



Your Dreams, Our Challenge

IR DAY 2024

Chemicals

AGC Inc.

June 4, 2024





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1. Overview of the Chemicals Business

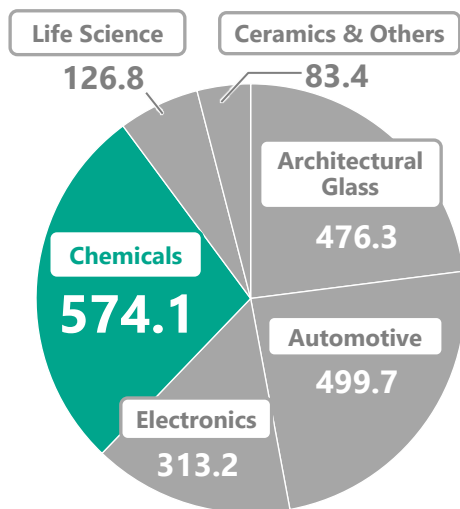


Business Scale of the Chemicals Business

- Composed of two sub-segments: Essential Chemicals and Performance Chemicals

2023 Net sales (Billion yen)

AGC Group **2,019.3 billion yen**



Sub-segments and main business

Essential Chemicals (402.8 billion yen)

Business category	Major products	Main areas of demand
Chlor-alkali	Caustic soda, vinyl chloride resin etc.	<ul style="list-style-type: none"> Chemical fibers Paper/pulp Water pipes Electric wire Architecture etc.
Urethane	Polyols, polyurethane sealant materials etc.	<ul style="list-style-type: none"> Architecture Automotive Electronic equipment etc.

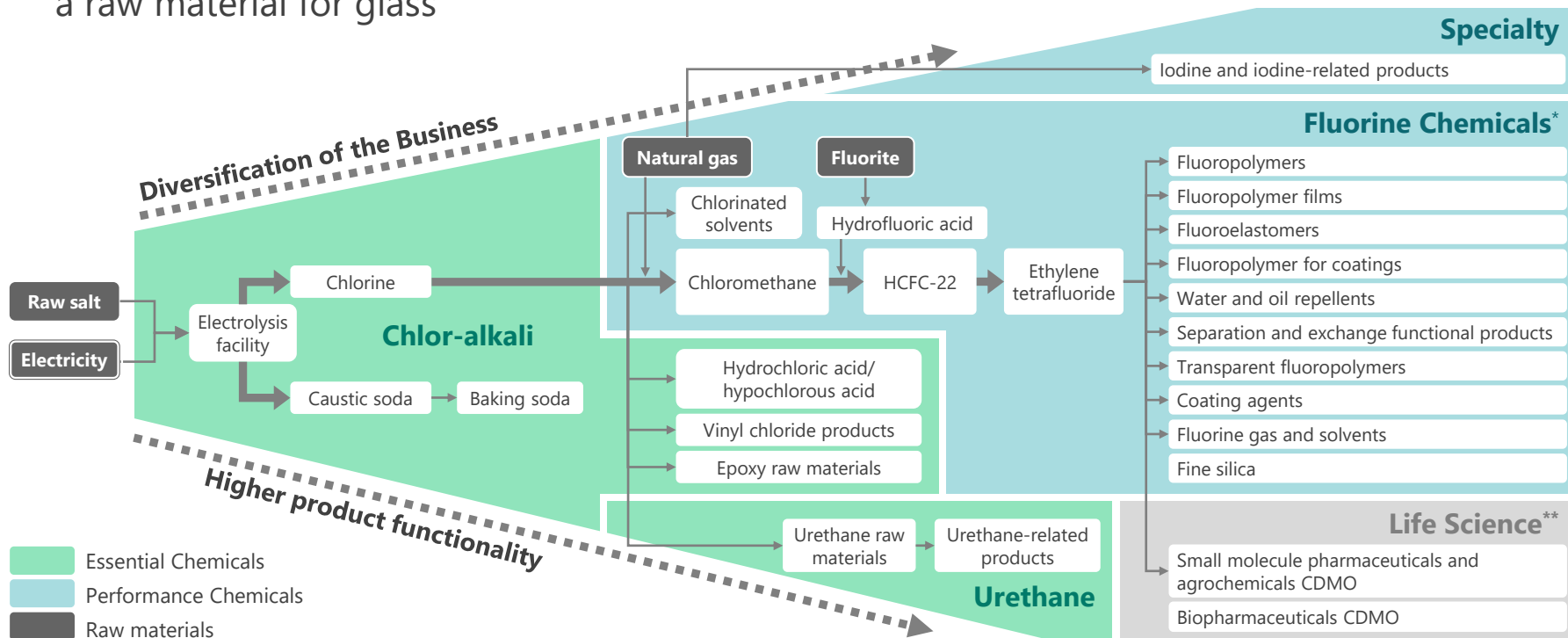
Performance Chemicals (166.9 billion yen)

Business category	Major products	Main areas of demand
Fluorochemicals*	Fluoropolymers, fluoropolymer films, fluorinated elastomers, fluoropolymer resin for coatings fluorinated gases and solvents, etc.	<ul style="list-style-type: none"> Transportation equipment Electronics Architecture Energy Aerospace Textiles/Paper Agriculture etc.
Specialty	Iodine and iodine-related products	<ul style="list-style-type: none"> Medical/ Pharmaceutical Precision / Electrical equipment etc.

* Includes some products not made from fluorine

Product Flow in the Chemicals Business

- Unique chemical chain formed over the past 100 years, starting from production of soda ash, a raw material for glass



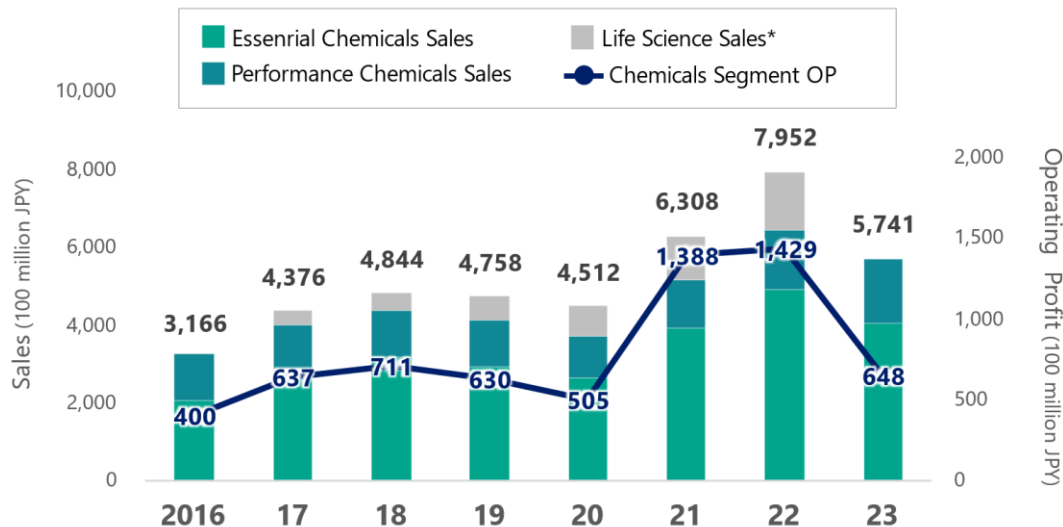
* Includes some products not made from fluorine

** Became a stand-alone segment after 2022

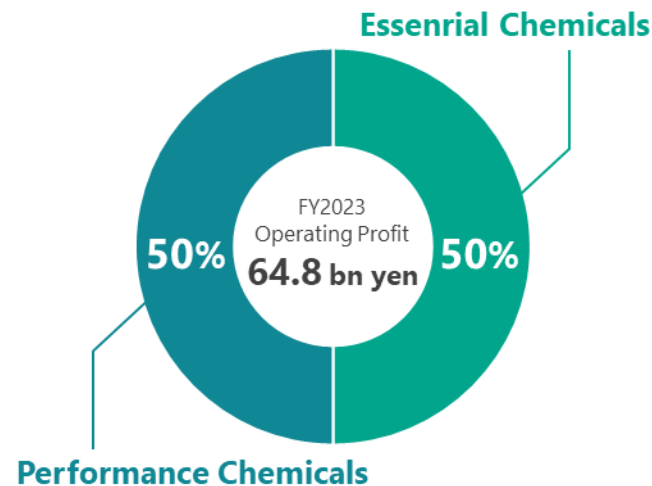
Chemicals Business Performance

- Although profits temporarily declined in FY2023 due to the slumping chlor-alkali market in Southeast Asia, both sub-segments steadily expanded their business scale through intensive investment.

