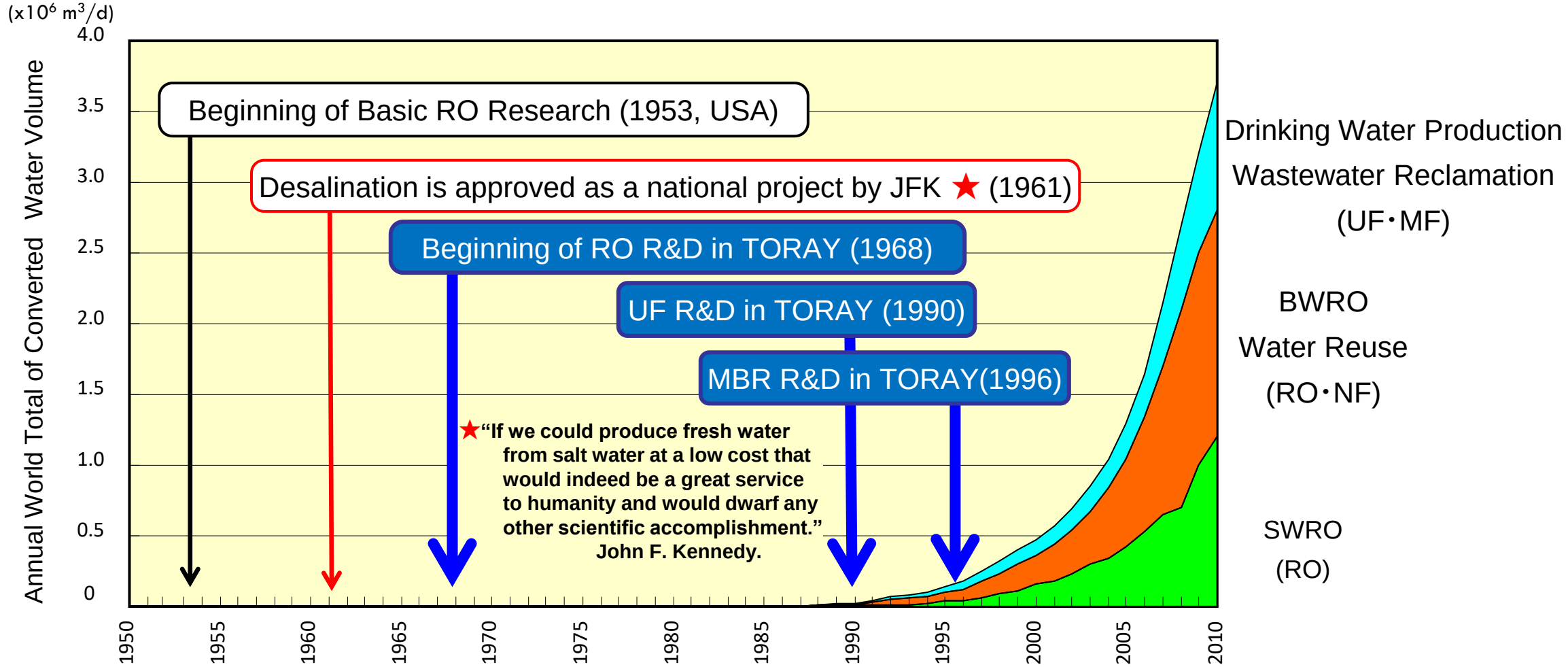
Level of water stress:
freshwater withdrawal as a proportion of total renewable freshwater resources, 2019 (percentage)



Source：United Nations
（https://unstats.un.org/sdgs/report/2022/goal-06/）

Long-term R&D History of Membrane Technology

Built decades of experience in R&D of membrane Technology seeking high quality, high throughput and energy saving process



