

IR DAY 2022



Chemicals

AGC Inc.

June 16, 2022

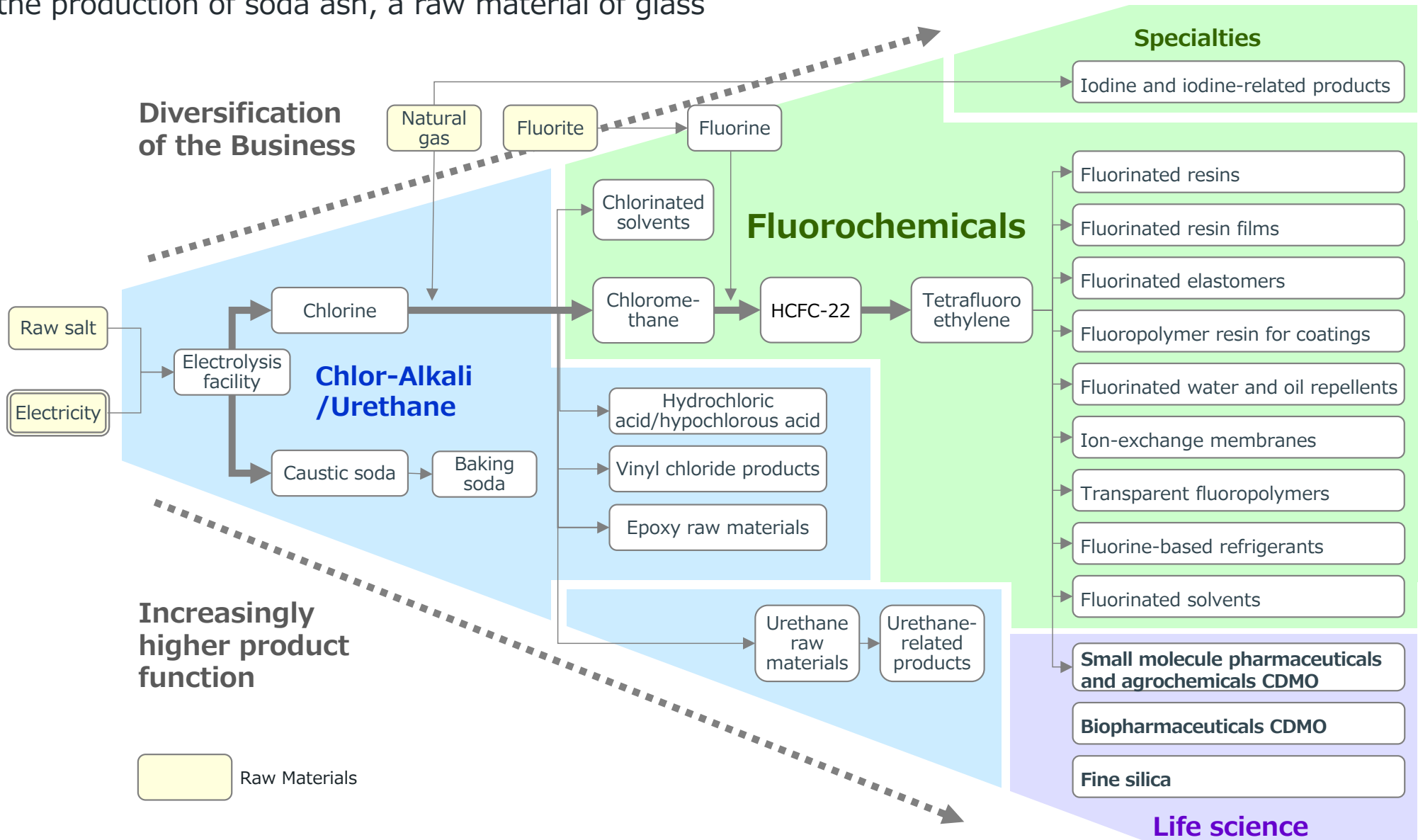
Your Dreams, Our Challenge

- Overview of the Chemicals Business
- Strategies for Major Business Divisions
 - Chlor-alkali
 - Fluorochemicals & Specialty Chemicals
 - Life science
- Solutions to Sustainability Issues

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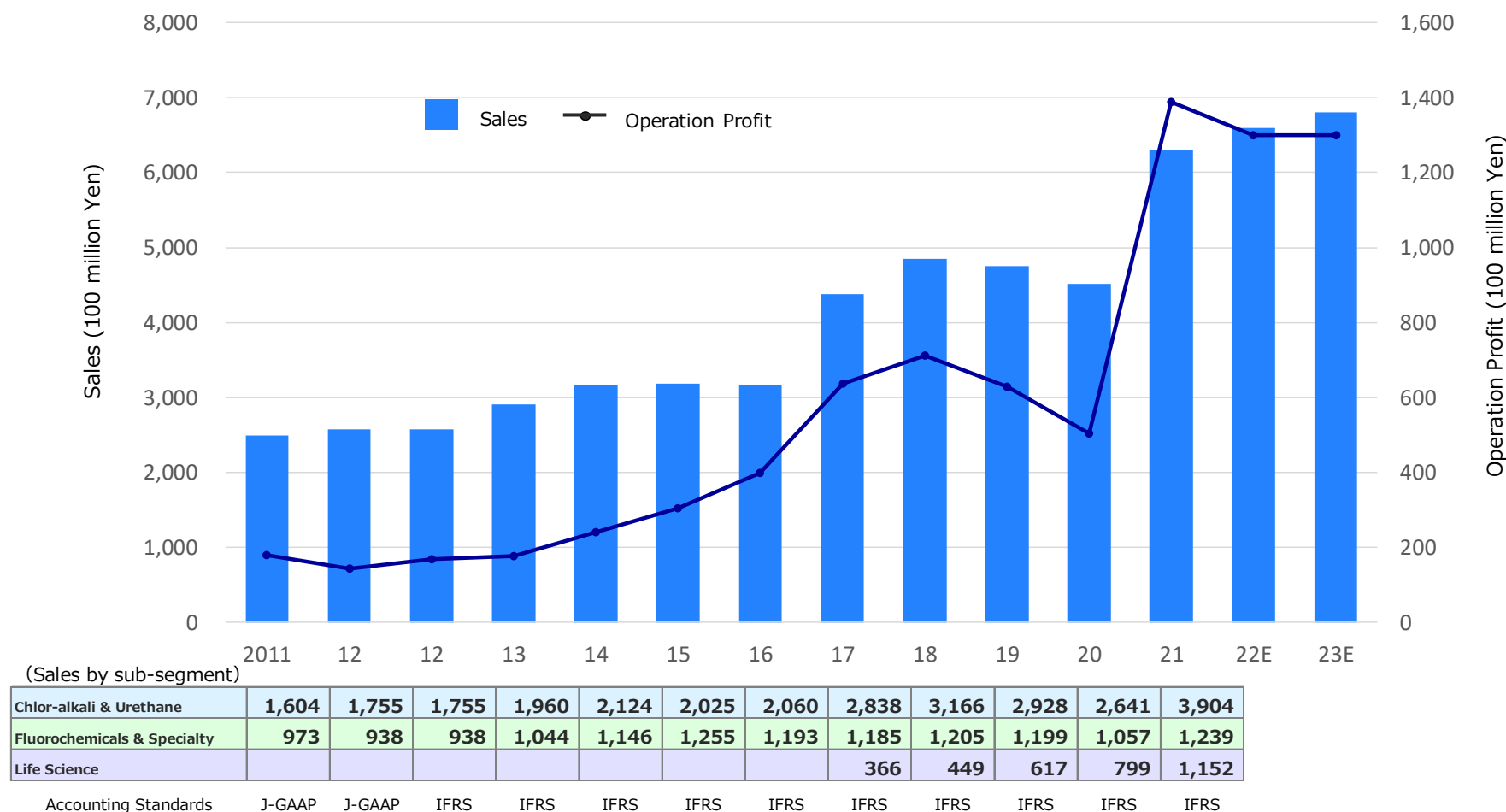
The AGC Group's Chemical Chain

- The AGC Group has developed its unique chemical chain formed over 100 years, which is originated from the production of soda ash, a raw material of glass



Sales trend

- All sub-segments keep on a growth trend
- The scale of the chemicals business as a whole is expanding thanks to proactive investments mainly in Life Science



*For life science, segment information (net sales) in and after 2017 is disclosed

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Vision of the overseas chlor-alkali business

Stably provide products to the growing Southeast Asia market and contribute to the growth and development of the region



Basic policy

1. Capture the growing demand for Chlor-Alkali Products in Southeast Asia and build a dominant position in that business
2. Maximize the total revenue of the Chlor-Alkali business in Southeast Asia

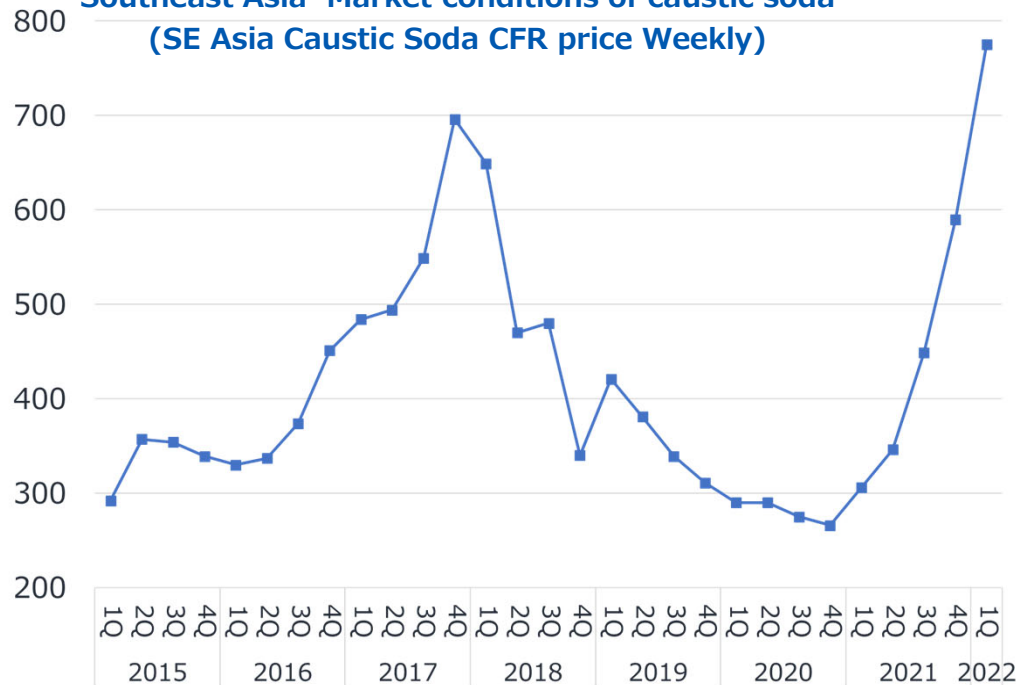
Chlor-alkali business: Change in the market structure