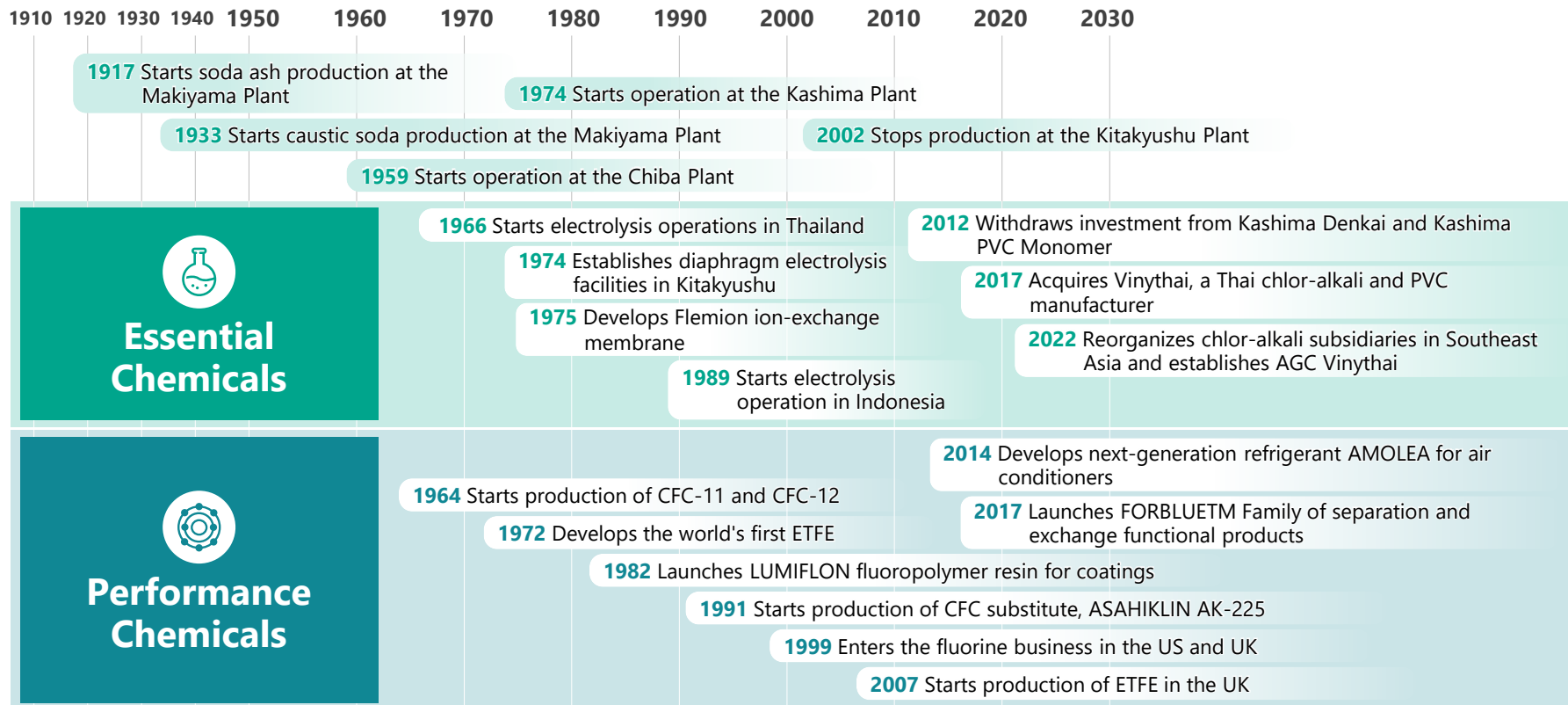
Net sales and operating profit



FY2023 Breakdown of operating profit by sub-segment**



History of the Chemicals Business



2. Strategies by Sub-segments

- **Essential Chemicals**
- **Performance Chemicals**

- Chlor-alkali products such as caustic soda, PVC, and epichlorohydrin hold the top shares in the growing Southeast Asia market
- Also expanding urethane-related products, such as polyols and modified silicone

Caustic soda

No. 1* in
Southeast Asia

Main applications: Chemical
textiles, paper/pulp

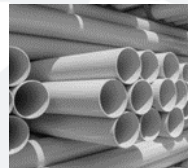


Mountain of salt
used as raw
material

PVC

No. 1* in
Southeast Asia

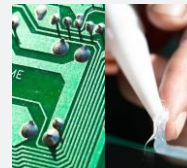
Main applications: Water pipes, electrical wires



Epichlorohydrin

No. 1* in
Southeast Asia

Main applications:
Adhesives, coatings, electronic materials



Sodium bicarbonate

Main applications:
Pharmaceuticals, bath salts, baking powder



Polyols

Main applications:
Urethane foam, elastomers, adhesives



Modified silicone

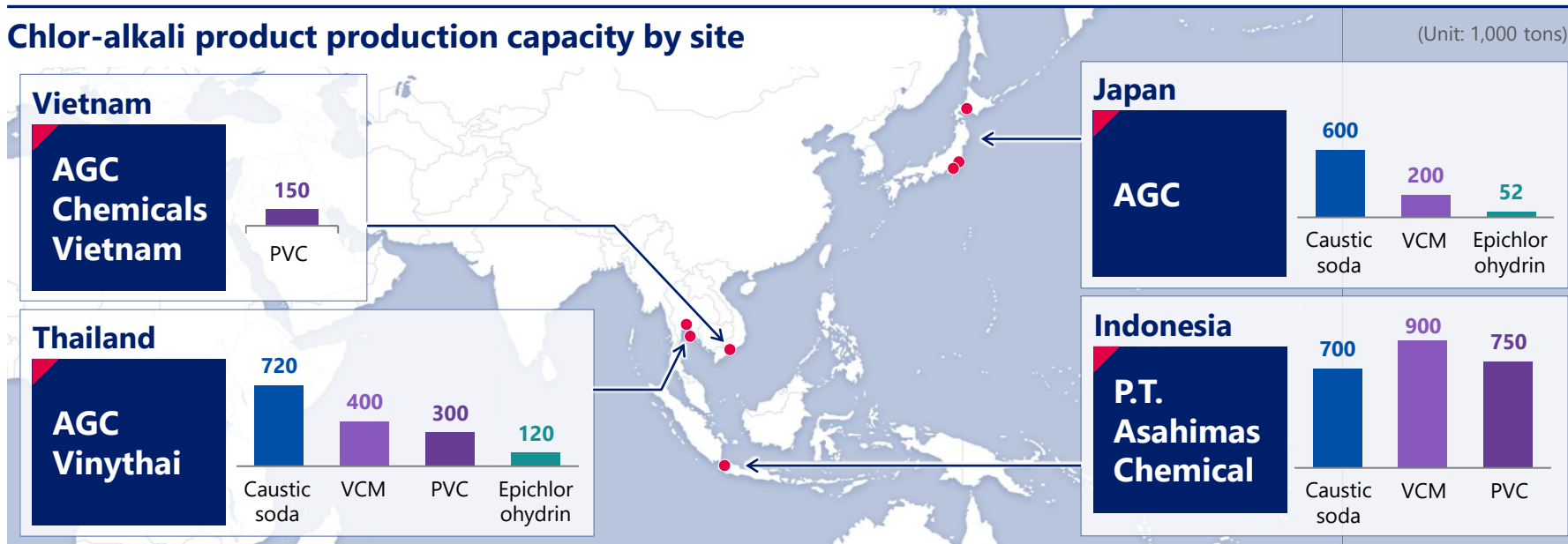
Main applications: Sealants, adhesives



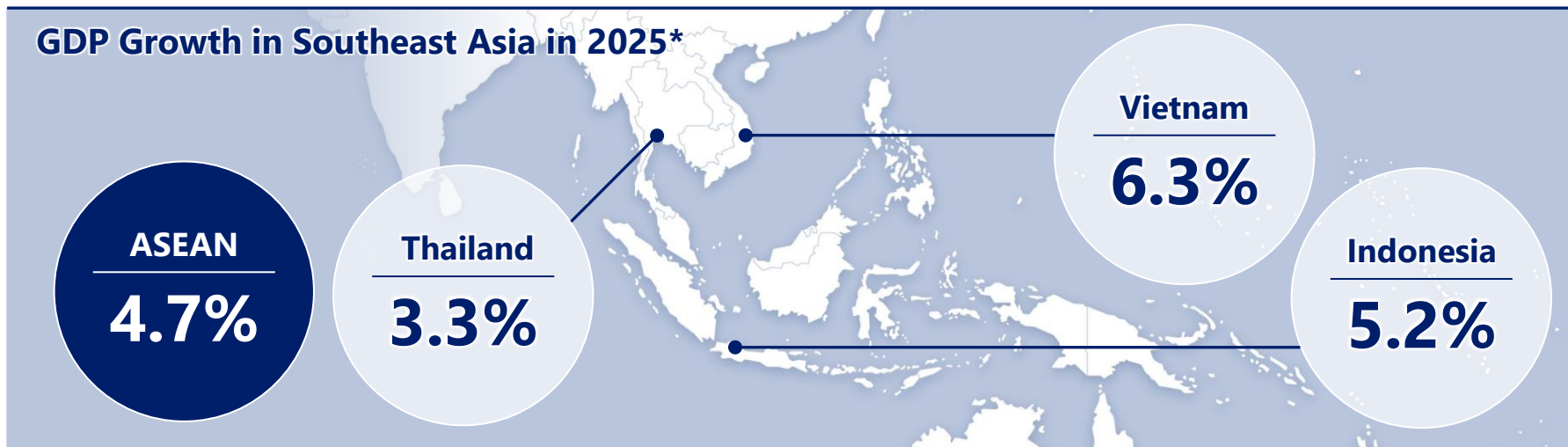
- Expanding business in Southeast Asia and Japan
- Expanding chlor-alkali business in the growing Southeast Asian market

Chlor-alkali product production capacity by site

(Unit: 1,000 tons)



- Demand for caustic soda and PVC in Southeast Asia is growing at an average of about 4% a year
- Southeast Asia is projected to continue importing chlor-alkali products
- Large-scale projects for alumina, nickel, etc. are expected to boost demand for caustic soda
- Demand for PVC is expected to grow in tandem with GDP owing to infrastructure investment, etc.