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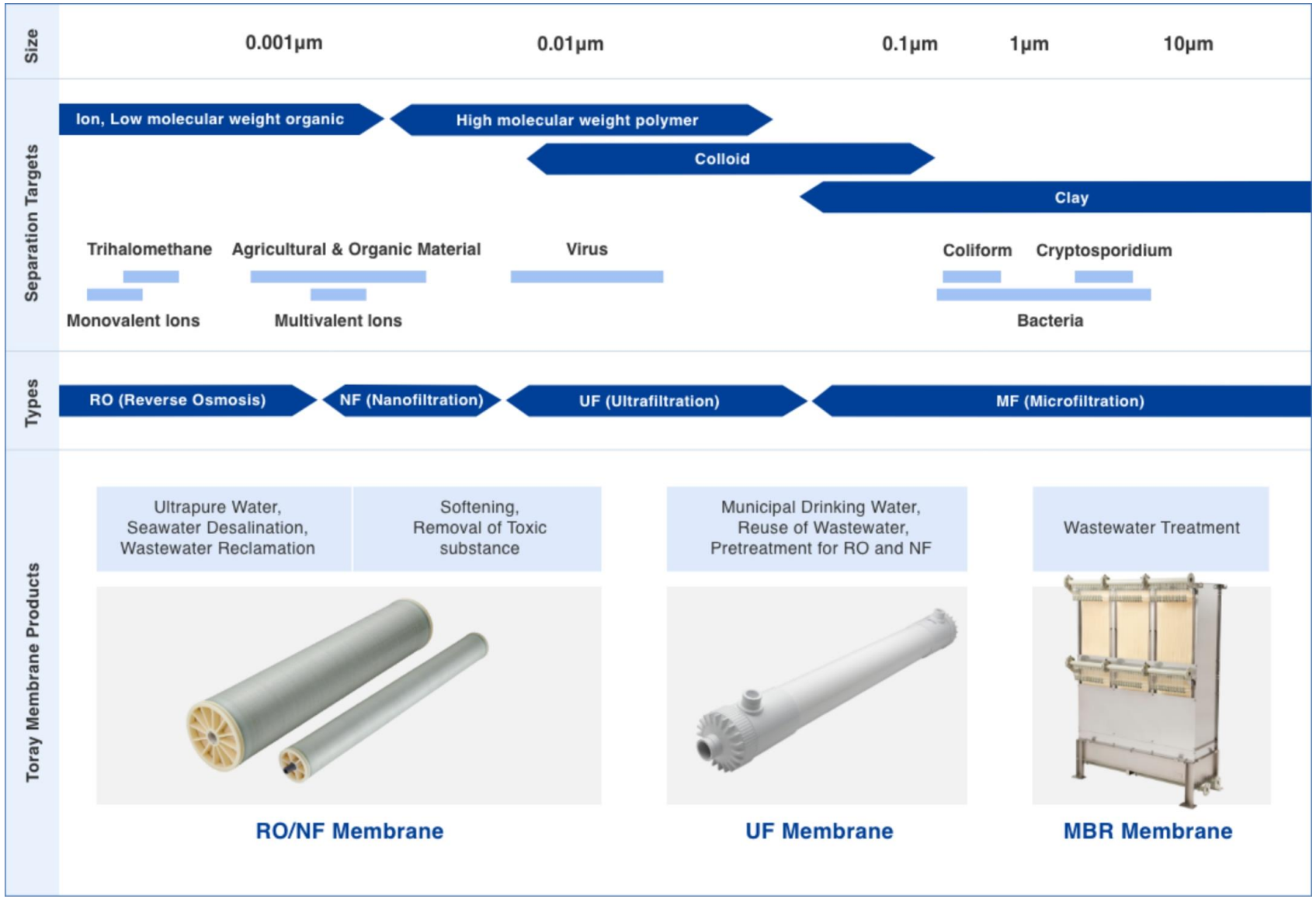
Variety of Membrane Products

All ranges of Membrane products In-house

R&D
⇓
Manufacturing
⇓
Sales
⇓
Technical Services

Capability to provide membranes for various types of raw water



Our Strength

1. Offer Total Solutions (IMS proposals) with **various product lineup**
2. **Global integrated operation system** for production, sales, and technology

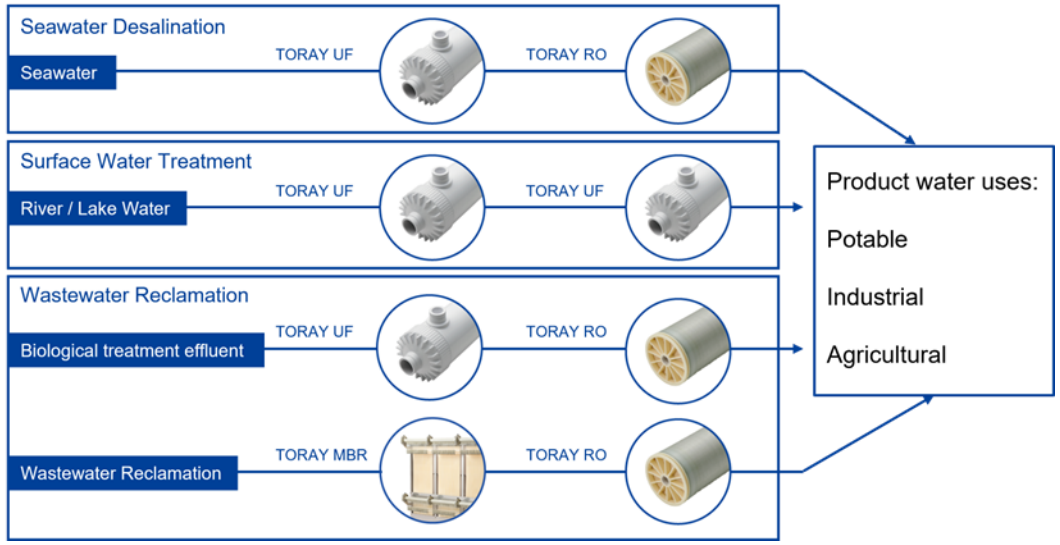
✓Stable supply of high-quality products which meet regional needs through global production network

✓Global sales network for RO with world's top class market share

✓Customer-oriented technical service through global technical network

IMS (Integrated Membrane System)

Toray can provide optimal membrane products for all type of raw water.