- In and after 2022, the fluctuations in market conditions will get mild but a high level will be maintained
- In terms of supply, the excessive capacity in China will decrease due to the tightening of environmental regulations in China; in terms of demand, the tight supply and demand balance is expected to continue

Market conditions of caustic soda

(US\$/t)

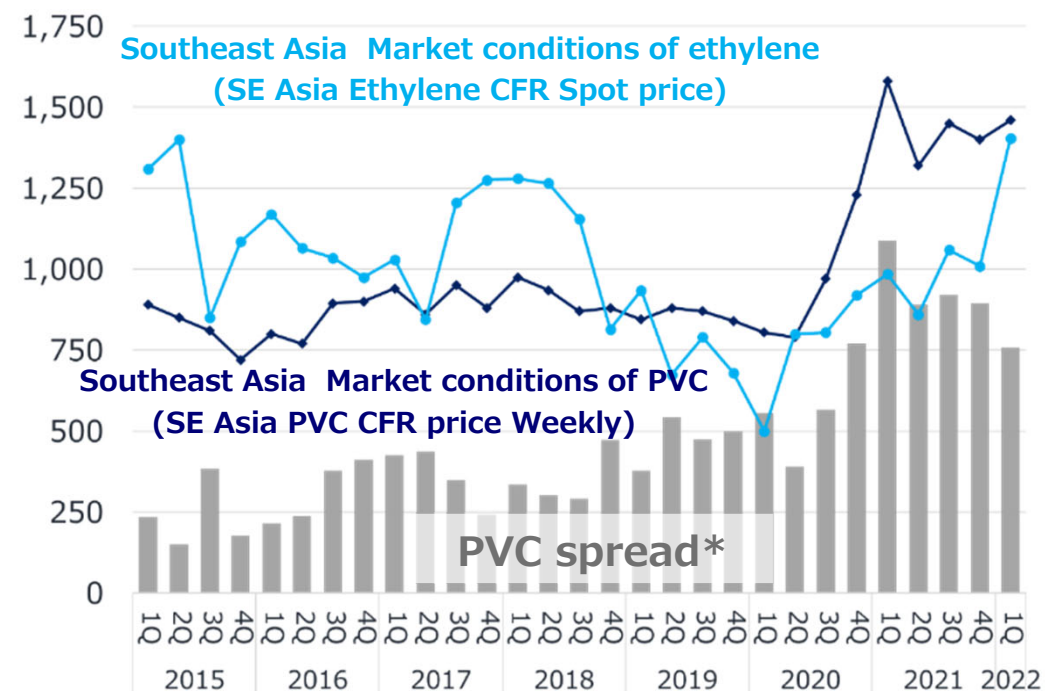
Southeast Asia Market conditions of caustic soda
(SE Asia Caustic Soda CFR price Weekly)



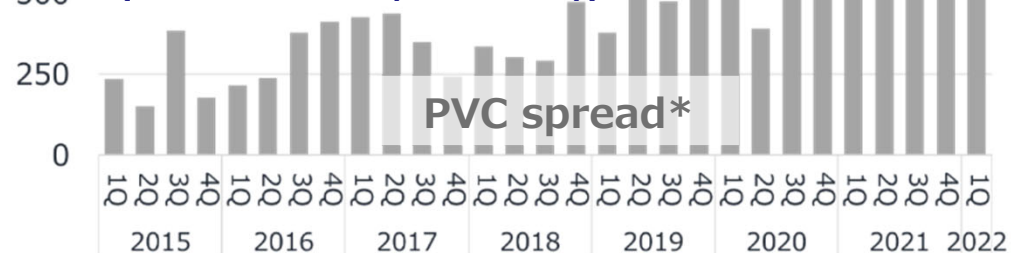
Market conditions of PVC*

(US\$/t)

Southeast Asia Market conditions of ethylene
(SE Asia Ethylene CFR Spot price)



Southeast Asia Market conditions of PVC
(SE Asia PVC CFR price Weekly)



PVC spread*

- The global demand for caustic soda and PVC will increase by about 2-3% per year on average

Supply and demand balance: **Caustic soda**

- Average growth rate of 2015-2025: About 4%
- In addition to GDP, large PJs of aluminum, rayon, etc. increase the demand
- Expansion of the balance of imports from outside the region
→ Keep considering capacity enhancement aiming at a production system of 2 million tons per year

Share in the region in 2022
(based on the production capacity)

Caustic soda: About 50%

Supply and demand balance: **PVC**

- Average growth rate of 2015-2025: About 4%
- Growth depending on GDP is expected thanks to infrastructure investments, etc.
- Expansion of the balance of import from outside the region
→ Keep considering capacity enhancement aiming at a production system of 2 million tons per year

Share in the region in 2022
(based on the production capacity)

PVC: About 50%

- Formulated measures for key factors for success

Taking the demand growth in the ASEAN region as the opportunity for business growth, we are implementing “Southeast Asia regional concentration strategy”

1) Maintain the overwhelming position in the region

- Facility expansion at appropriate timing (including new manufacturing sites)
- Stable procurement of ethylene (raw material)
- Construction of a supply chain

2) Improve technological competence

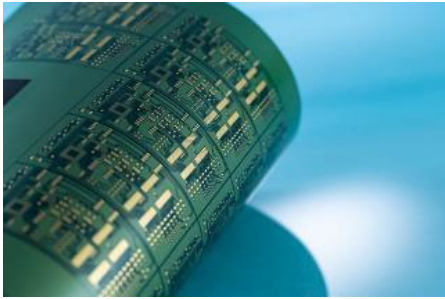
- Improvement in PVC quality and productivity with AGC’s unique technologies

3) Reinforce the business foundation and competitiveness

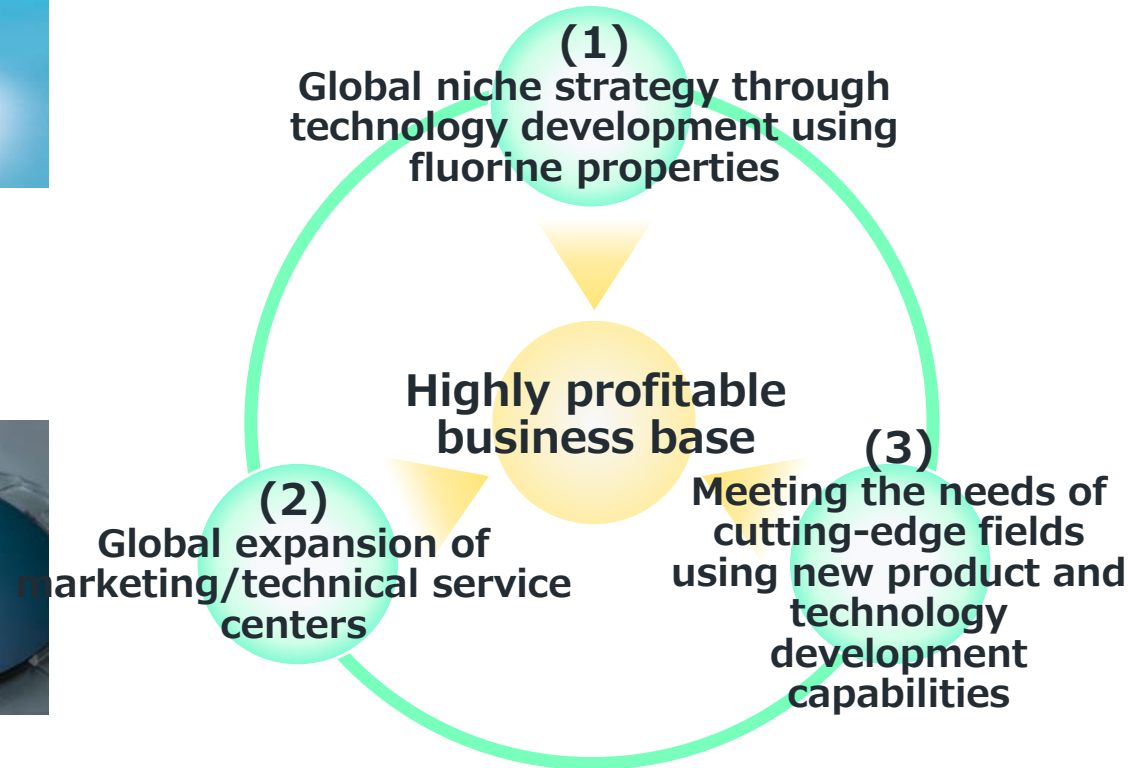
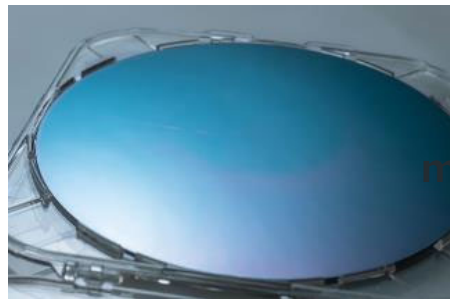
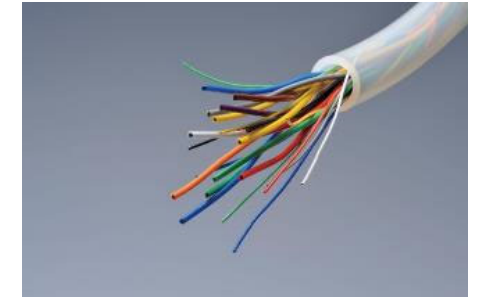
- Promote HR and DX measures
- Respond to environmental issues