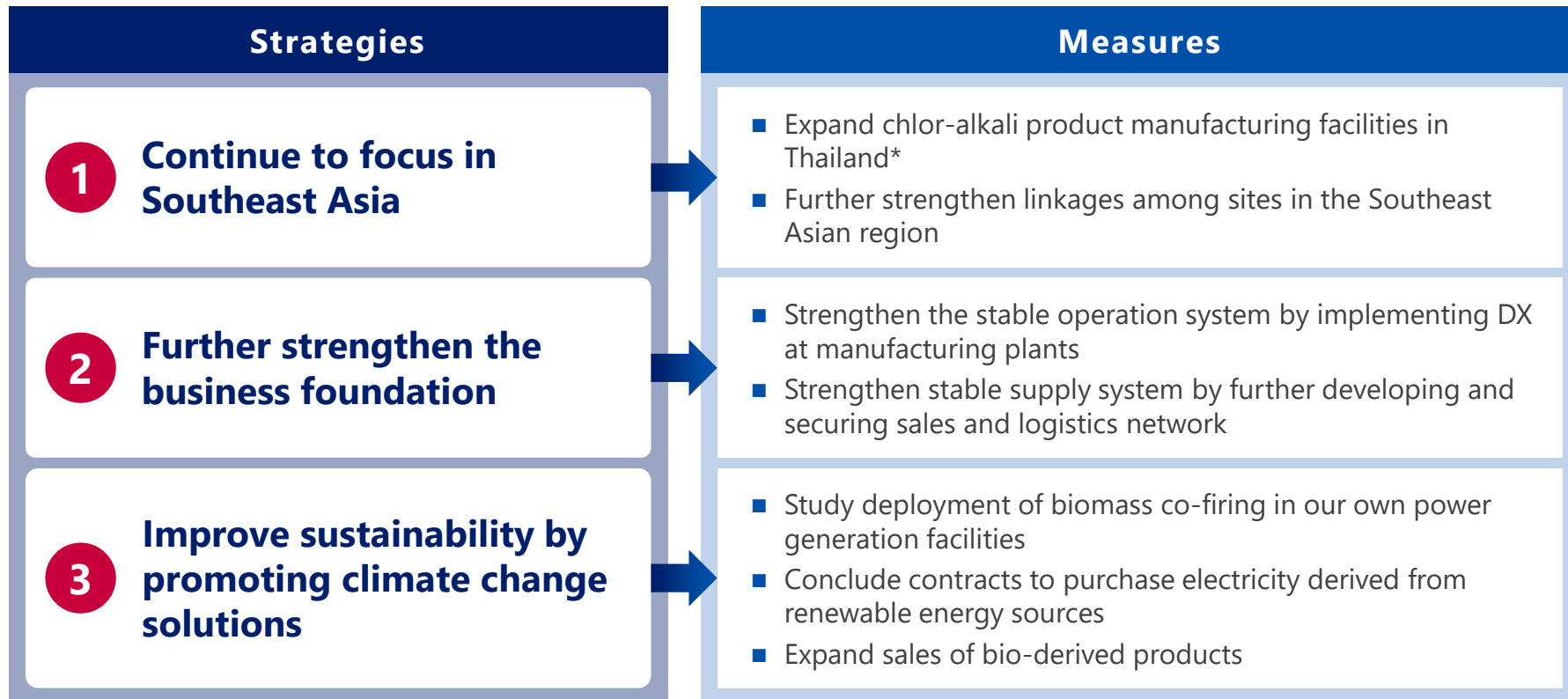
Vision

Contribute to the growth and development of the region by providing a stable supply of products to the growing Southeast Asian market



Strengths

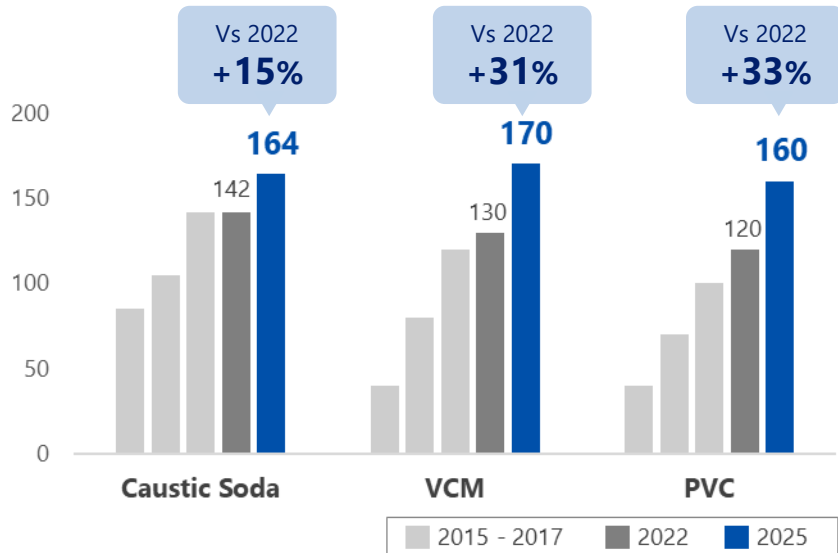
- 1. High market share thanks to the largest production capacity in Southeast Asia**
- 2. Stable sales and supply capabilities through a solid sales and logistics network built over many years**
- 3. Stable production through advanced operational technology**



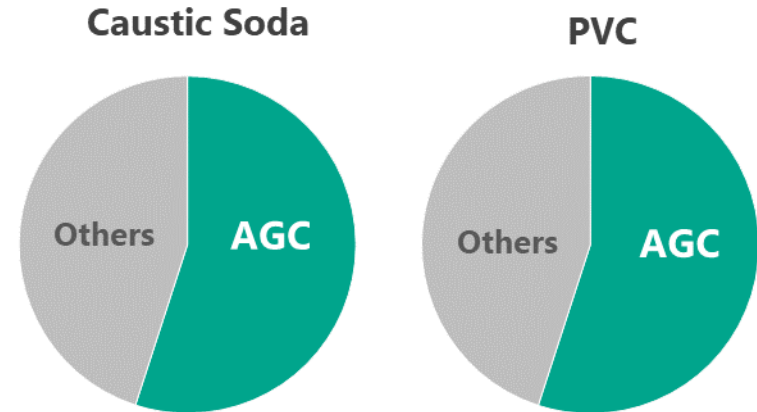
- The undergoing expansion of our plant in Thailand will further enhance AGC's position in Southeast Asia.

Chlor-alkali production capacity in Southeast Asia

(Unit: 10,000 tons)



Market share based on production capacity in Southeast Asia* (after expansion)



* Market share based on production capacity: Caustic soda does not include Australia/NZ in the region, PVC includes Australia/NZ in the region

2. Strategies by Sub-segments

- Essential Chemicals
- **Performance Chemicals**

- Almost all the sales comes from Fluorinated products, many of which have top global market shares.
- Indispensable materials to realize a decarbonized and digital society

ETFE resin (Fluorinated resin)

No. 1 Globally*



Main applications: Electric wires, tubes, lining and coating materials

ETFE film



Main applications: Releasing films for membrane structures and electronics

Fluorinated electrolyte polymer for fuel cells



No. 1 Globally*

Ion-exchange membrane for chlor-alkali electrolysis



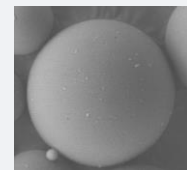
No. 1 Globally*

Fluoropolymers for on-site coating



No. 1 Globally*

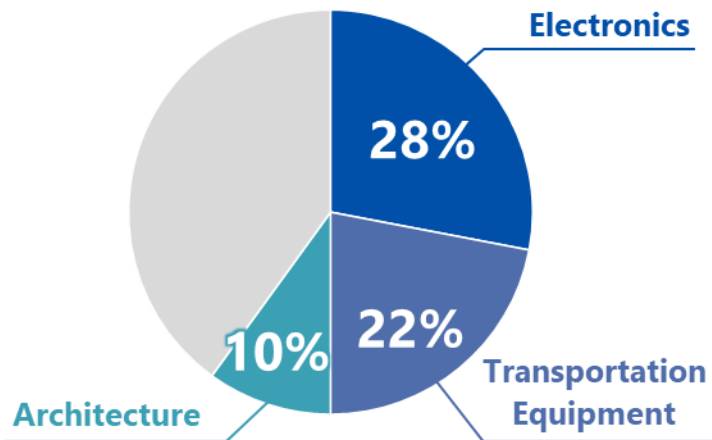
Fine silica



Main applications: Cosmetics, analytical equipment, electronic materials, coatings

- About 60% of the demand is in the sectors of transportation equipment and architecture; where the products are mainly applied in electronics, automobiles, aircraft, etc.
- The remainder consists of diverse and specialized sectors

Sales ratio by application (2022)



Electronics



Transport Equipment



Architecture





Vision

Contribute to the realization of a sustainable society and grow by further deepening and developing the technologies AGC has cultivated through addressing environmental and other social issues



Strengths

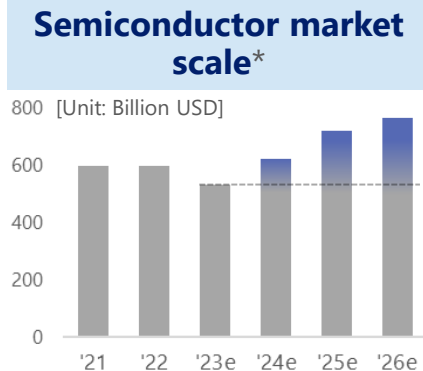
- 1. Global niche strategy aiming for No. 1 in specific markets with high profitability**
- 2. Global network of manufacturing, sales, and product development functions**
- 3. Ability to develop new products and technologies to meet the needs of cutting-edge fields**

Performance Chemicals | Strategy and Measures (Semiconductor-related Products)

- As semiconductors become highly functional, the materials' specifications become more sophisticated. Growing demand for fluorinated products with special properties
- Developing new products and technologies to support even higher speed and capacity in telecommunications

Strategies

Stably supply existing products to the semiconductor market, which is expected to expand, and enhance presence through the introduction of new products



Measures

Increase manufacturing capacity for high-performance resin products in Japan**

Increase manufacturing capacity of fluorinated products at the Chiba Plant to address robust demand, especially for semiconductor-related applications

Investment	Approx. 35 billion yen
Scheduled to start operation	2Q 2025

Launch products that meet market demand

Fluon+™ EA-2000 as a PCB material, silica products as inorganic fillers, etc.

* Graph created by AGC based on Gartner data. Gartner®, Semiconductors and Electronics Forecast Database, Worldwide, 3Q23 Update, Rajeev Rajput et al., 4 October 2023, Semiconductor Revenue by Electronic Equipment basis.

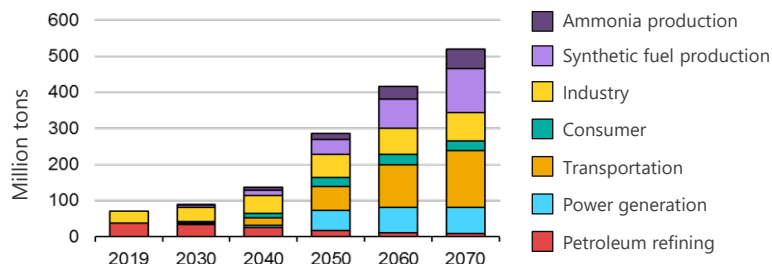
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- In anticipation of the coming hydrogen society, we will supply materials that demonstrate superior performance in the production of hydrogen producing water electrolysis devices and fuel cells that use hydrogen.