Global Business Network

35 Sales Office

6 Production Base

4 R&D Centre

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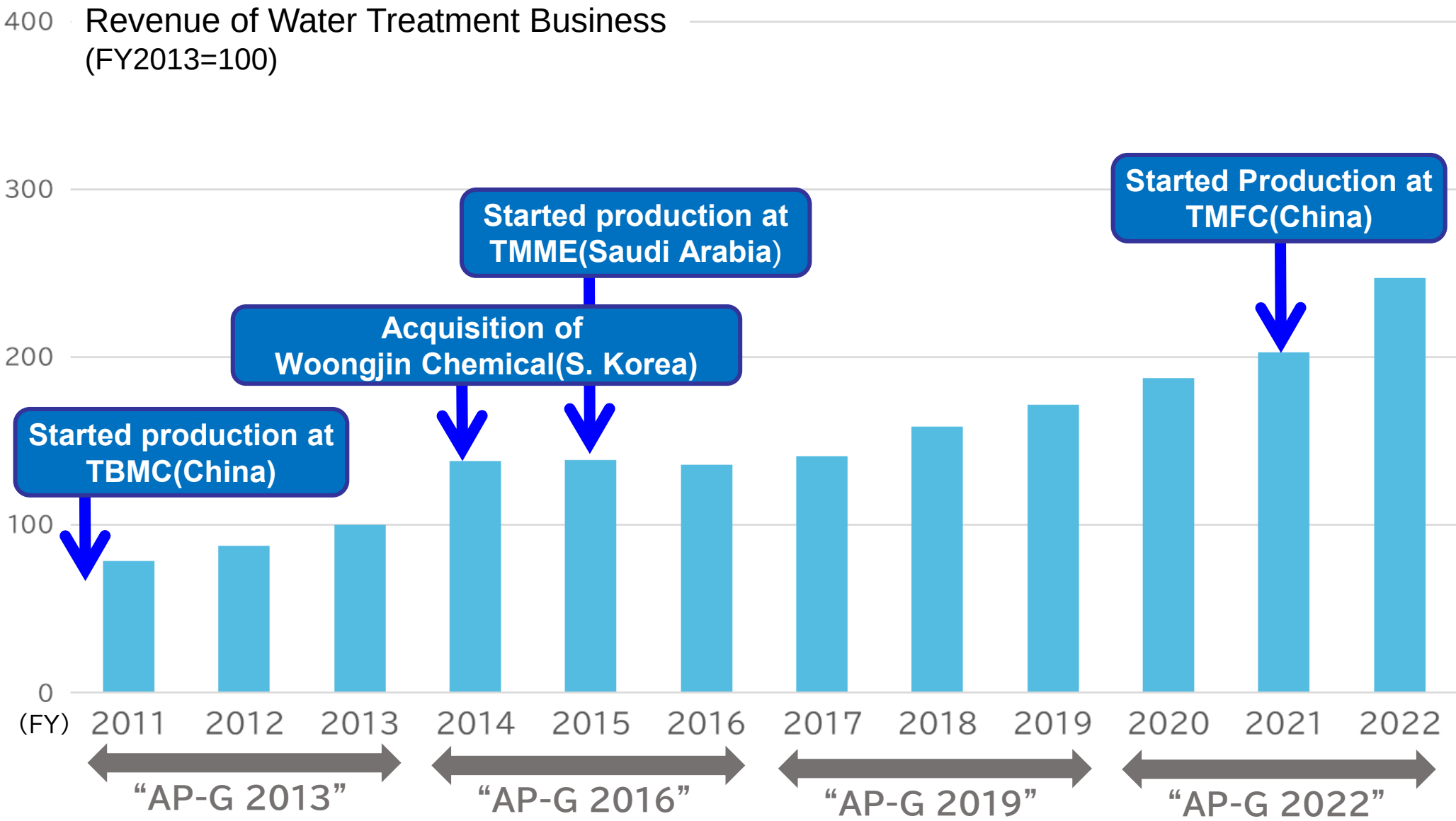
Long-term Performance of the Water Treatment Business



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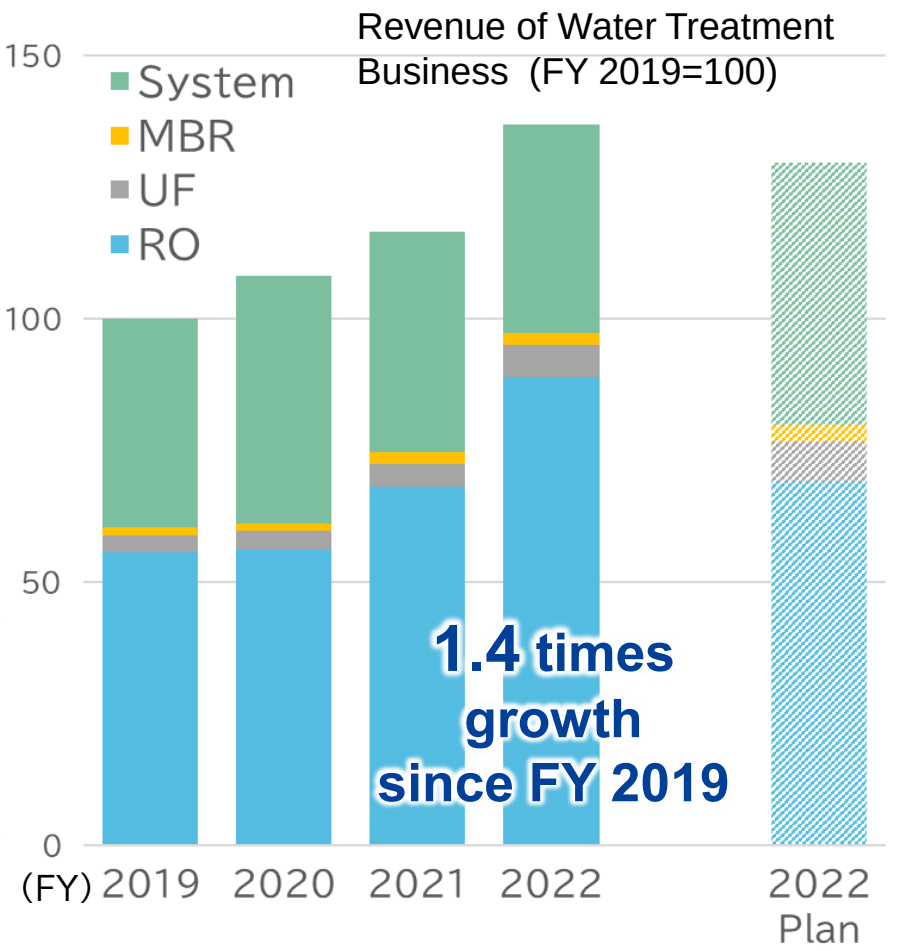
Review on the Medium-term Management Program Project AP-G 2022