Fluorochemicals & Specialty Chemicals : Strengths

- Global niche strategy targeting the top position in specific markets by developing high-performance materials and leveraging mass production technology
- Globally expanding functions for production, marketing technical service centers and product development
- Capture demand in global niche markets, including cutting-edge fields, and establish a highly profitable business base

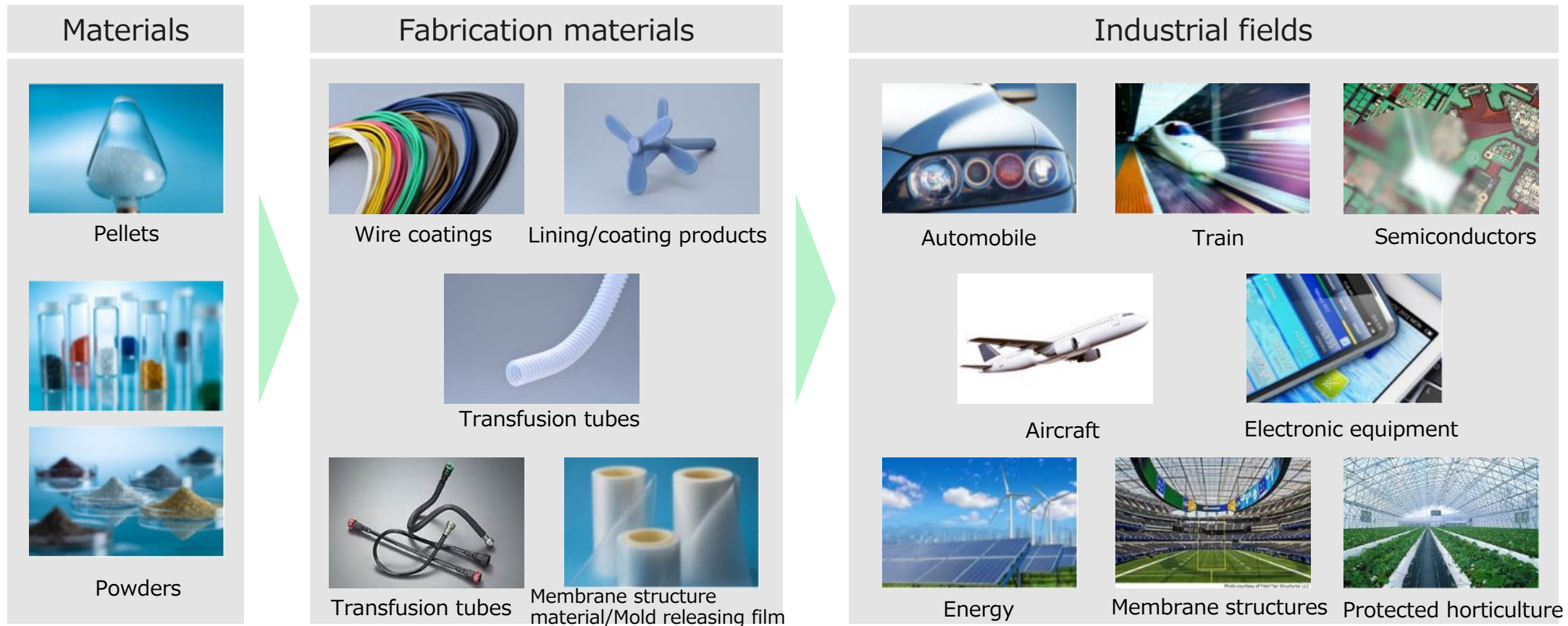


Strengths of AGC's Fluorochemicals Business



Fluorochemicals & Specialty Chemicals : 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



Total solution provider of ETFE

Fluon® ETFE

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



Fluon® ETFE FILM

- 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



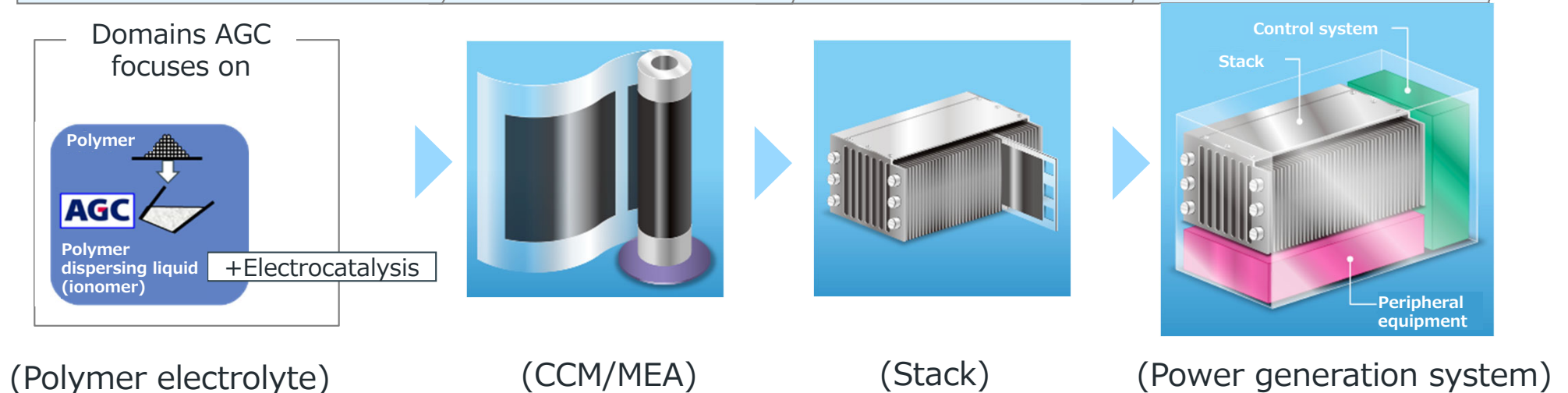
Fluon+™

- 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

Fluorinated electrolytic polymer for fuel cells (PEMFC ionomer)

- Supplying fluorine-based electrolyte polymer (PEMFC ionomer) for fuel cell membranes, an essential component of fuel cells.
- Demand increase accelerated due to the spread of fuel cell vehicles (FCV) and technological development aimed at realizing a hydrogen society.
- AGC achieved No.1 position based on the excellent performance for high power generation and durability.



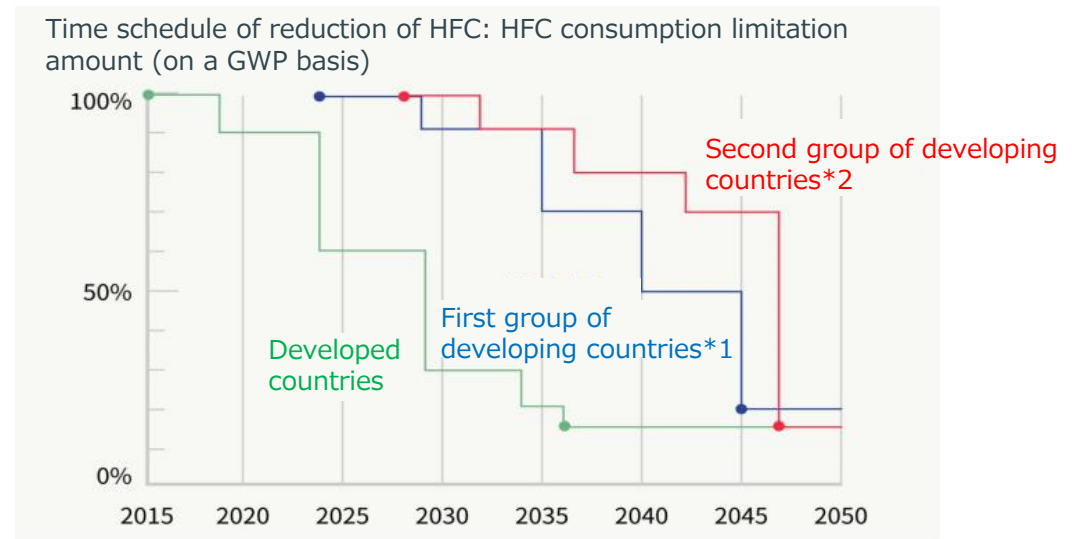
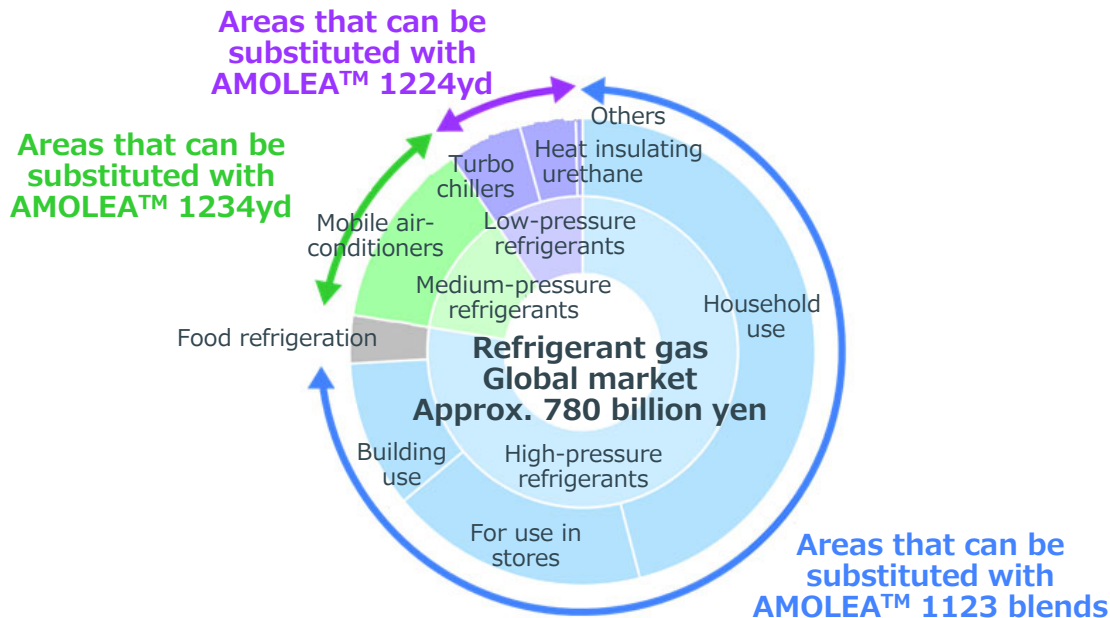
New environmentally friendly refrigerant, AMOLEA™ series