Strategies

Establish an overwhelmingly No. 1 position in fluorinated electrolysis polymers for fuel cells and ion-exchange membranes for hydrogen production

Trends in hydrogen demand*



Hydrogen-related: Including synthetic fuels through ammonia, methanation, etc.

Measures

Building a new production facility to manufacture fluorinated ion-exchange membranes suitable for producing green hydrogen**

- Establish a new manufacturing facility at Kitakyushu site as the third domestic chemical site
- Investment of approx. 15 billion yen
- Scheduled to be operational in 2Q 2026



Performance Chemicals | Conceptual Image of Medium- to Long-term Earnings

- In addition to existing applications, we aim to capture cutting-edge needs and achieve sales of 300 billion yen or more by 2030

Performance Chemicals: Sales image

[Unit: 100 Million yen]

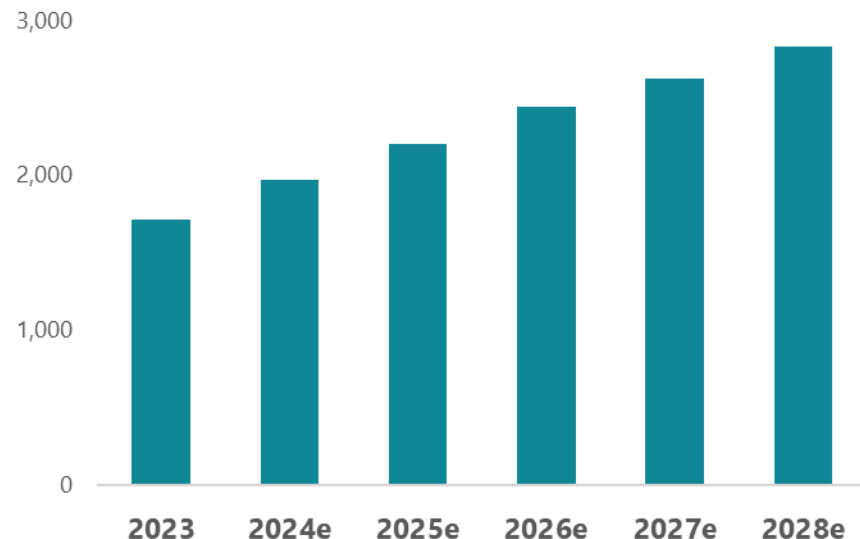
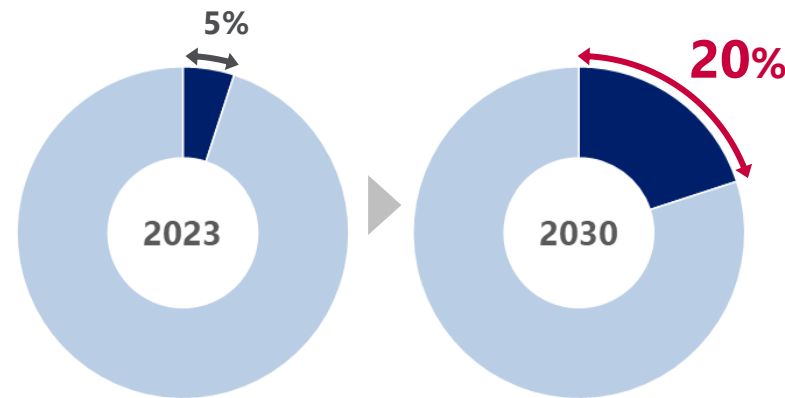


Image of sales ratio of new product families related to semiconductor and hydrogen



■ New product families related to semiconductor and hydrogen

■ Other product families

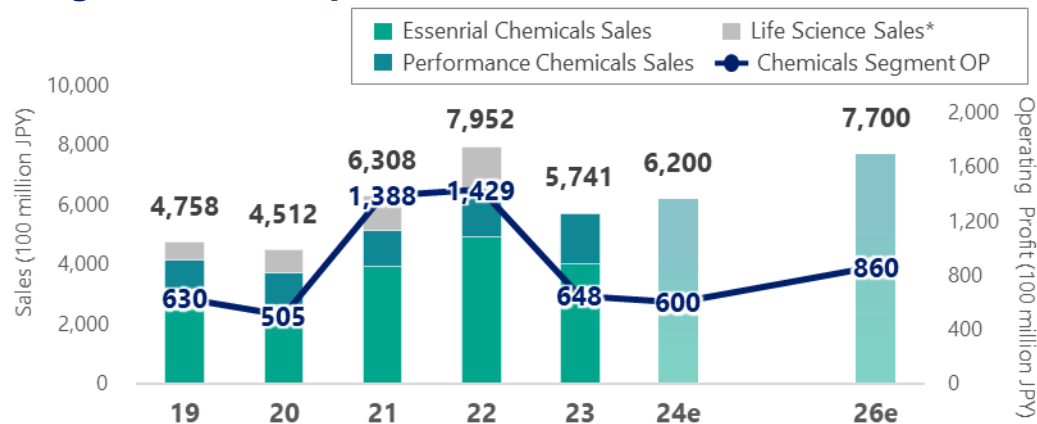
3. Performance Targets



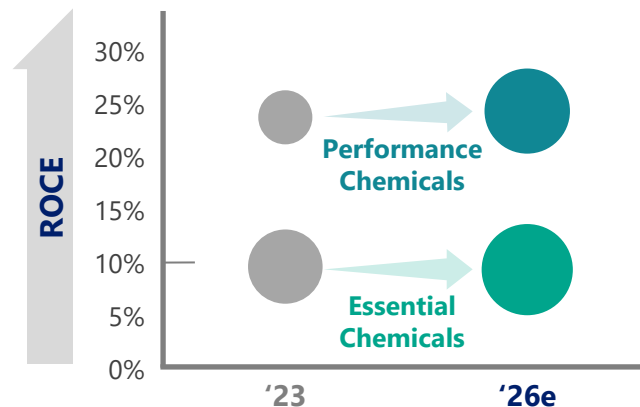
Chemicals Segment Performance Targets

- Essential Chemicals will maintain its strategy to put focus in the growing market of Southeast Asia.
- Performance Chemicals will provide high-performance materials for electronics, including semiconductors, and environmental and energy fields. We will capture demand in global niche markets through the provision of further added value and business domain expansion.
- By 2026, realize operating income of 86 billion yen and maintain ROCE of about 10% in Essential Chemicals and more than 20% in Performance Chemicals

Image of business performance

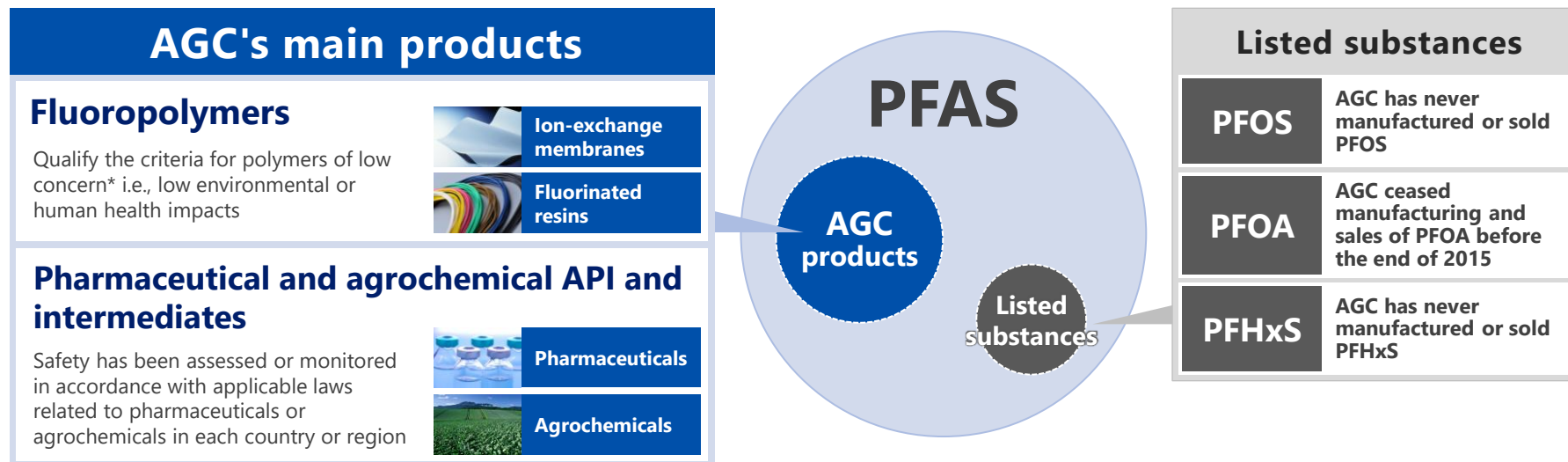


Change in ROCE and EBITDA**



4. PFAS Regulations

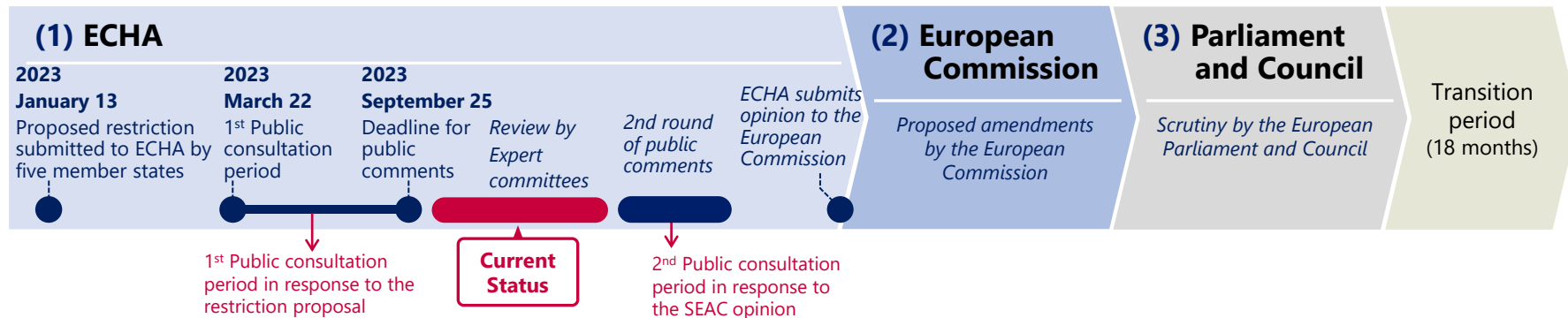
- Of the PFAS (umbrella term for approximately 12,000 types of fluorine compounds), three substances are listed as Persistent Organic Pollutants under the Stockholm Convention, and AGC does not currently handle any of these listed substances.
- To fulfill its corporate social responsibility, AGC Group is working to minimize environmental impacts resulting from our business activities and contribute to resolving global environmental issues through our products, based on scientific evidence.