Review on Project AP-G 2022

Achieved business expansion over the target by deepening a local production for local consumption system and strengthening the business structure

Project AP-G 2022 Basic Policies
Further enhance the position as an "Excellent Company" in the water treatment membrane business
～To achieve overwhelming global top market share and realize highly profitable business～

	Progress
RO	■ Increased market share by deepening a local production for local consumption system Production：Increased production capacity by 1.6 times compared to FY2019 Sales：Reinforced sales network and global operation function Technical Service：Enhanced capabilities at each location ■ Accelerated development of new high-performance products
UF・MBR	■ Promoted sales expansion with competitive new products ■ Strengthened business structure with collaboration with partners ■ Implemented thoroughly cost reduction, but the impact of soaring PVDF, which is main raw material, price was huge.
Plant・System	■ Enhanced efforts in O&M business ■ Promoted project formation with membrane solution technology



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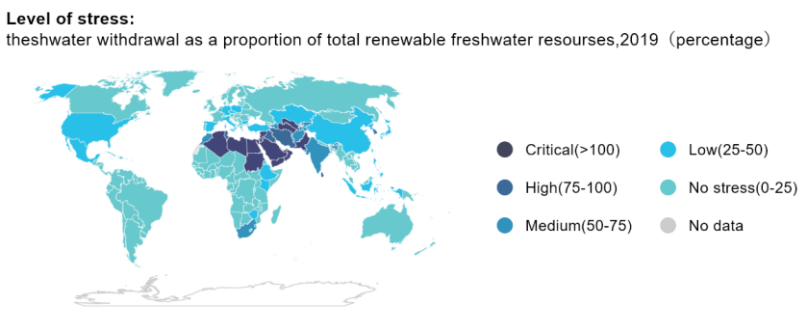
Business Environment, Demand Outlook

Business Environment(1)

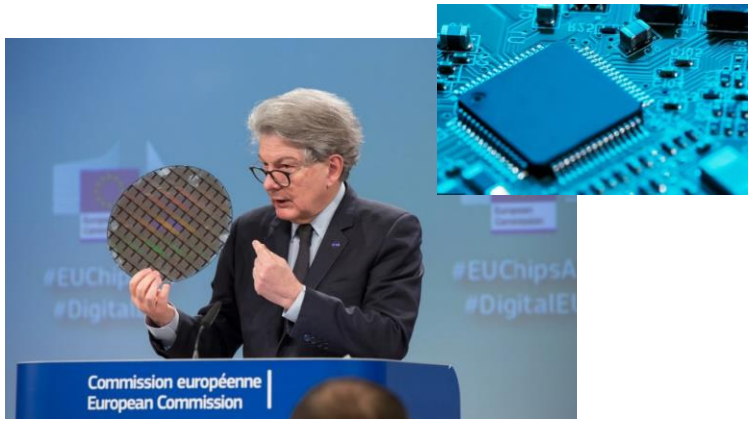
Increase in social issues to which the water treatment business can contribute, due to acceleration of water shortages and heightened environmental awareness as well as changes in the external environment such as geopolitical risks

Climate Change/Drought



Environmental Regulation

Geopolitical Risk



Business Environment(2)

RO Membrane demand outlook

Overall

- ✓ Overall demand is expected to grow at a CAGR of 5% until 2025

China

- ✓ Changing in industrial structure in order to bring emissions to a peak by around 2030