- The global warming problem is boosting demand for new environmentally-friendly refrigerants with extremely small GWP*

Refrigerant name	Functions/Characteristics
1123 mixed	Most promising candidate for the next-generation refrigerant which may be a substitute in 70% to 80% of domains in the global market. It is promising as a refrigerant unique to AGC, which leads market growth mainly for domestic and professional air conditioning. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) registration, which authorizes a refrigerant, is to be completed in 2023
1234yf	Medium-pressure refrigerant for car air conditioning. Established the only production equipment with unique manufacturing processes
1224yd	Low-pressure refrigerant for turbo refrigerators and high-temperature heat pumps. Established purpose and manufacturing process patents and production equipment

Target markets

HFC reduction schedule



*1: Developing countries that do not belong to the second group

*2: Indonesia, Pakistan, Iran, Iraq, and gulf countries

Vision of the operations

Contribute to health of people, the healthcare service, and stable production of agricultural products by leveraging AGC's expertise in the field of pharmaceutical and agrochemical and specialty chemicals



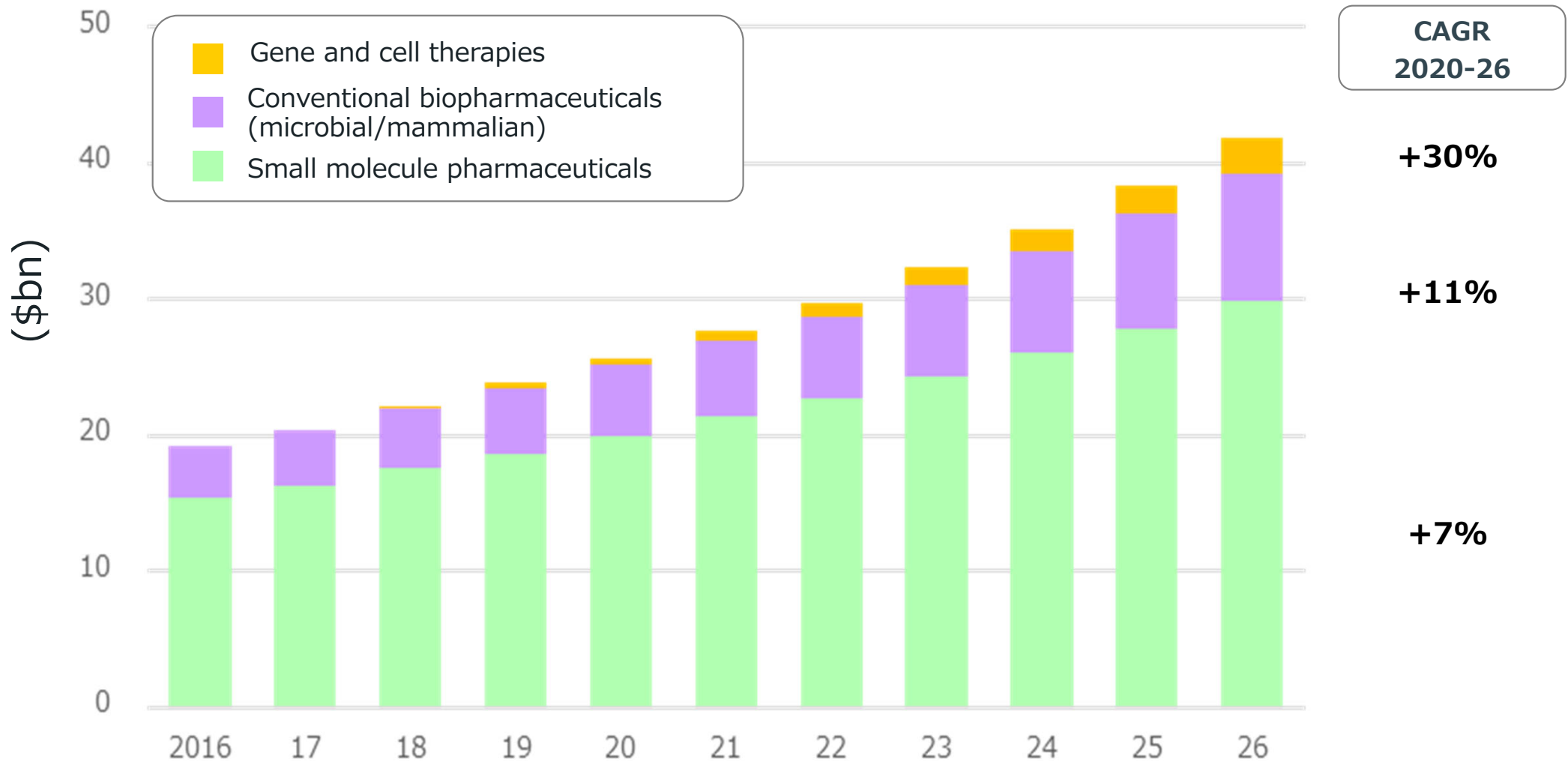
Basic policy

Become the first-choice strategic partner for customers under the common global standard GMP system in three designated regions

Life science : Business environment (pharmaceutical ingredient CDMO market scale)

- With the trend towards increased outsourcing, the CDMO market is expanding steadily.

Drug Substance CDMO Market (estimated by AGC)



1. Production network catering to customer needs

Offering a wide range of services with high-level cGMP production network in three regions, Japan, the U.S., and Europe

2. Track record in commercial phase manufacturing

With high-level quality and developmental capabilities, have undergone numerous inspections

3. Technological competence

Use of cutting-edge technology to solve manufacturing and development challenges

1. Production network catering to customer needs

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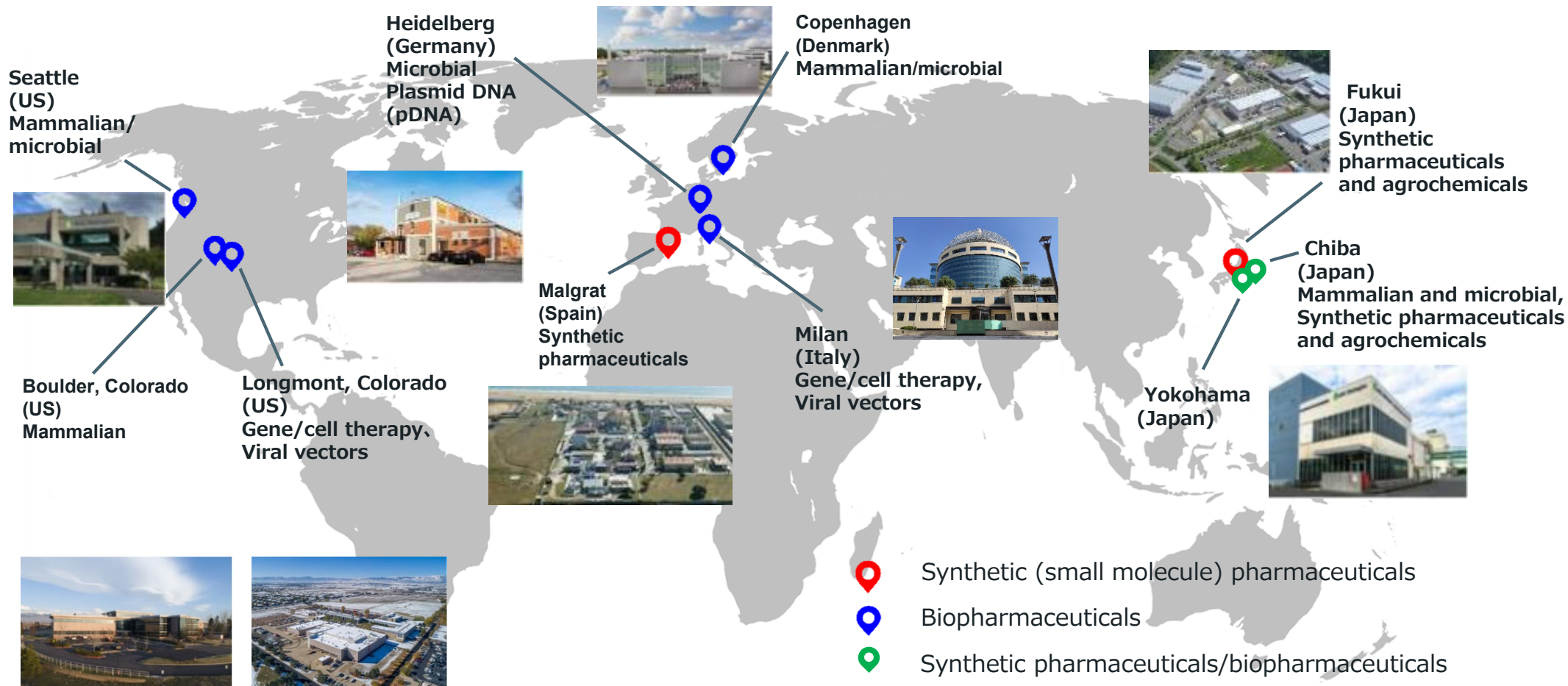
With high-level quality and developmental capabilities, have undergone numerous inspections

3. Technological competence

Use of cutting-edge technology to solve manufacturing and development challenges

Life science : Production network catering to customer needs

- One of the few global CDMOs with major operations in Japan
- Offering a **wide range of services** with capabilities in synthetic/microbial/mammalian processes, pDNA, and cell & gene therapies, from clinical through commercial phase, based on high-level **cGMP production network in three regions, Japan, the U.S., and Europe**