- The expert committees of the European Chemicals Agency (ECHA) is currently reviewing the proposal of the universal PFAS restriction.
- The ECHA's review process is taking time due to the significant number of public comments received, and the timing of the second public consultation and the time frame for the subsequent regulatory process is currently unclear.
- AGC Group has submitted our public comments for the 1st public consultation.

Review process of the proposal of the universal PFAS regulation in Europe

- (1) After two rounds of public consultation by ECHA, the expert committee submits their final opinion
- (2) The European Commission prepares a draft regulation referring the final opinion submitted, and the REACH Committee, consisting of member states, deliberates on and adopts the draft.
- (3) The adopted legislation enters into force after being scrutinized by the European Parliament and Council



5. Appendix

Capital Investment Projects in the Chemicals Segment

- We aim to further expand our business by intensively investing in growth areas.

Products	Capital investment details	Investment	Scheduled to start operation
Caustic soda, PVC (Thailand)	<ul style="list-style-type: none"> ■ Increasing production capacity for chlor-alkali products at two sites in AGC Vinythai Public Company Limited, an integrated chlor-alkali company in the Indochina Peninsula ■ Largest capital investment ever made by the AGC Group 	Over 100 billion yen	1Q 2025
Fluorine-related products (Chiba, Japan)	<ul style="list-style-type: none"> ■ Expanding the production capacity of high-performance resin products at the Chiba Plant to meet brisk demand for semiconductors and other products 	Approx. 35 billion yen	2Q 2025
Fluorine-based ion-exchange membranes (Kitakyushu, Japan)	<ul style="list-style-type: none"> ■ New manufacturing facility for the FORBLUETM S series fluorine-based ion-exchange membrane suitable for green hydrogen* production ■ Will be the third domestic chemical site following the Chiba and Kashima plants 	Approx. 15 billion yen	June 2026

* Hydrogen produced using renewable energy and without CO₂ emissions in the manufacturing process
(Source: Agency for Natural Resources and Energy; Ministry of Economy, Trade and Industry website)

- Further earnings growth through steady demand growth in each application, mainly in Europe and the U.S., as well as increased demand and expansion of new applications in the electronics, transportation equipment, construction, energy-related and other fields, mainly in emerging countries

Demand sector		Current status	Future demand outlook
Electronics	Semi-conductor	Semiconductor cycle has bottomed out and demand is gradually recovering	Continued growth due to strong demand for 5G-related products and data centers.
Architecture		Slumping demand due to high interest rates, soaring material prices, real estate market conditions in China, etc.	Demand to remain firm over the long term due to growing environmental awareness
Trans- portation equipment	Automobile	Recovery to 2019 level and demand expansion due to the shift toward EVs	Demand remained strong
	Aircraft	Recovering from the impact of COVID-19	Demand is expected to exceed 2019 levels by the end of 2024 and is expected to grow steadily thereafter

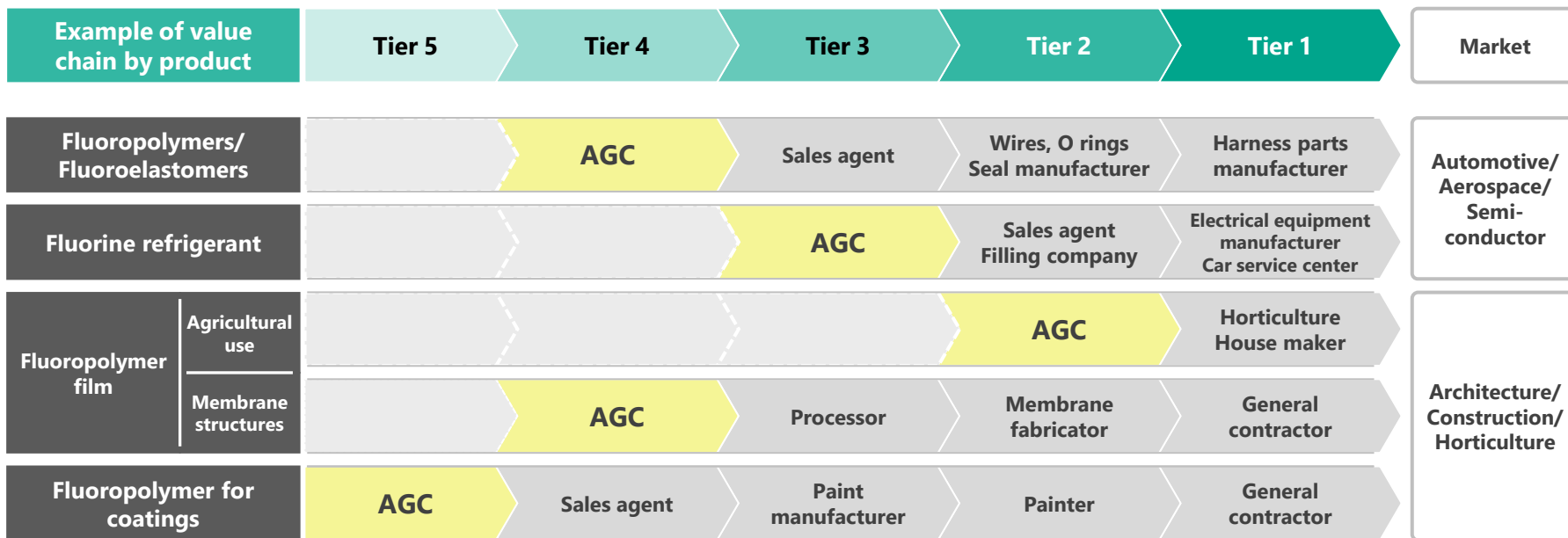
Performance Chemicals | Excellent Characteristics of Fluorochemicals

- Our products with two or more superior characteristics differentiate them from rivals and are used in a wide range of industrial fields
- We continue to develop new markets with the technology to control characteristics

Major characteristics and sample applications for fluorochemicals		Heat resistance Resistance to cold	Chemical resistance	Weatherability Durability	Water and oil repellency Anti-stick properties	Mechanical characteristics	Electrical characteristics	Optical characteristics
Automobiles Transport equipment	Oil filters	●			●			
	Wire covering/fuel hoses	●				●		
	Oscillation components	●	●	●	●		●	
	O rings	●	●	●				
Electronics Tele-communications	Semiconductor packaging	●			●		●	
	Semiconductor manufacturing equipment components		●	●				
	Optical lenses				●			●
	Touch panels			●	●			
	Film for LED production processes				●			
	Printed circuit boards				●			
	Wire covering	●		●		●	●	
	OA equipment components	●			●			
Architecture materials	Coatings			●	●			
	Interior/exterior materials			●	●			
	Metal construction material coatings			●	●			
	Roof/exterior wall/membrane structures			●	●			
Energy	Solar cell materials			●			●	
	Power plant cables	●	●			●		
Infrastructure Plants	Bridge/steel tower coatings			●				
	Chimney/pipe sealing		●	●				
Industrial materials	Various sealants	●	●					
	Tubes/hoses	●	●					
Medical & lifestyle industries	Surgical gowns/medical masks				●			
	Food packages/containers				●			

Performance Chemicals | Positioning in the Supply Chain

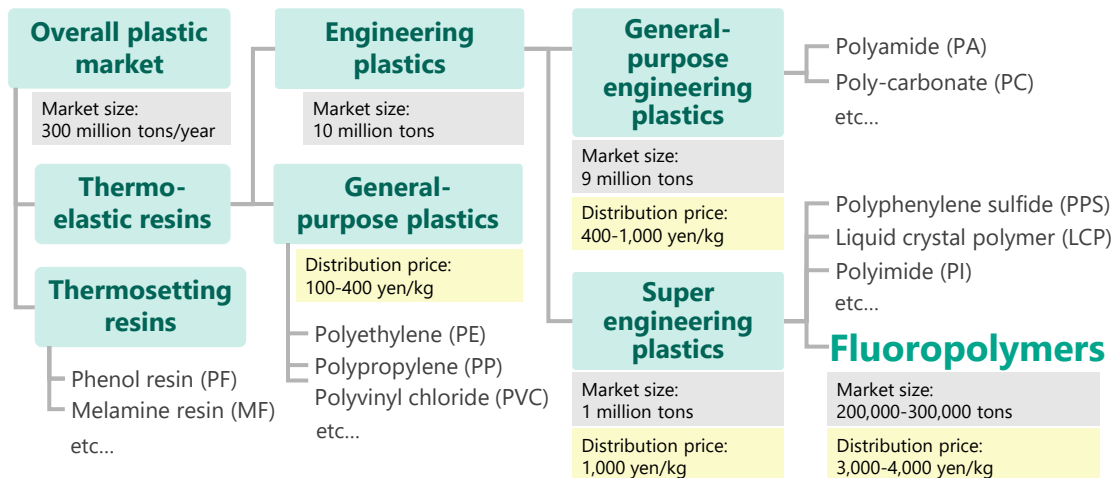
- These products are positioned in the upstream of the supply chain, and are difficult to be recognized from the final consumer product side
- Market demand trends tend to appear late



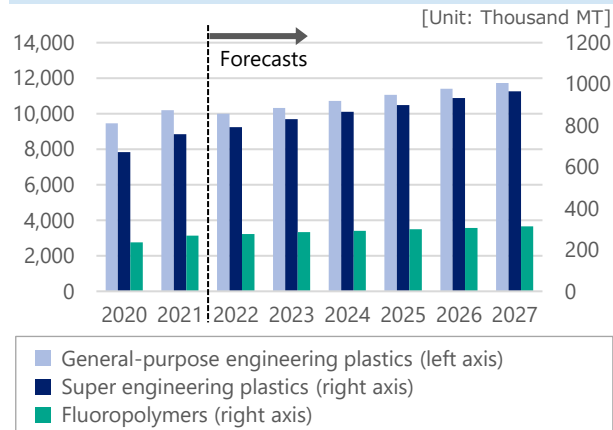


- Fluoropolymers, AGC's mainstay product, are used in applications with special physical properties and have a high sales price level
- Due to the increasingly sophisticated final products in growing markets such as automobiles and semiconductors, the required specifications for materials have become more sophisticated, and the market is expanding.