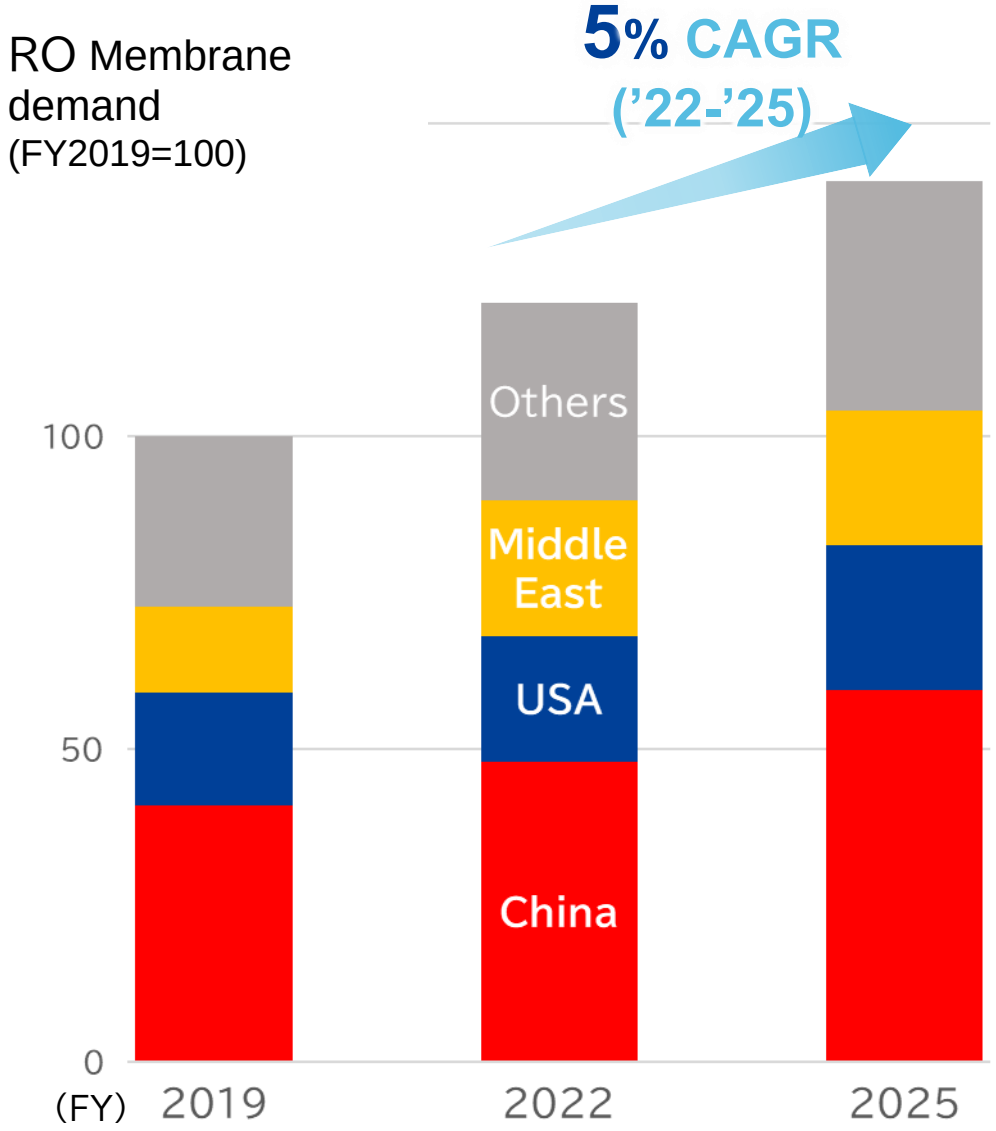
(Decrease：Thermal power generation, coal chemistry
Increase：Nuclear power generation, PV, New energy)

USA

- ✓ Growing needs for water reuse as a counter measures on drought, especially in the West Coast
- ✓ Return semiconductor manufacturing to USA

Middle East

- ✓ Continue construction of large desalination plants
- ✓ Accelerate “Localization of Industry” in Saudi Arabia



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Medium-term Management Program
Project AP-G 2025

Basic Policies

Project AP-G 2025 Basic Policies

Strengthening the business foundation as a “Leading Company” in the water treatment membrane business

～To achieve expanding global market share and secure profitability ～

RO/NF

1 Business expansion and solving social issues

- Achieve **top market share in RO business**
- Enhance activities in growing **water reuse** field
- Development of brine mining technology and study of product recycling

2 Enhance activities in growth areas and growth applications

UF

- Promote global business development in growth fields such as **Water reuse, ultrapure water for semiconductors**
- Keep **No.1 position of SWRO** and further enhance our presence in China and the US market

3 Strengthen price and non-price competitiveness

- Development of high value-added products
- Promote thorough cost reduction
- Development of drastic cost reduction technology for the future

4 Enhance our sales network and sophistication of sales methods

- Strengthen web and digital marketing
- Expand maintenance warranty sales using ICT technology
- Enhance collaboration with partners

5 Strengthen organizational power & governance

- Provide opportunities and HR development for young employees
- Strengthen quality management systems

MBR

Plant System

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Basic Strategies, Major Issues ～RO business～

Basic Policies in RO business

Realization of No.1 global market share by 2025

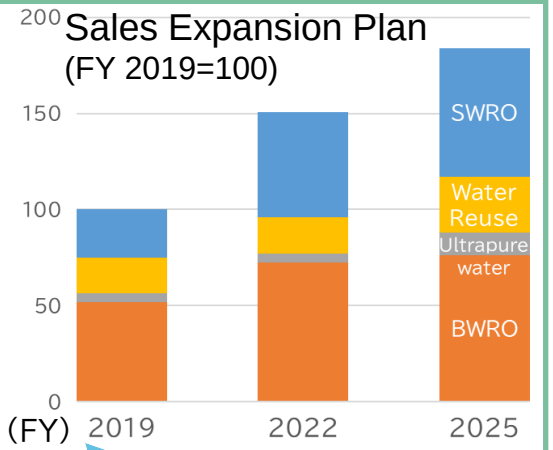
Major Issues

1. Enhance sales activity in priority applications and development of high value-added products
2. Establish global supply chain to support sales expansion
3. Promote cost reduction and further strengthen non-price competitiveness

Global Supply chain

＜Measures＞

- Promote capacity increase of existing production lines
- Continue aggressive investment