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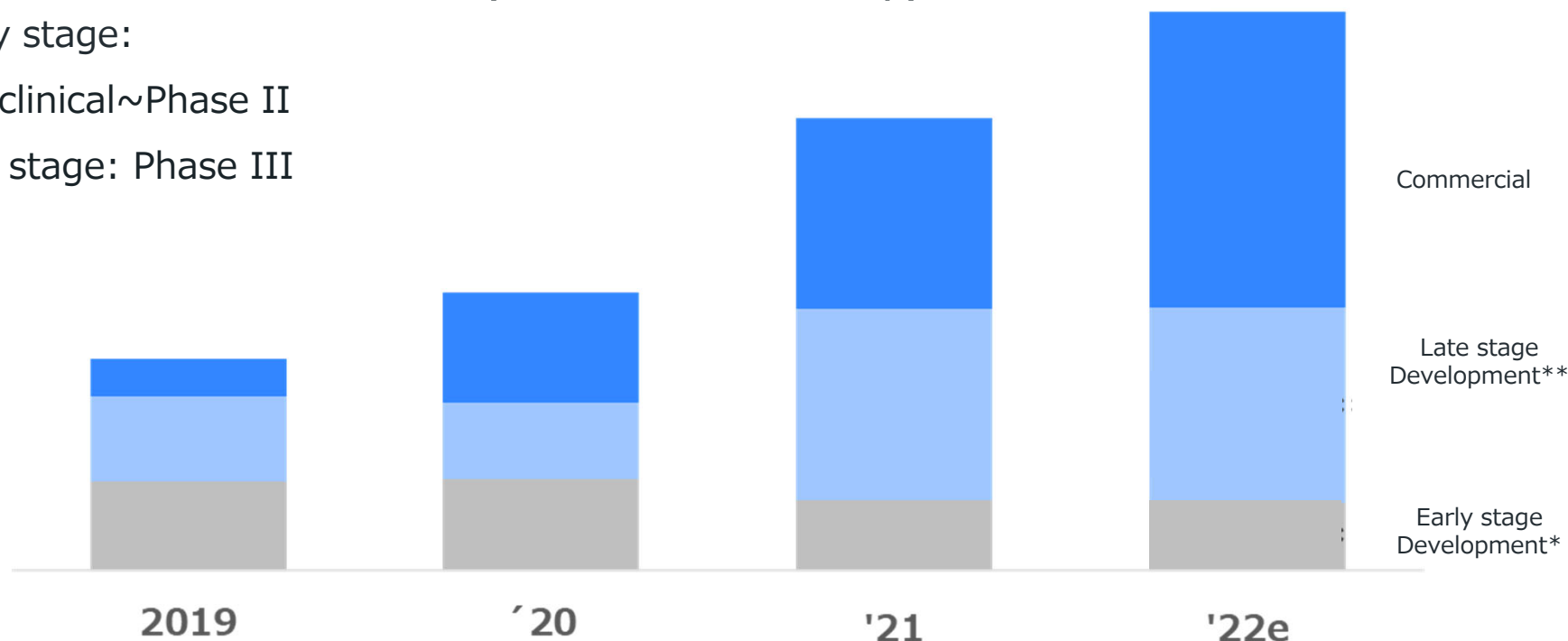
- Having built up an extensive track record, we have earned the **trust** from many pharmaceutical companies as a CDMO, and the proportion of commercial and late-stage development projects that **require high-level cGMP management** is increasing.
- Having both commercial projects that tend to stably continue, and early-stage projects that potentially grow larger as the developmental phase progresses, we are **well positioned for continued growth beyond 2023**.

Biopharmaceuticals CDMO Contract (amount of money)

* Early stage:

Pre-clinical~Phase II

** Late stage: Phase III



- With high-level quality and developmental capabilities, we have successfully undergone **numerous inspections**.

<Inspection Track Record at Our Sites> (*Includes inspections for non-commercial products)

		FDA US Food and Drug Administration	EMA European Medicines Agency	PMDA Pharmaceuticals and Medical Devices Agency
Small Molecules	AGC Chiba Plant	●		●
	AGC Pharma Chemicals Europe (Catalonia)	●	●	●
Biopharmaceuticals	AGC Biologics (Seattle)	●	●	
	AGC Biologics (Copenhagen)	●	●	●
	AGC Biologics (Heidelberg)	●	●	
	AGC Biologics (Milan)		●	
	AGC Chiba Plant			●

1. Production network catering to customer needs

Offering a wide range of services with high-level cGMP production network in three regions, Japan, the U.S., and Europe

2. Track record in commercial phase manufacturing

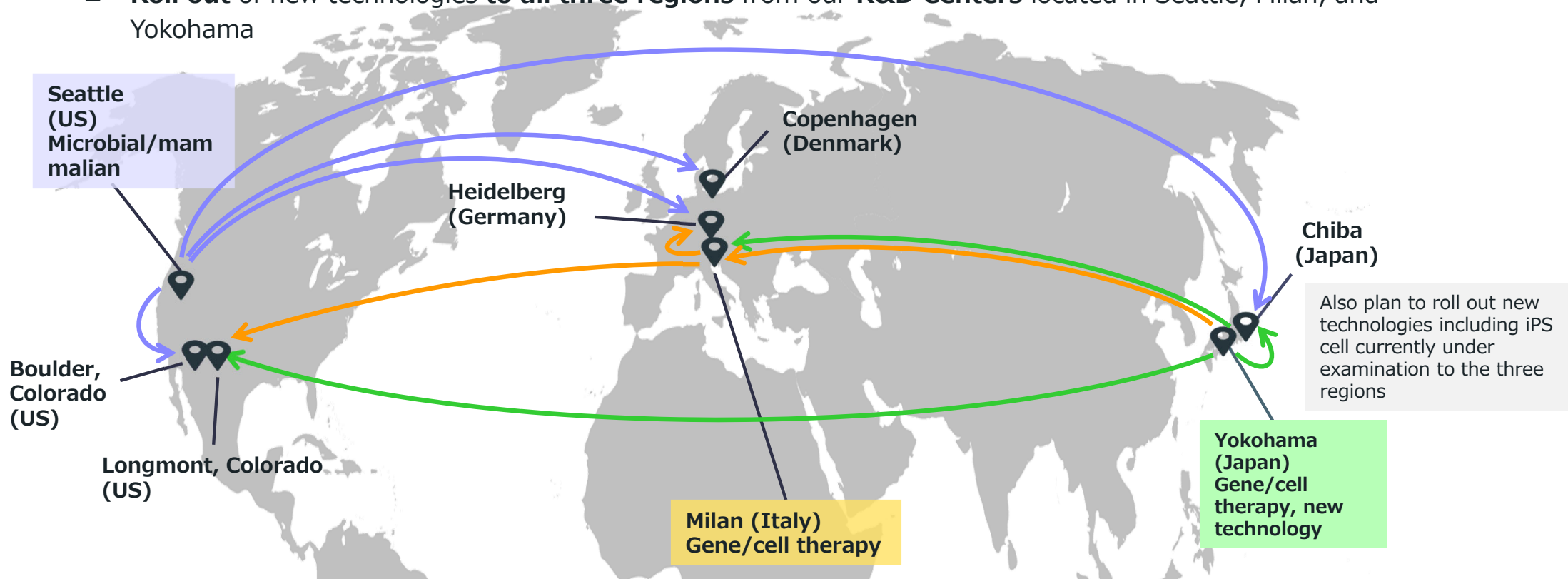
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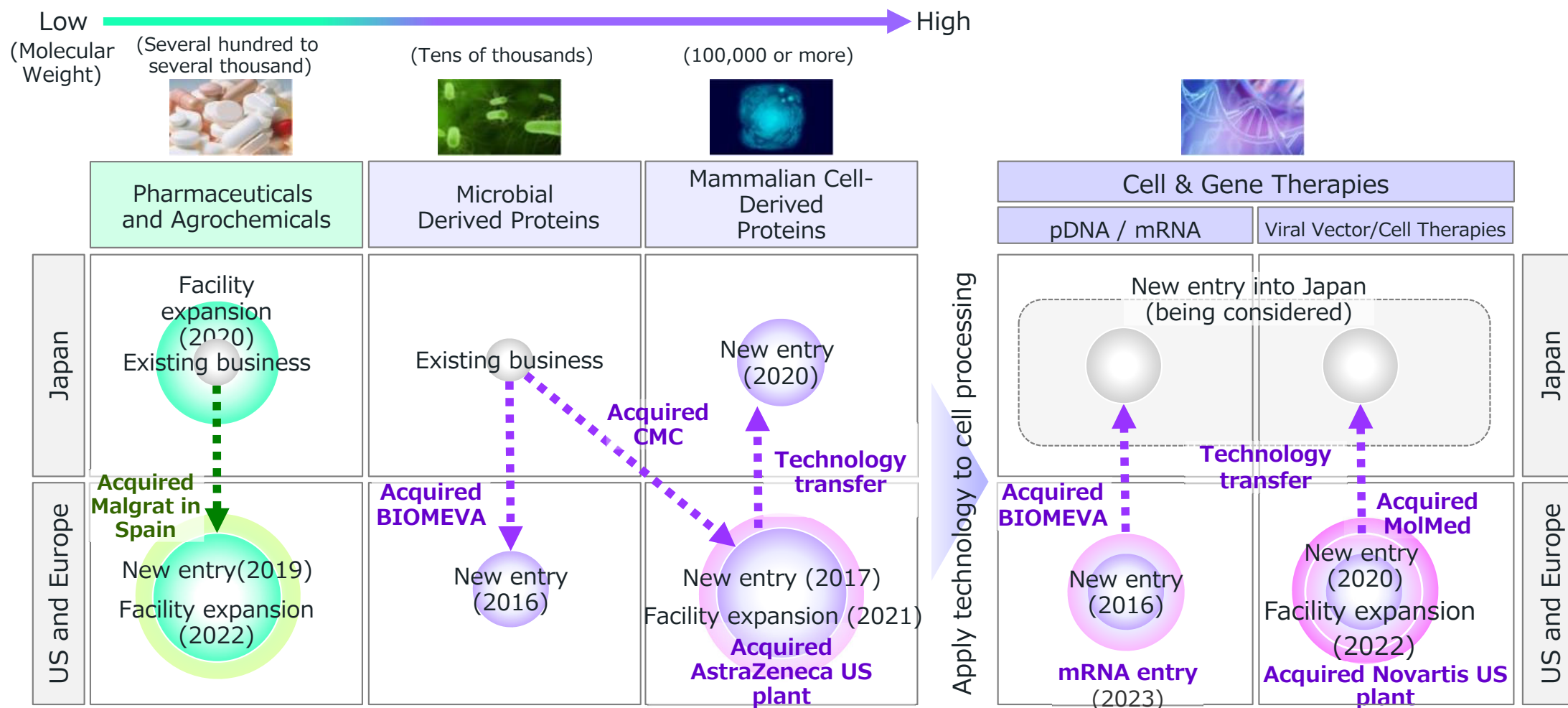
Life science : Technological Competence