Fluoropolymers in the resin market



Engineering plastics and fluoropolymer market trends


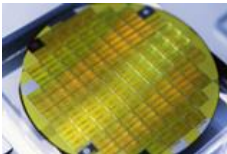




Source: Fuji Keizai, "2023 Engineering Plastic Market Outlook and Global Strategy" (Part 1 and 2)

- Globally offering functions for manufacturing, marketing, technical service and product development
- Considering to build strategy planning teams in each area to focus on initiatives for medium- to long-term themes



- Increasing market requirement of higher specifications for materials in growth markets such as hydrogen and semiconductors with higher product functionality
- Developing new products and technologies with fluorine technology cultivated over many years to meet needs

	Hydrogen business	Semiconductor business
Consumer goods	<ul style="list-style-type: none">■ Hydrogen power generation■ Alternative fuel feedstock■ Fuel-cell vehicle 	<ul style="list-style-type: none">■ High-speed and high-capacity communications■ Millimeter wave band utilization expansion 
Required technology	<ul style="list-style-type: none">■ Water electrolysis devices to produce hydrogen■ Fuel cells requiring hydrogen	<ul style="list-style-type: none">■ Achievement of low dielectric constant and low dissipation factor of dielectric materials, reduction of transmission loss
Necessary materials	<ul style="list-style-type: none">■ Electrolytic membrane for water electrolysis■ Electrolyte polymer solution for fuel cells 	<ul style="list-style-type: none">■ Silica products as inorganic filler and EA-2000 as printed circuit board material 

Products Expected to Grow in the Future:

(1) Fluorinated electrolyte polymers for fuel cells



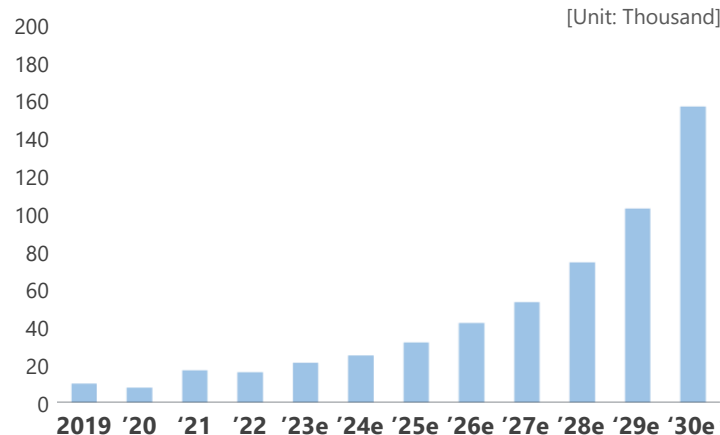
- Demand growth is accelerating due to the diffusion of fuel cell vehicles and technological development toward the realization of a hydrogen society.
- AGC supplies **fluorinated electrolyte polymers for fuel cells**, which are indispensable for fuel cells
- High quality that combines high power generation performance and durability achieved by differentiated technological capabilities to establish an **overwhelming No. 1 position**



AGC Group's Strengths

Issues with conventional products	AGC Group's Strengths
Battery cooling required due to insufficient thermal resistance of electrolytes	Developed electrolyte with excellent heat resistance
Electrolyte degradation during power generation	Durability is also dramatically improved by AGC's original technology (NPC* technology)
Increased cost due to the use of platinum as a catalyst	Molecular design technology that significantly reduces platinum usage

Fuel cell vehicle production volume **



Products Expected to Grow in the Future: (2) Fluorinated sulfonate ion-exchange membranes



- Growing demand for electricity derived from renewable energy accelerating introduction of water electrolysis devices for hydrogen production
- AGC has integrated its electrolyte technologies for fuel cells and ion-exchange membrane technologies for chloroform electrolysis to supply electrolyte membranes for water electrolysis with the **world's highest efficiency and safety performance**



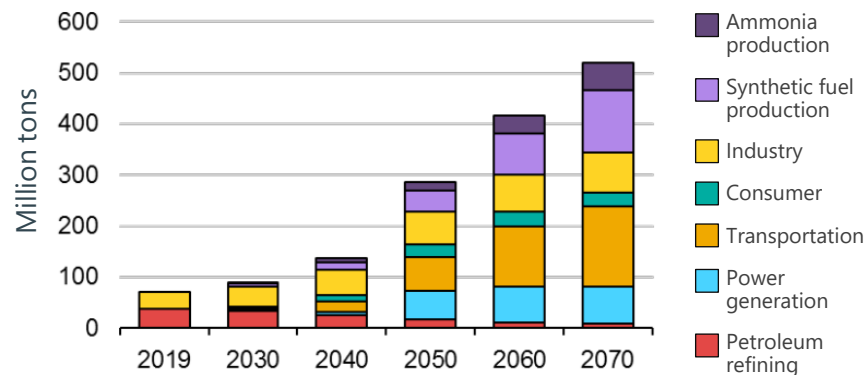
AGC Group's Strengths

Minimal electrical resistance, which improves efficiency of water electrolysis

Low hydrogen leakage, suitable for safe operation of water electrolysis

Excellent handling and dimensional stability due to reinforced body

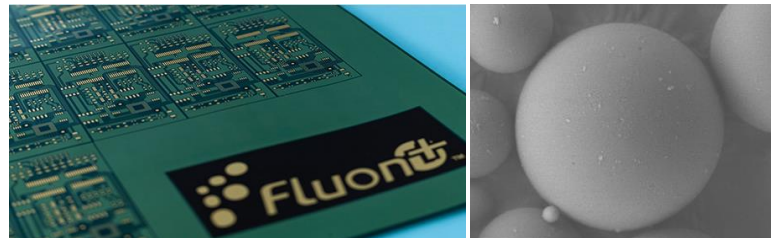
Trends in hydrogen demand *



* Hydrogen-related: Including synthetic fuels through ammonia, methanation, etc.

(3) Fluon+™ EA-2000 / Silica for inorganic fillers

- As communication speeds and capacities increase, there is a need for substrate materials with low dielectric constant, low dielectric dissipation factor, and reduced transmission loss



AGC Group's Strengths

Fluon+™ EA-2000

Unique characteristics of low-dielectricity fluoropolymer with adhesive properties, enabling printed circuit boards with composite low-transmission-loss materials

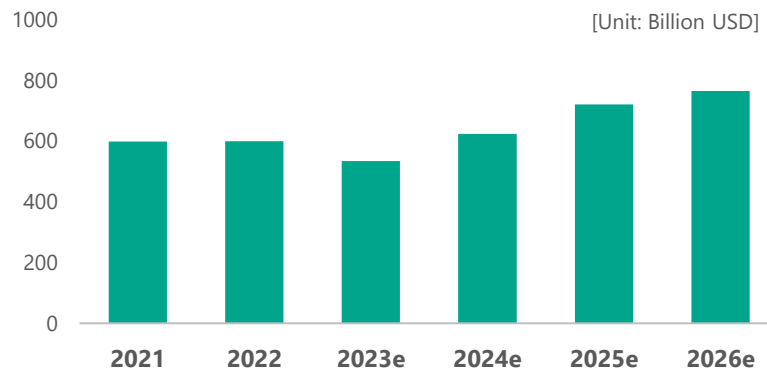
Available in various forms such as powders, films, and dispersions according to customer needs

Silica for inorganic fillers

Lowest dielectric constant and dissipation factor in the industry with AGC's proprietary silica technology

Available in a wide range of applications, including printed circuit boards and semiconductor sealants

Semiconductor market size*



* Chart created by AGC based on Gartner data. Gartner®, Semiconductors and Electronics Forecast Database, Worldwide, 3Q23 Update, Rajeev Rajput et al., 4 October 2023, Semiconductor Revenue by Electronic Equipment basis.

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Fluorinated resin Fluon® ETFE

- Fluoropolymers **with ease of forming and fabrication while keeping the excellent characteristics** of fluorine. **Widely used in diverse and specific industrial fields**, namely transport equipment, electronics, construction, and energy.
- Extrusion molding, injection molding, and powder coating are possible. **Used in severe usage environment where thermal resistance, chemical durability, insulation, etc. are required** such as wire coatings, tubes, and coating materials.
- With ETFE, film fabrication is also easy. **Used as a mold-releasing film for membrane structure materials and other various fields**

Materials



Pellets



Powders

Fabrication materials



Wire coatings



Lining/coating products



Transfusion tubes



Transfusion tubes



Membrane structure material/
Mold releasing film

Industrial fields



Automobile



Train



Semiconductors



Aircraft



Electronic equipment



Energy



Membrane structures



Protected horticulture

Characteristics and strengths of the ETFE business

Total solution provider of ETFE



- Trust built up for 50 years since the start of sales
- **Global sales share of 70% or more**
- Overwhelming manufacturing capacity



- **Comprehensive production from raw material resin**
- Full line-up of products including for industrial mold-releasing and surface protection through membrane structure materials as the No.1 ETFE film supplier



- **Grant and extra functions to expand application domains**
- Adhesive series with adhesiveness
- MPC (Melt Processable Compounds) series with functions added thanks to filler

- In 2021, enhanced the manufacturing capacity by 1.5 times compared with 2020
- Meet the demand for expanded semiconductor, transport equipment, and electronics/information communication markets, etc.

- Customers considering switch from other fluorinated resin increased in response to recent lack of fluorinated resin other than ETFE
- Already started to consider next production increase as a global top niche supplier

Performance Chemicals | Companywide Strategic Positioning

- Performance Chemicals, which provides high-performance materials for a variety of cutting-edge applications*, is now integrated into strategic businesses.