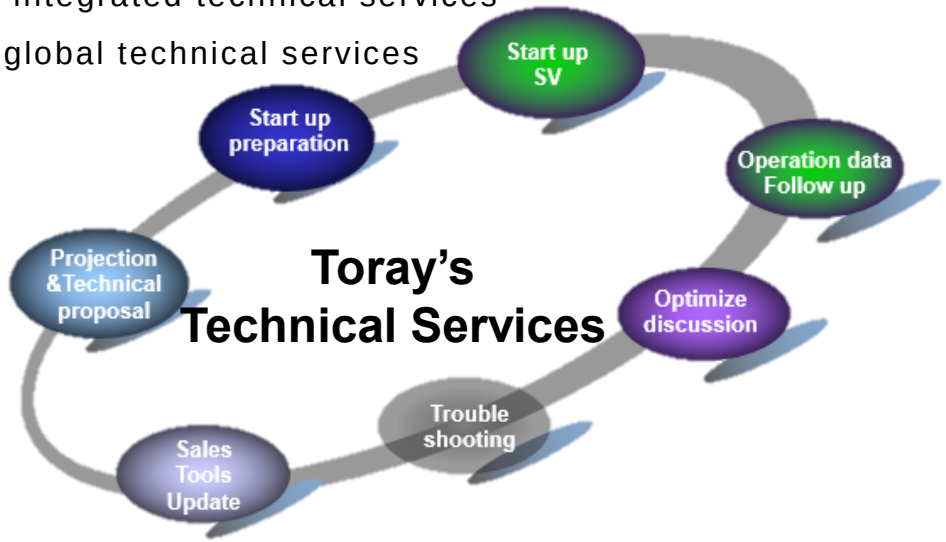


Timely supply to customers by utilizing global operations

Further enhancement in technical service

＜Measures＞

- Establish integrated technical services
- Enhance global technical services



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Growth Business Field (1) ～Water Reuse～

Changing wastewater into a new water resource through IMS* technology (UF + RO, MBR + RO)

*IMS: Integrated Membrane System

Business Environment

- In the 2000s, the trend of water reuse has been accelerated, especially in countries and regions suffering from drought
- Compared to seawater desalination, water reuse makes it easier to obtain raw water even in inland areas. It is also about 1/3 of the cost of desalination and reduces environmental impact by reducing wastewater discharge.

➡ Water Reuse market is expected to grow over **10%** CAGR

Sewage reclaimed water plants with advanced treatment are in operation

Basic Strategy

- Create added value and strengthen profitability through the provision of total membrane solutions by utilizing strengths of full line-up membrane manufacturer
- Accelerate global business expansion through focused allocation of resources

Main Tasks

- New product development for water reuse application
- Accumulate IMS know-how and provide advanced technical services
- Strengthen information dissemination through the dedicated website (https://www.water.toray/water_reuse/)

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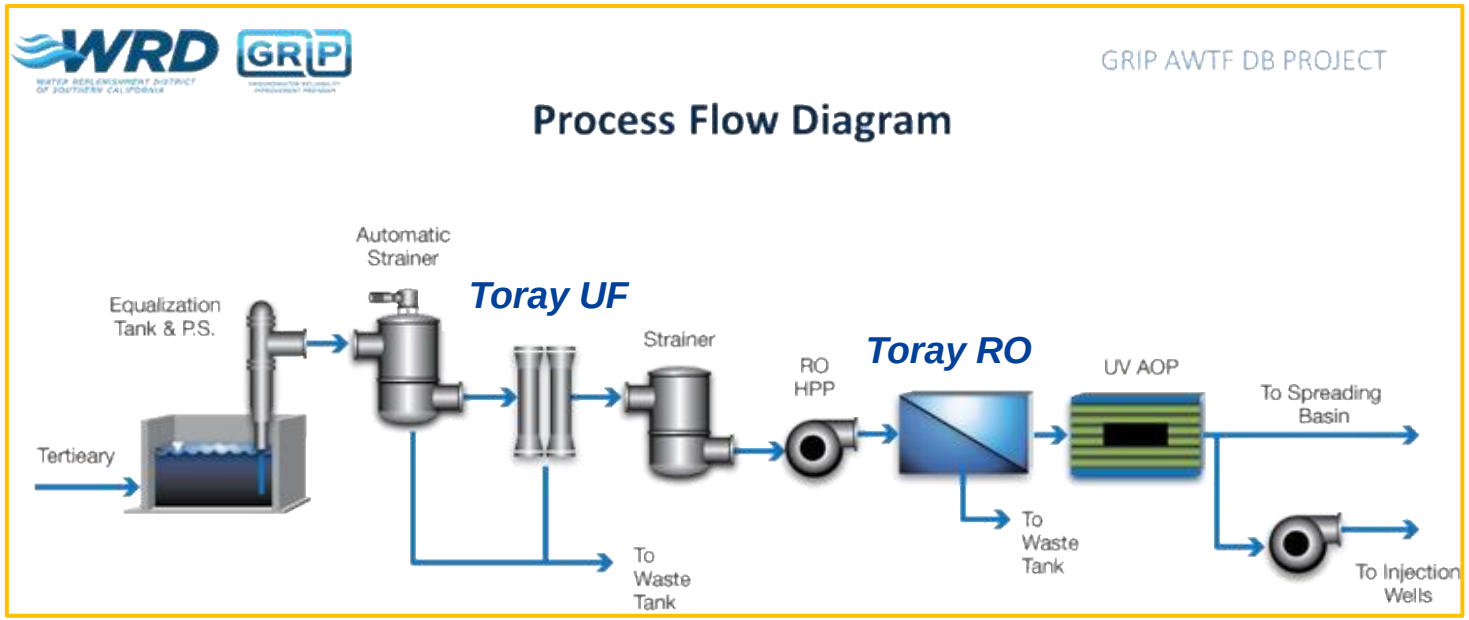
Growth Business Field (1) ～Water Reuse～

Groundwater Reliability Improvement Program
(Los Angeles)
Production capacity: 56,000 m^3/day

Photo:Albert Robles Center



Key Features of Membrane Treatment Process:

- Piloting impacted ability to win
- 92.5% high recovery system
- Direct coupled UF to RO
- High-pressure UF developed by Toray for process

https://www.wrd.org/ARC

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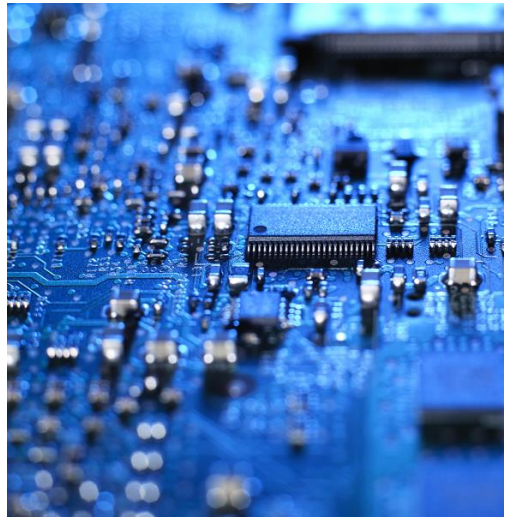
Growth Business Field (2) ～Ultrapure water～

Appeal for added value through global expansion of new high-performance products

Business Environment

- Expected steady market expansion for semiconductors
- Global semiconductor supply shortages have triggered a trend of constructions on semiconductor factories in many countries and regions
- As the requirement for semiconductors become more sophisticated, higher purity is also required for cleaning water used in the semiconductor production process.

➡ Growing needs for supply of **high-purity water (Ultrapure water)**



Basic Strategy

- Stable and continuous supply of high value-added products
- Strengthen partnerships with leading engineering companies and end users in the world

Main Tasks

- Implement intensive promotion of new products
- Further development for Ultrapure water application
- Promote mass production and cost reduction

Growth Business Field (3) ～Seawater Desalination～

Keep de facto position and surely support on replacement demand

Business Environment

- In the middle east construction of large-scale desalination plants using the RO method continue in response to ongoing demand for water resources and enhance in environmental awareness.
- Energy price hike lead the announcements on construction plans of new desalination plant in Middle East and North Africa
- Large-scale replacement demand is expected to increase in line with the accumulation of new plants
- Accelerate Industrial localization in Saudi Arabia

Basic Strategy

- Keep NO1 position of SWRO through de facto
- Establish stable supply chain
- Support replacement demand by strengthening technical services
- Further promotion of localization in Saudi Arabia

Main Tasks

- Expand production capacity to meet increased demand timely
- Promote thoroughly cost reduction
- Develop high-performance new products
- Strengthen local technical service functions

Growth Business Field (3) ～Seawater Desalination～

Middle east: Saudi Arabia
600,000 m^3/d

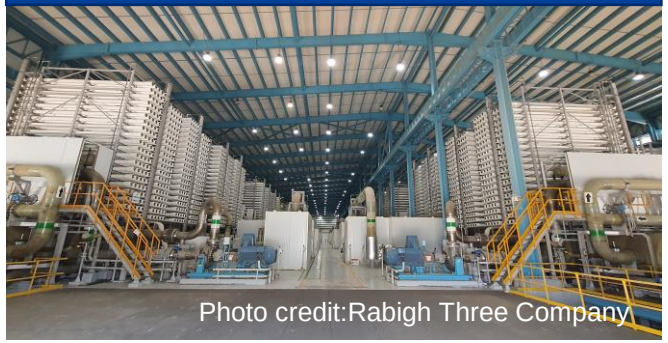


Photo credit:Rabigh Three Company

North Africa: Algeria
200,000 m^3/d

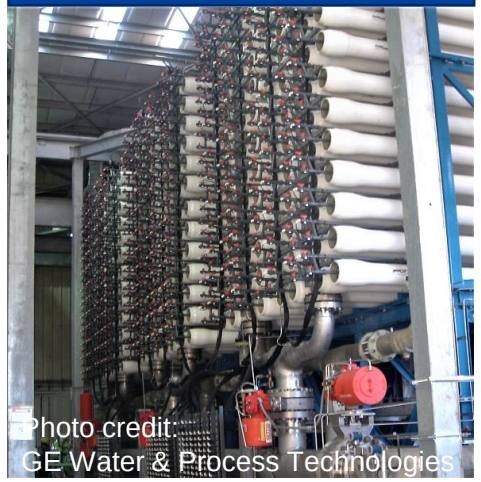
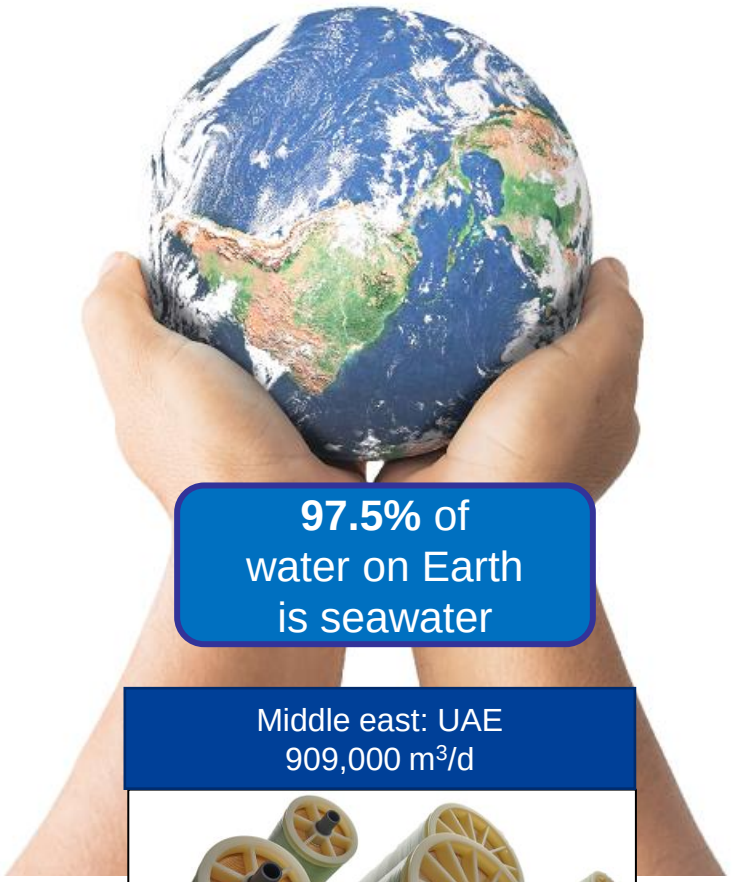