- In addition to more than 25 years of experience as a CDMO, we **continually incorporate new technologies and work on new modalities to meet the ever evolving needs of customers**
 - Once of the first adopters of single-use technology since its naissance
 - Trial and incorporation of new manufacturing tools, not just those developed in-house
 - Contracted for various COVID-19 vaccine projects based on track record including pDNA; now expanding our services into mRNA
 - Transferring Milan's advanced technology to Longmont, which was acquired last year, and developing similar services in North America
- **Roll out** of new technologies **to all three regions** from our **R&D Centers** located in Seattle, Milan, and Yokohama



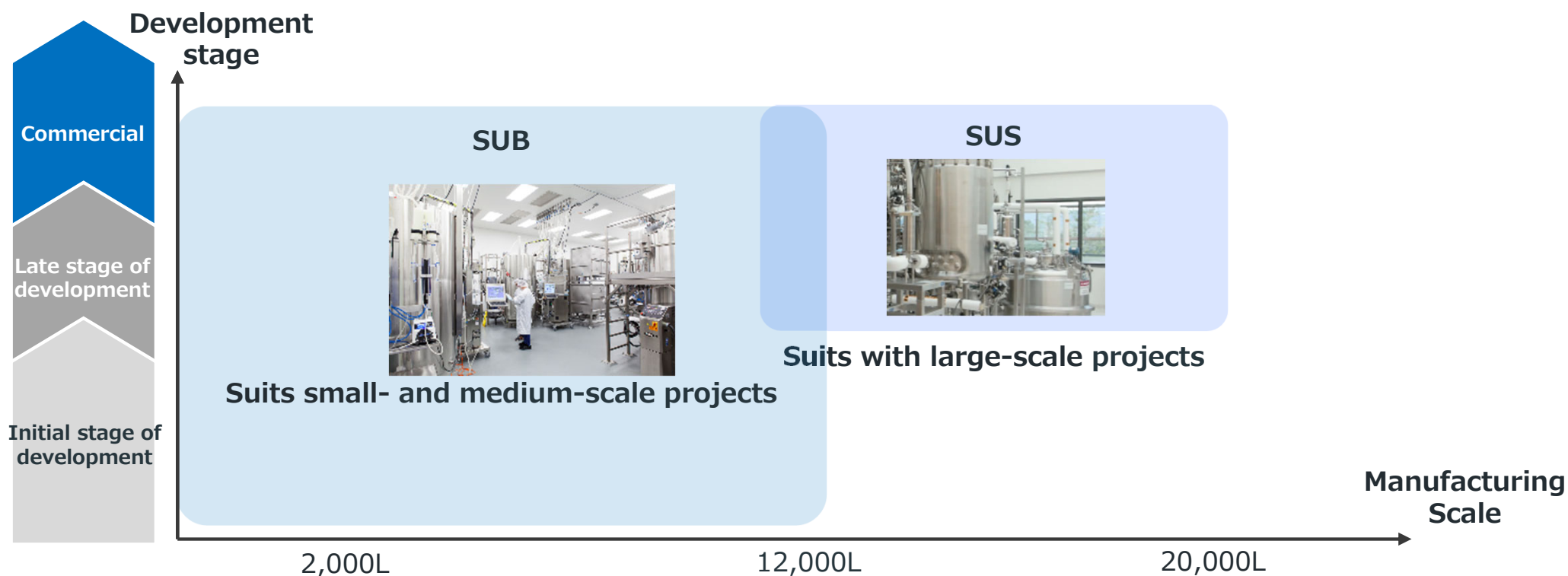
Life science : Regional/Technological Broadening

- Since acquiring BIOMEVA in 2016, AGC has expanded its business regionally and technologically through substantial capital expenditures and M&As, forming a solid foundation as a pharmaceutical CDMO.
- Now, building on this foundation, further expanding in the cell & gene therapy area.



Strengths of the biopharmaceutical CDMO operations

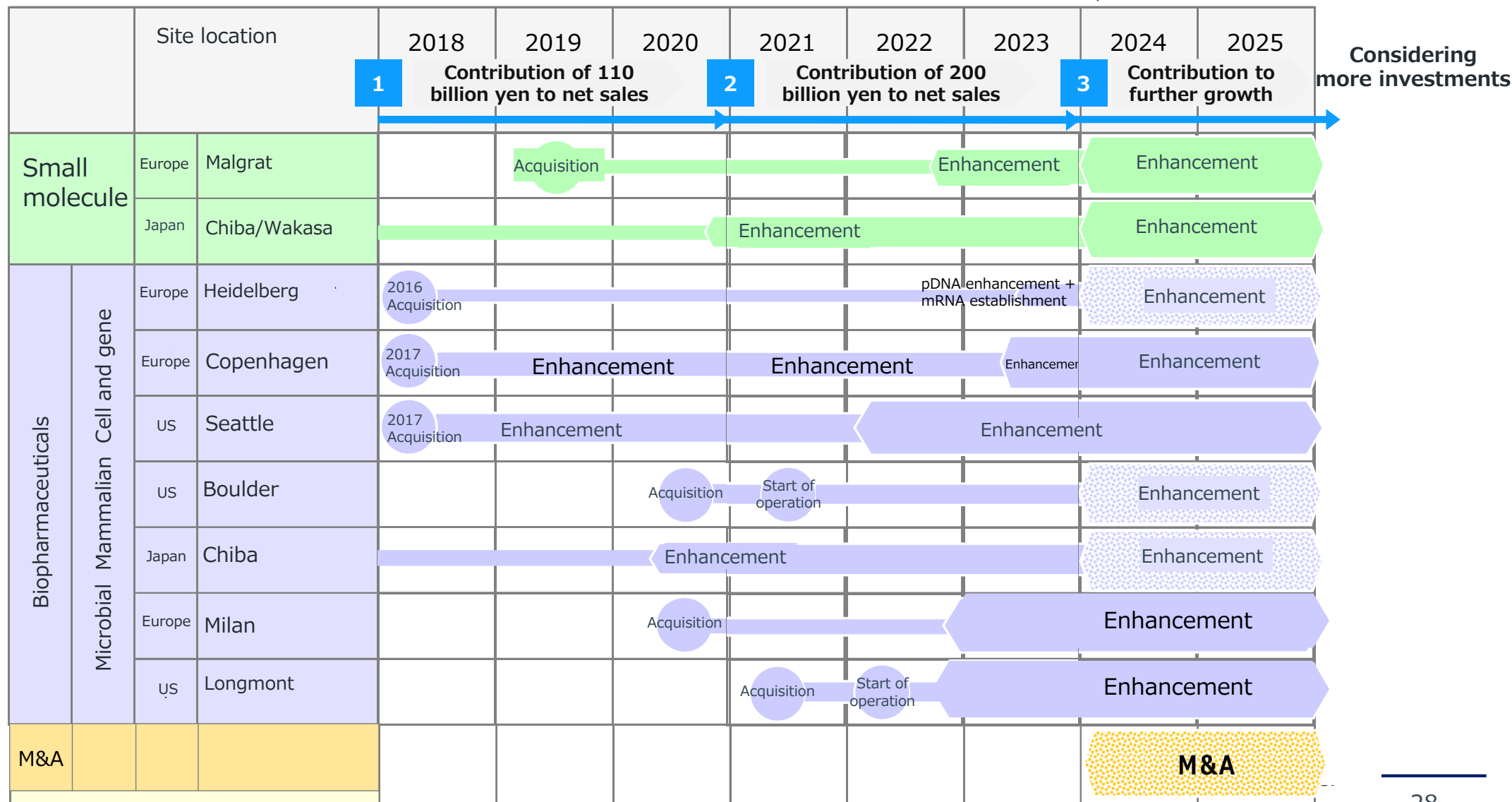
- **Deal with rising needs for low-volume production** based on abundant track records as the pioneer of optimal single use bag(SUB) technologies for low-volume, large-variety production
- We also provide flexible services for **medium to larger scale production needs**, with our SUBs operatable in a **6pack™** configuration, and with our **large-scale SUS bioreactors** located in Boulder, Colorado.
- As **production scale needs shift together with the progression of the development stage**, we provide **consistent services** from early developmental through commercial phase.



Life science business: Medium-term operations strategy

- ① Active investments leading to achievement of initial revenue goal 4 years earlier than originally planned, with **2021 revenue of 115.2 billion yen.**
- ② **Investments necessary to reach revenues of 200 billion yen already decided.** Investments carried out since 2020 coming online.
- ③ **Further M&As and Expansions** being considered for further growth.