Core Business

Establishing long-term, stable sources of earnings by increasing competitiveness of each business

Architectural
Glass

Automotive
(Existing)

Display

Essential
Chemicals

Performance
Chemicals

Ceramics

Strategic Business

Create and expand highly profitable businesses that will become future pillars by using AGC's strengths in high-growth fields



Electronics



Mobility



Life Science

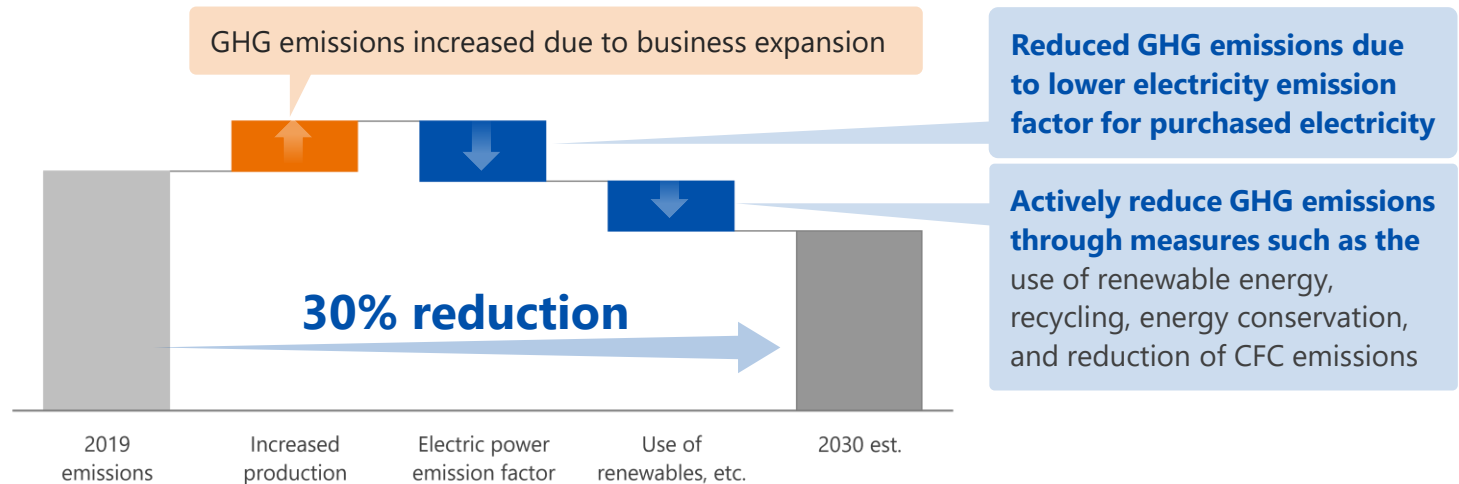
Performance
Chemicals

New

* Environment and energy, electronics including semiconductors, mobility, life sciences, etc.

- Undertaking initiatives to reduce GHG emissions globally, including domestic and overseas subsidiaries
- Despite the increase in emissions due to business expansion, AGC has drawn a roadmap for a 30% reduction in GHG emissions (Scope 1+2) in 2030 (versus 2019) through the use of renewable energy and other measures.

Image of future trends in GHG emissions (Scope 1+2)



Contributing to a Sustainable Society

1

Promote development of products and technologies that contribute to GHG emission reductions

Fluorine-based ion-exchange membranes for PEM water hydrolysis



Fluorine-based ion-exchange membranes for PEM water hydrolysis



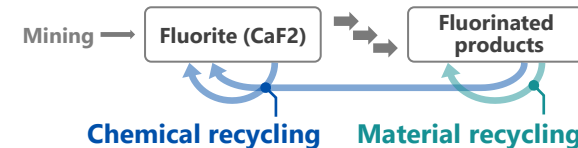
2

Reduce use of newly mined resources by extending product life and recycling activities

Green house film



Effective use of fluorine resources



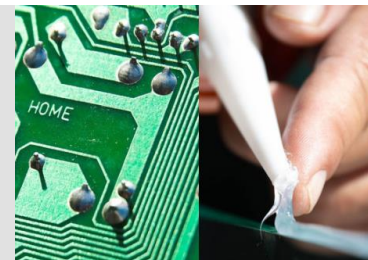
Contributing to a Sustainable Society

3

Contributing to the reduction of GHG emissions generated from the entire life cycle through the introduction of bio-based feedstock



Epichlorohydrin, a bio-derived raw material for epoxy resins



4

Studying GHG emission reduction through the introduction of carbon neutral fuels

P.T. Asahimas Chemical
Studying the use of PKS co-firing for own thermal power generation



5

Actively promoting mangrove planting activities and coral reef conservation activities in Southeast Asia

AGC Vinythai
Coral reef conservation project



Examples of Social Value Provided by the Chemicals Business

- Contribute to all three areas of social value through all products and technologies

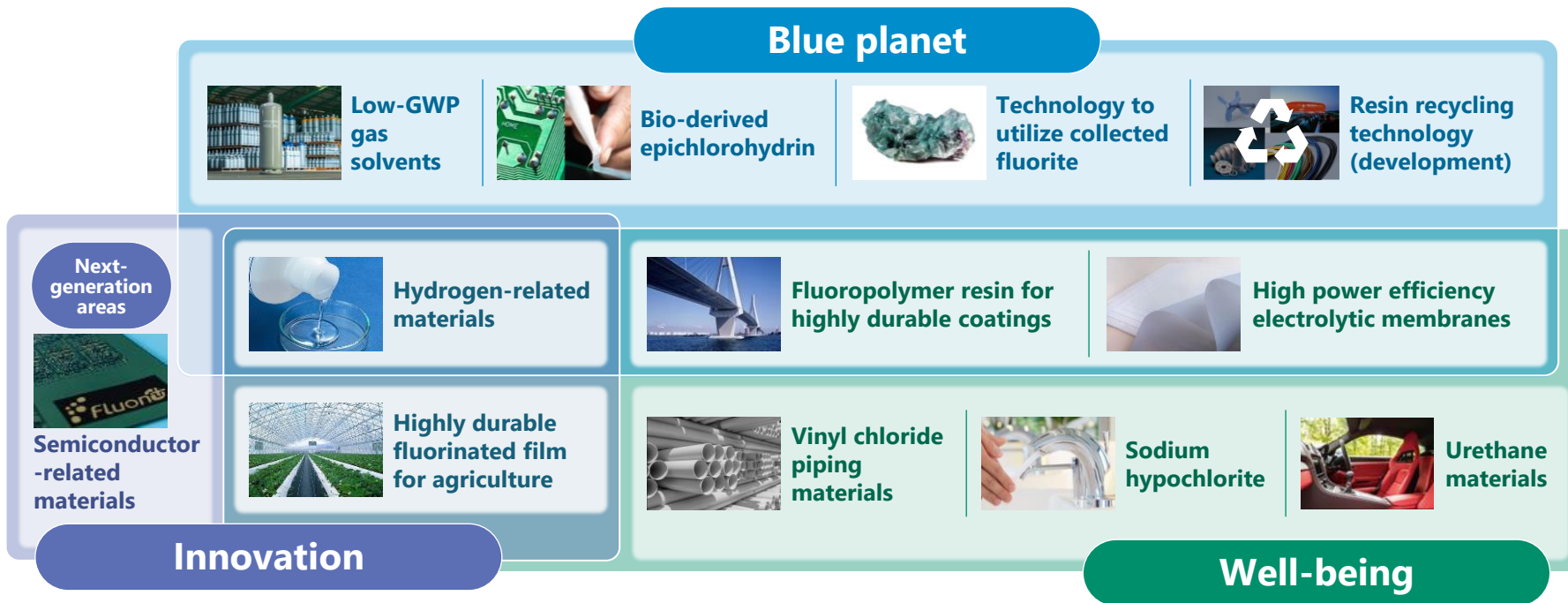
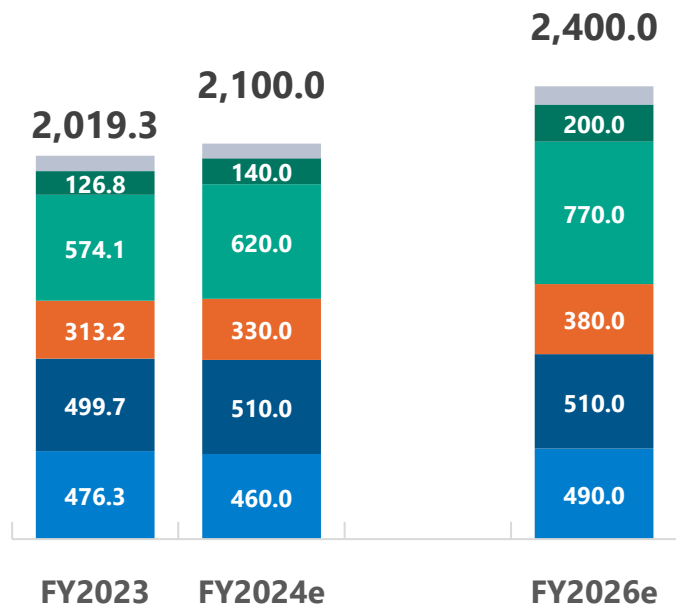
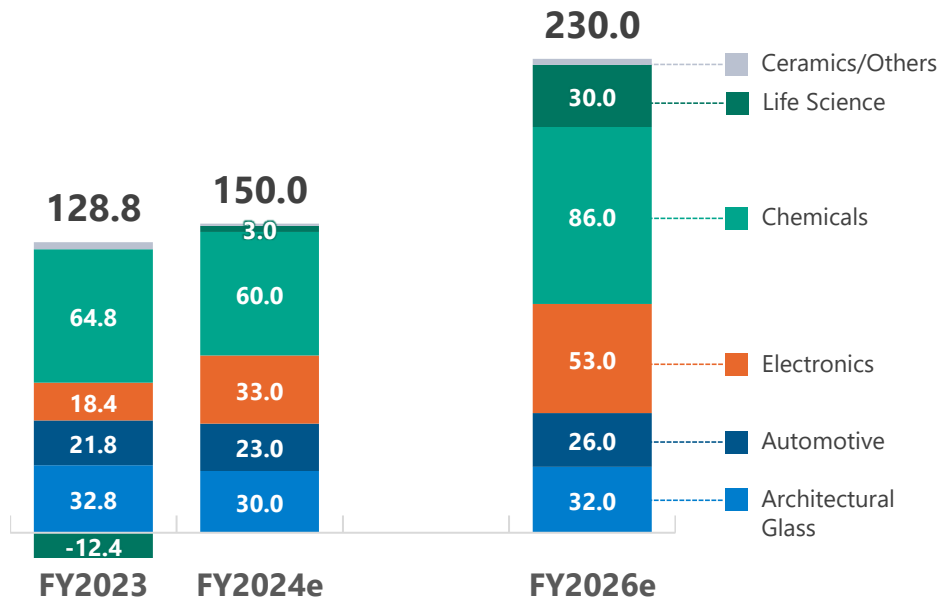