Photo credit:
GE Water & Process Technologies



97.5% of
water on Earth
is seawater

Central America: Trinidad and Tobago
189,000 m^3/d

Middle east: UAE
909,000 m^3/d

Southeast Asia: Singapore
136,000 m^3/d

Photo credit : Hyflux

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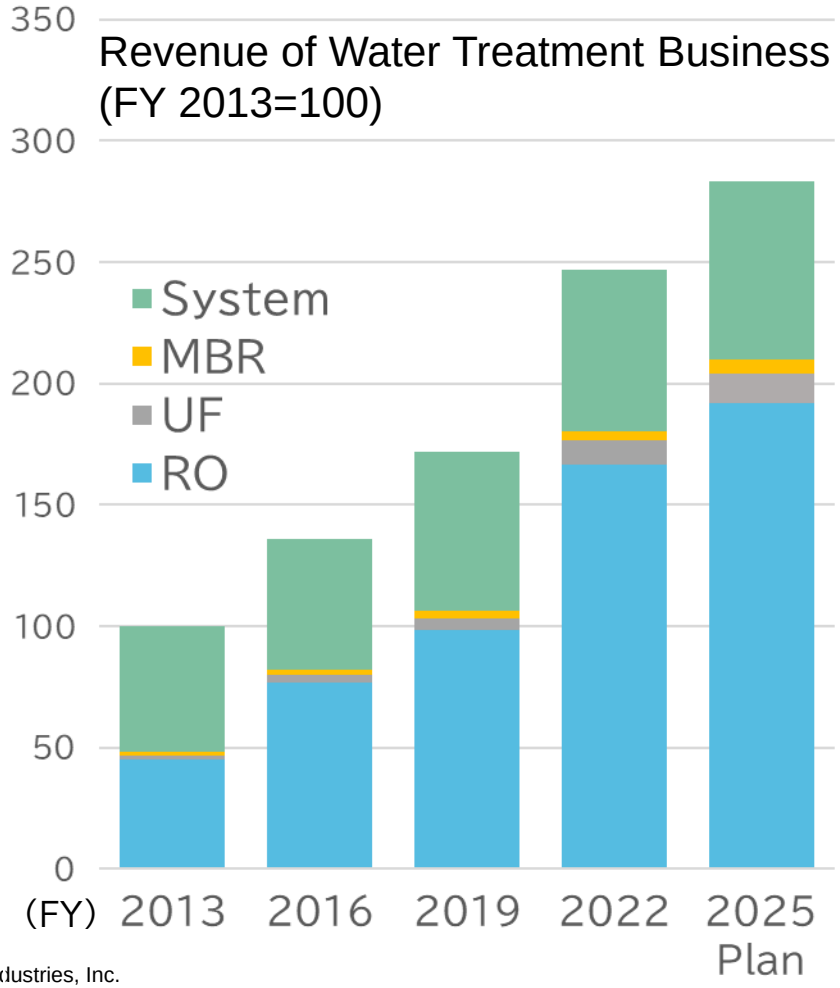
Performance target in 2025

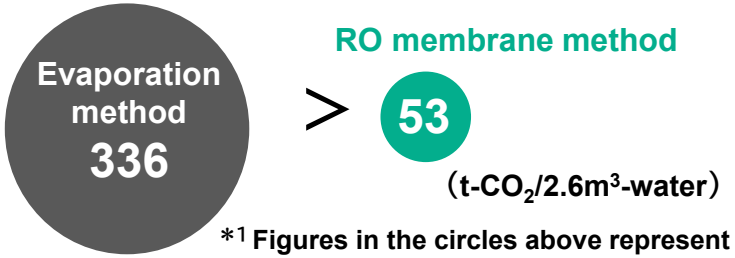
As a leading company in the water treatment membrane business, Promote global business expansion and strengthen business structure



Sustainability Target	FY 2013 (Baseline year)	FY2022	FY 2025 Target
Water filtration throughput contribution by Toray's water treatment membranes*	27.23 million tons/day	2.4-fold	2.9-fold

* Water treated annually with Toray water treatment membranes. It is calculated by multiplying the amount of fresh water that the Toray membranes can produce per day, including reverse osmosis (RO), ultrafiltration (UF) and membrane separation bioreactors (MBR), by the number of membrane elements sold.

CO_2 emissions avoided by using RO membranes for seawater desalination*1



*1 **Figures in the circles above represent CO_2 emissions for the entire product life cycle**

Source: *Innovations for Greenhouse Gas Reductions*, Japan Chemical Industry Association (JCIA)

Descriptions of predicted business results, projections and business plans contained in this material are based on assumptions and forecasts regarding the future business environment, made at the time of publication.

Information provided in this material does not constitute any guarantee concerning the Toray Group’s future performance.

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