*The expressions are based on the start of operation

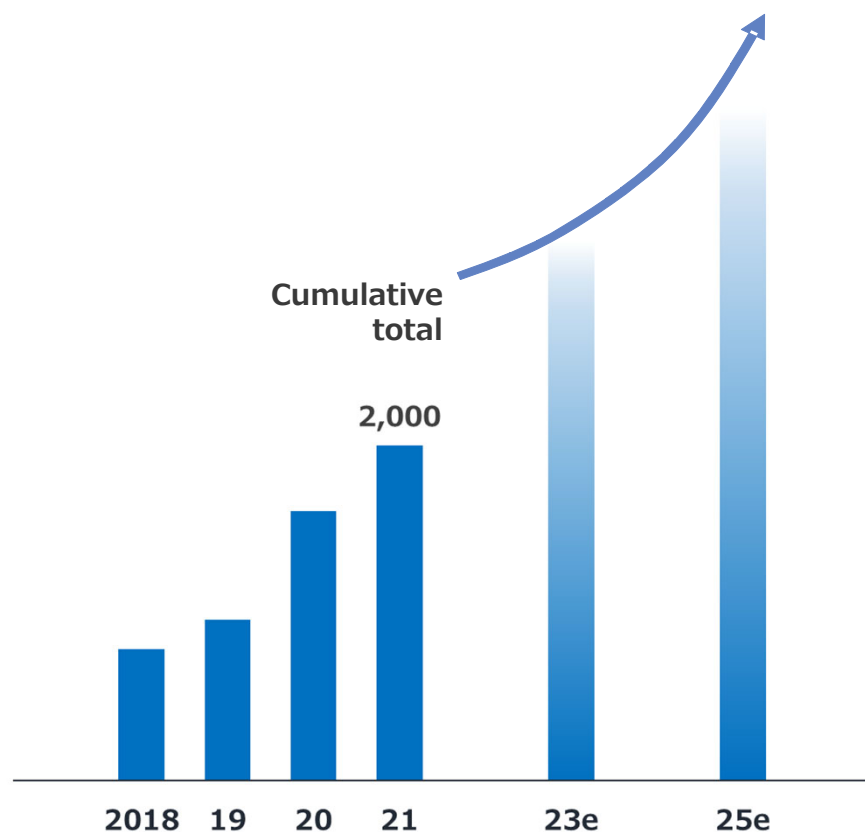


Life science business: Medium-term operations strategy

- AGC's cumulative investment will total approximately 200 billion yen in 2021, and the aim is to achieve our 2025 revenue goal of 200 billion yen or more, one year earlier.
- We plan to investment another 200 billion yen through 2022 to 2025, driving further business growth.

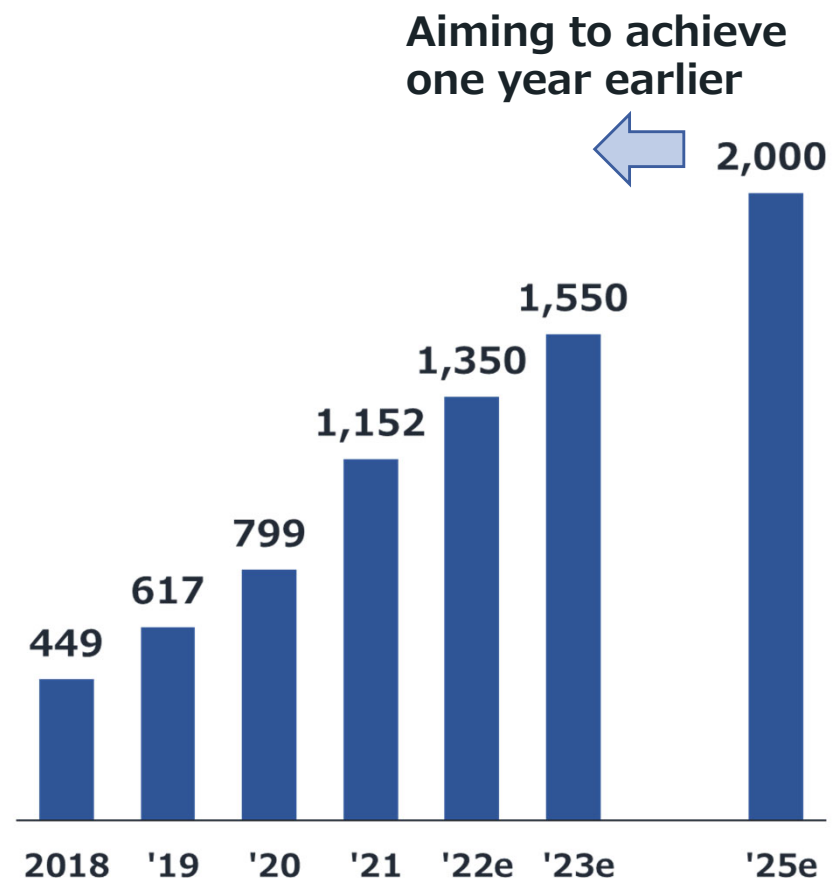
Cumulative Investment in Life Science Business*

(Unit: 100 million yen)



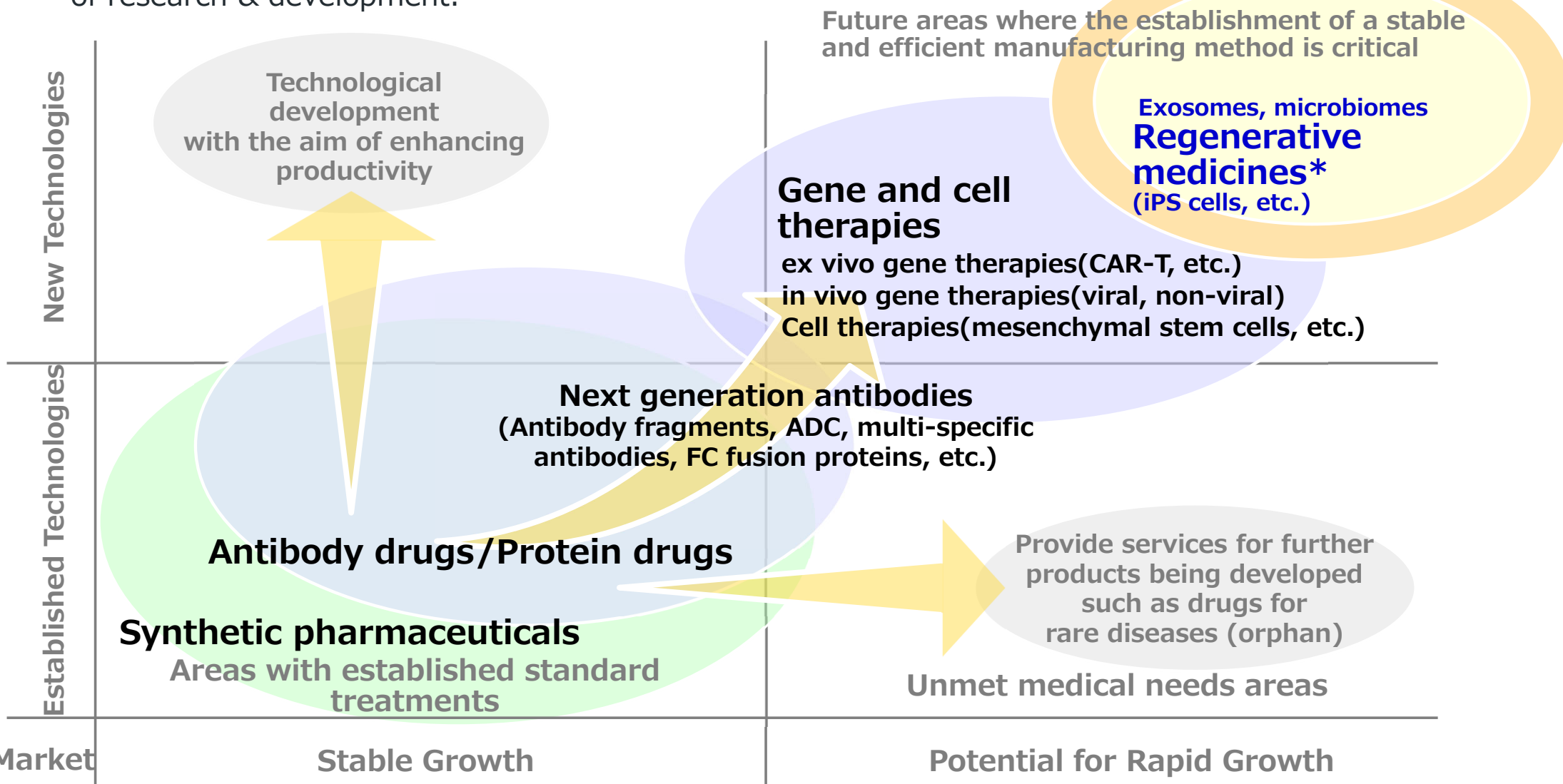
Life Science Business Revenue Growth

(Unit: 100 million yen)



Life science : Future direction of deployment

- We will be looking into timely entry into new fields, such as manufacturing services for regenerative medicines where extensive research is ongoing in the industry, and other new technologies and modalities that are in the early days of research & development.