Image of Performance by Segment

Net sales (Billion yen)

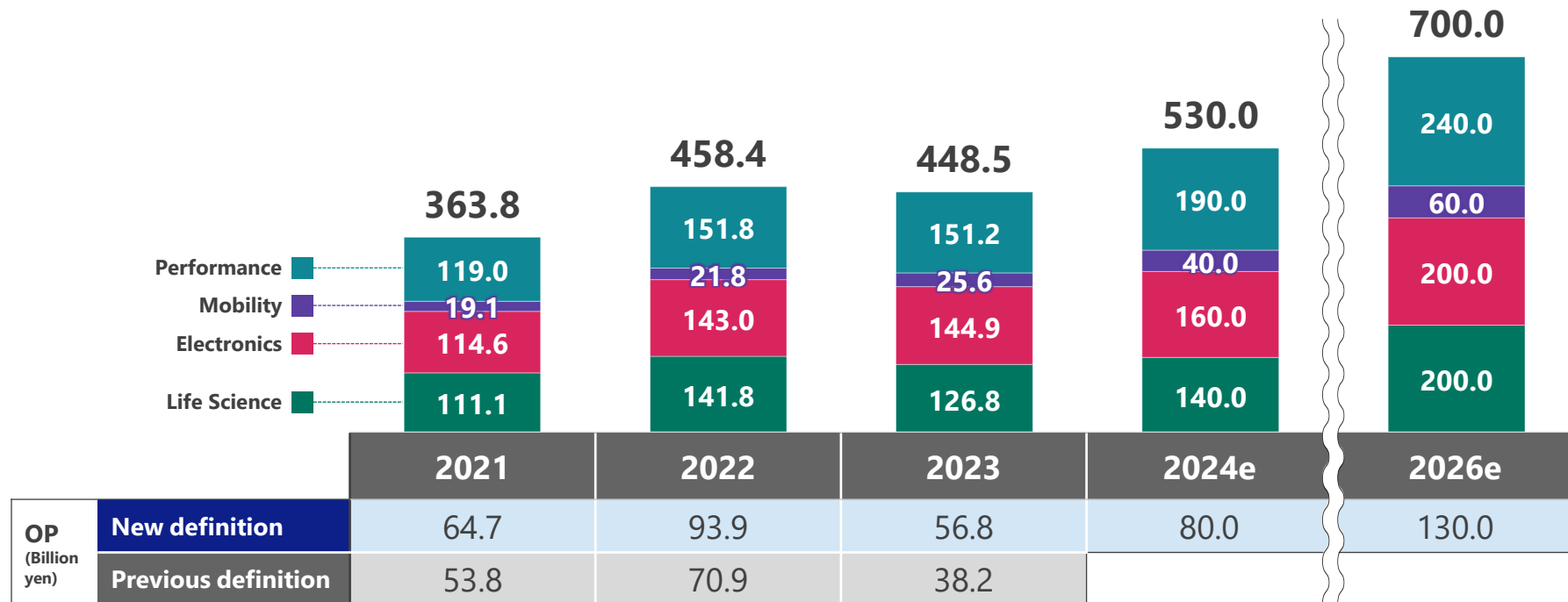


OP (Billion yen)



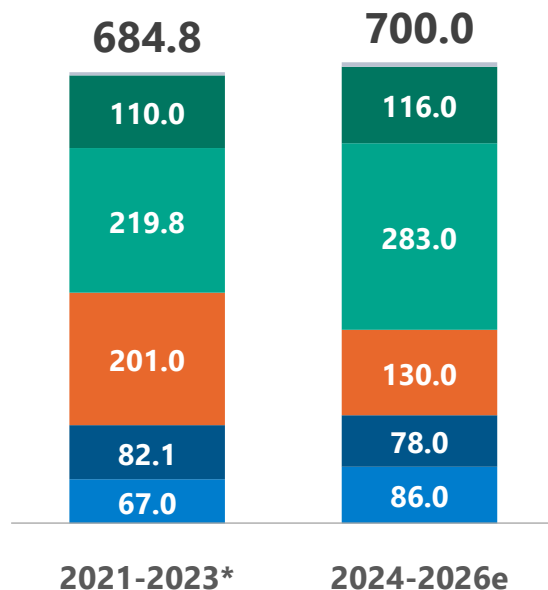
Strategic Business Performance Image

Strategic business net sales (Billion yen)

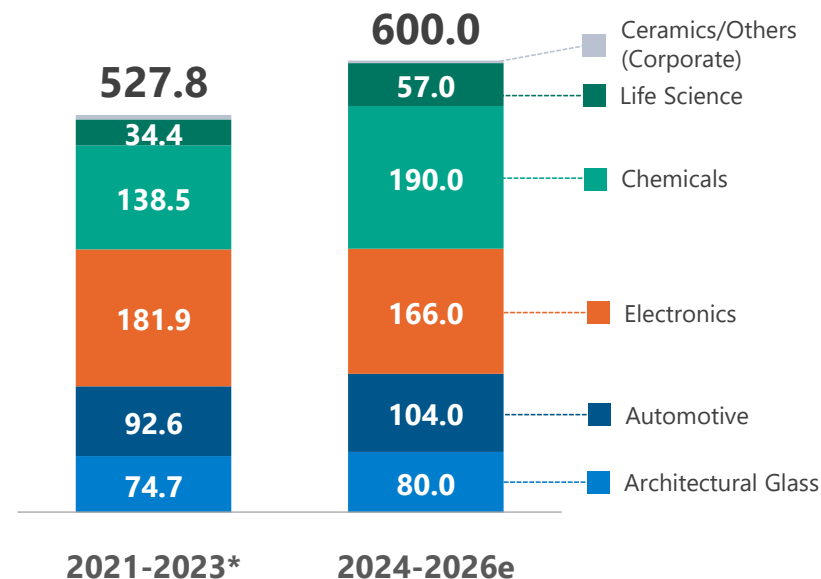


AGC plus-2026 CAPEX and Depreciation & Amortization

CAPEX (Billion yen)



Depreciation & amortization (Billion yen)

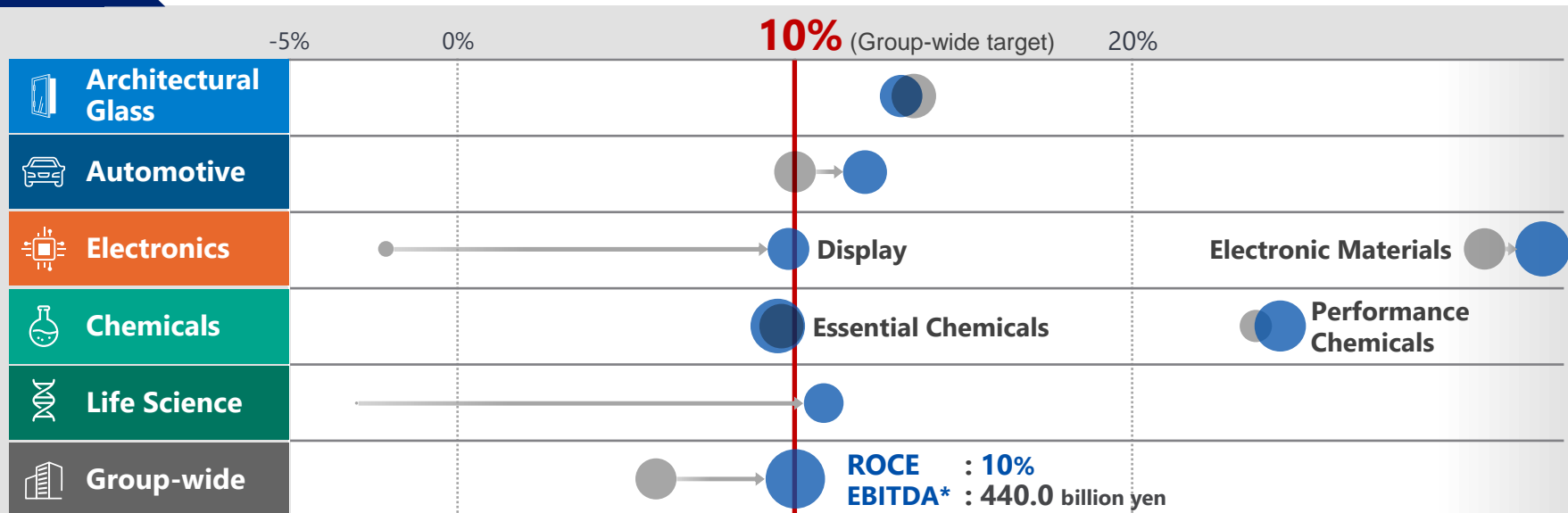


ROCE of Each Business

- We will continue to aim for a Group-wide ROCE of **10% or higher**

ROCE

● 2023 Actual vs ● FY2026 Projection



ROCE : (OP forecast of the year) ÷ (Operating asset forecast at the year-end),

Group-wide OP by business is after allocation of common expenses; OP for each business is before allocation of common expenses

Diameter of each circle (excluding those of the group-wide section) : the size of EBITDA * **EBITDA** = Operating profit + Depreciation

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Your Dreams, Our Challenge