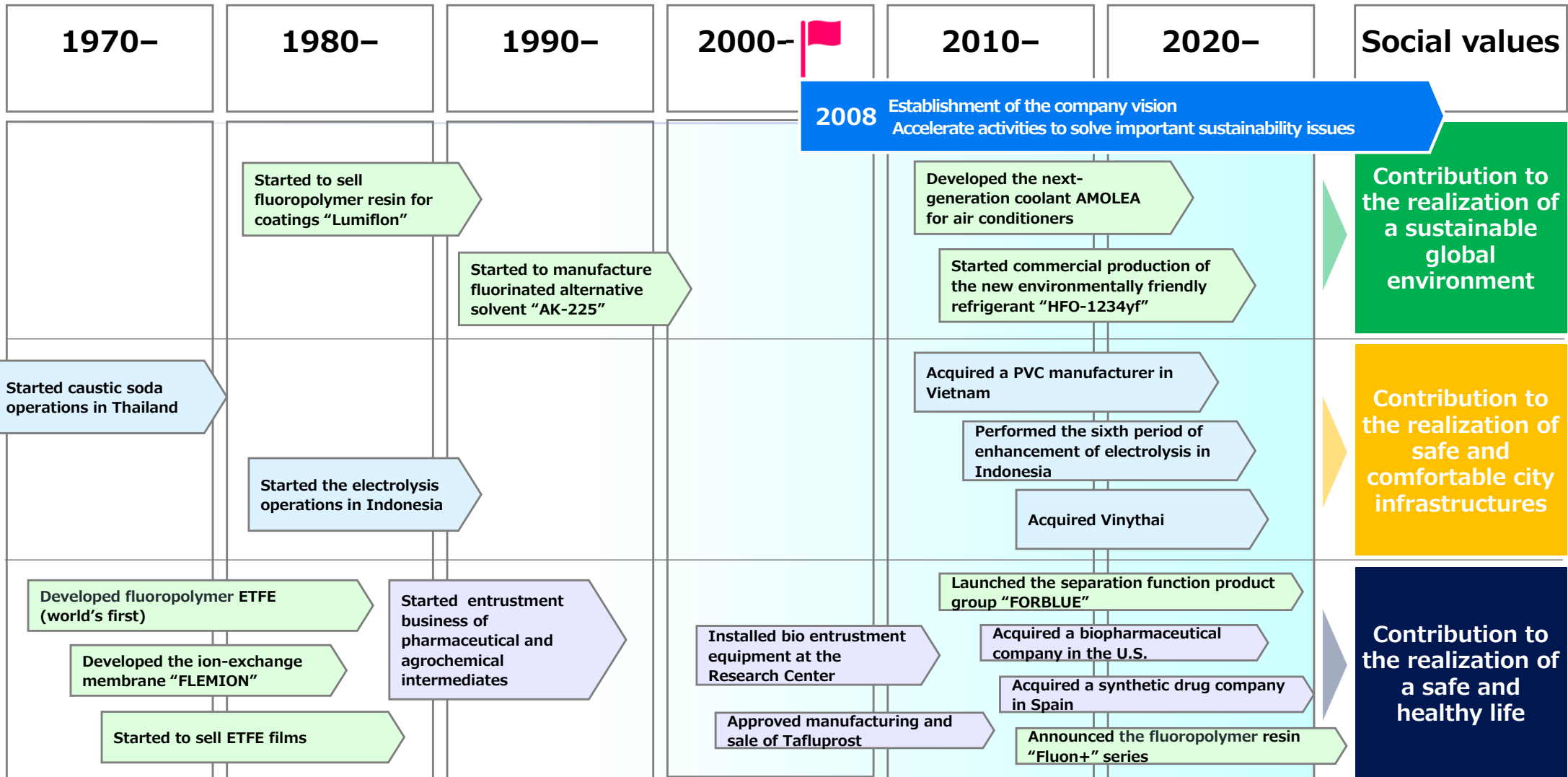


*Black text (modalities that AGC has already entered), blue text (modalities the company will consider entering in the future)

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Contribution to Sustainability Issues

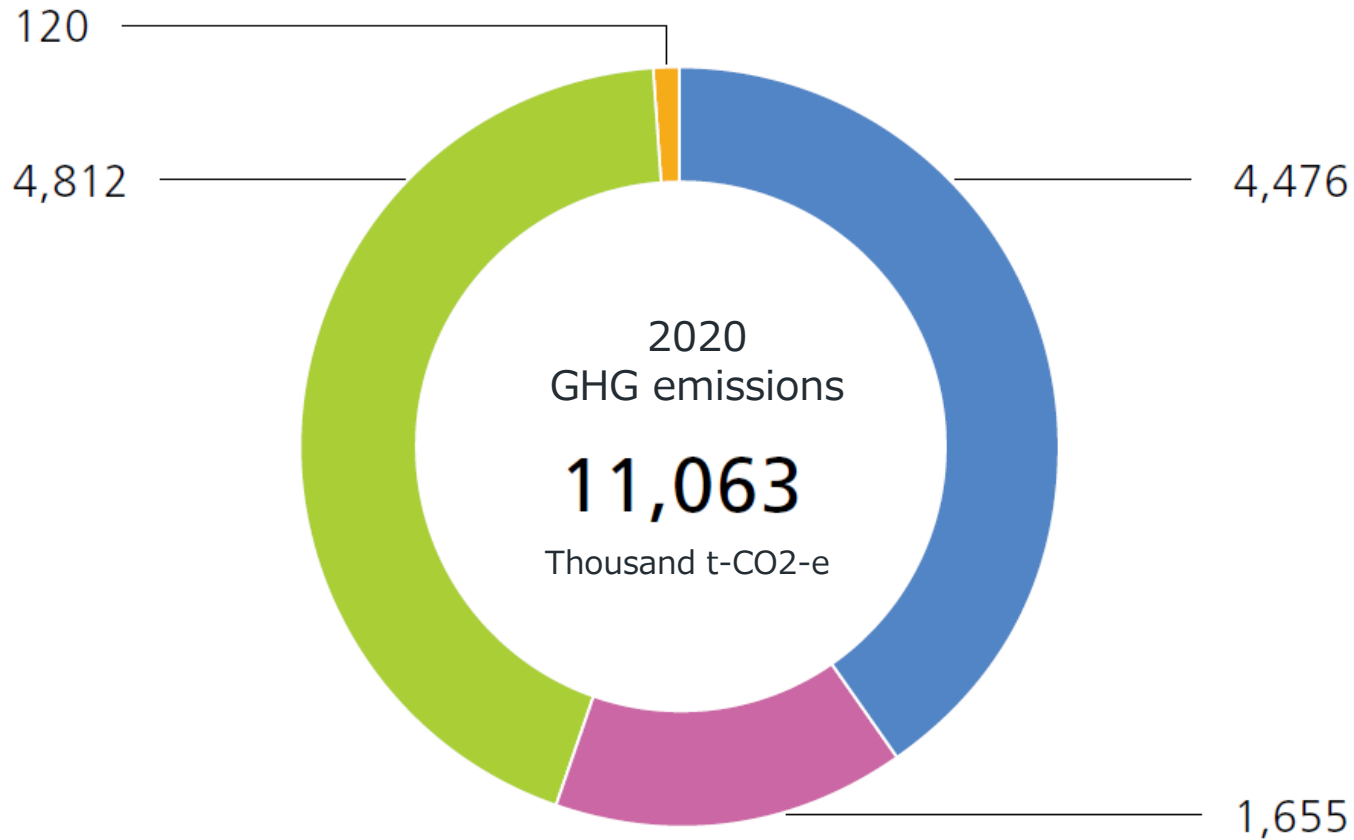
- Established the company vision "Chemistry for a Blue Planet" in 2008 ahead of other companies in the chemicals industry
- Accelerating activities to solve important sustainability issues including responses to environmental issues



Contribution to sustainability issues: GHG emission reduction

▶ Scope 1+2 operation-specific GHG emissions (AGC Group)

(Thousand t-CO₂-e)



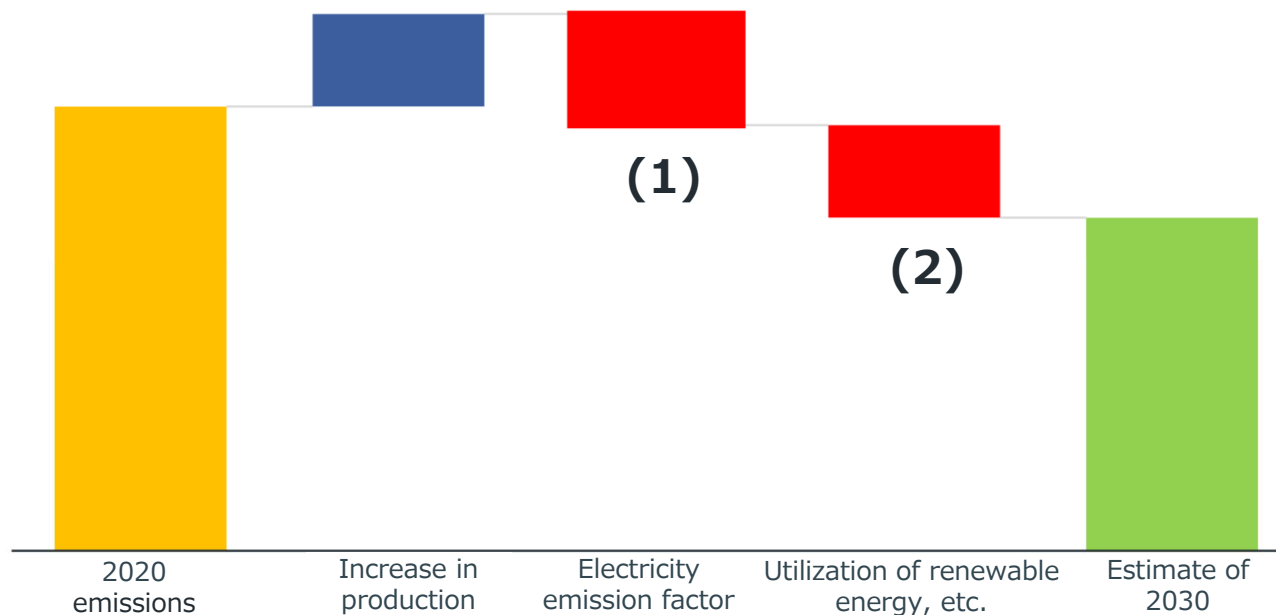
■ Glass ■ Electronics ■ Chemicals ■ Ceramics, etc.

AGC Sustainability Data Book 2021

Contribution to sustainability issues: GHG emission reduction

- Chemical products are indispensable for our daily lives and infrastructure, so it is important to view them as a contribution to sustainability, along with their positive aspects.
- Increased production of these product lines would increase GHG emissions, but GHG emissions would decrease due to lower electricity emission factors for purchased electricity. (Figure (1) below)
- Actively promote reduction of GHG emissions by measures such as recycling, energy-saving, and reduction of emissions of fluorocarbons in addition to the introduction of renewable energy at each site (Figure (2) below))

Image of the future trend of GHG emissions (Scope1+2)



Contribution to sustainability issues: Other activities

- Contribution to reduction of GHG emissions from the whole lifecycle up to procurement of raw materials, manufacturing, logistics, sales, and disposal in addition to the operations themselves

New environmentally friendly refrigerant/thinner, AMOLEA™ series



Green house film, F-CLEAN™



- Promotion of the development of products and technologies that contribute to reduction of GHG emissions

Electrolytic polymer solution for fuel cell, FORBLUE™ i series



- Active promotion of mangrove forestation and coral reef protection activities in Southeast Asia

Mangrove forestation project kick-off ceremony by P.T. Asahimas Chemical (December 22, 2021)





Your Dreams, Our Challenge

END

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