Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

The AGC Group has an established global business platform with 238 subsidiaries and business bases in Japan/Asia, Europe, and the Americas. We endeavour to create new value in the areas of glass, electronics, chemicals, and ceramics, while taking advantage of our world-class material technology, an extensive customer base, and advanced production techniques that we have developed over the 110 years of our corporate history. Our Group has set the Group Vision "Look Beyond." This is the corporate philosophy on which all the activities of the Group are founded. Under this Group Vision, we have Our Mission to describe value that our Group should offer to world, and represents the reason why the AGC Group exists.

[Our Mission]
"AGC, an everyday essential part of our world—AGC's unique materials and solutions make people's lives better around the world every day."
Note also that our Group Vision "***Look Beyond***" describes the most important values to be shared across the whole Group and the founding spirit to be handed down from generation to generation and shared by all Group members.

[Our Shared Values]
Our values are innovation & operational excellence, diversity, the environment, and integrity.

[Our Spirit]
"Never take the easy way out, but confront difficulties."

Operating glass and chemicals businesses that use a huge volume of resources and energy, our Group has chosen the environment as one of our shared values under the Group Vision. Based on the trusting relationship with our customers as our foundation, since the inception we have been addressing social issues by carrying out research and development with a long-term vision and generating new business in response to demands of the time. Our products include glass for buildings and homes t, solar power generation mirrors, and green refrigerants that contribute to realization of an eco-friendly smart city.
In the manufacturing process, we have been actively reducing the overall environmental impact by fully conforming to environment-related laws and regulations, reducing greenhouse gases

(GHG), and minimizing industrial waste landfilling. Taking advantage of the capabilities of our own unique materials and solutions, we will continue to fulfil our mission "AGC, an everyday essential part of our world" and contribute to realization of a sustainable global environment and society.
In the area of climate change issues, we set a target in 2014 to enable our energy-saving and energy-generating products to offset Group's annual GHG emissions by six times by 2020. We have mostly achieved this target as a result of reducing GHG emissions in business activities and putting efforts into promoting and increasing sales of energy-saving and energy-generating products including energy-saving glass and eco-friendly next generation low GWP refrigerants. We announced in the new Medium-Term Management Plan that we will promote AGC plus-2023 and build a foundation to realize our long-term management strategy, Vision 2030. In response to the demand for striking a good balance between business growth and realization of a sustainable society, in addition to setting a goal to fulfil the financial target as we always do, we have decided to work toward our sustainability targets in all business activities based on our understanding of key opportunities and risks the Group faces and have chosen "realization of a sustainable global environment" as our important theme. To realize a sustainable global environment, our goal is carbon neutrality in 2050. Milestone targets for 2030 are 30% reduction of GHG emissions from 2019 and 50% reduction of GHG emissions per unit of sales* (* GHG emissions per unit of sales = GHG emissions/sales).
To achieve these targets, we will promote energy-efficient oxygen combustion methods and introduce a booster to reduce fuel use in melting glass for the glass melting process. We will also accelerate conversion of heat from glass melting into electricity. Furthermore, we will help society achieve net zero GHG emissions by making high-performance energy-saving glass and fluorine electrolyte polymers for fuel cells available.

Forward-looking statements
Answers to this questionnaire may contain forward-looking statements based on current assumptions and predictions by AGC Group management. Various known and unknown risks, uncertainties, and other factors may produce significant differences between the actual results, financial state, development, and business results in the future and the prediction provided in this document. Such factors include those listed in the AGC public report available on the AGC website (www.agc.com). We assume no responsibility for updating these forward-looking statements or adjusting these statements to future events or development.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2020	December 31, 2020	No

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Austria

Belgium
Brazil
Canada
China
Czechia
France
Germany
Hungary
Indonesia
Italy
Japan
Mexico
Morocco
Netherlands
Philippines
Poland
Portugal
Republic of Korea
Russian Federation
Singapore
Slovakia
Spain
Taiwan, Greater China
Thailand
Turkey
United Kingdom of Great Britain and Northern Ireland
United States of America
Viet Nam

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

JPY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Financial control

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals

Aromatics
Polymers

Bulk inorganic chemicals

Chlorine and Sodium hydroxide
Soda ash
Hydrogen

Other chemicals

Specialty chemicals
Specialty organic chemicals

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	At the Board Meeting, the Chairperson (Director), the CEO (Representative Director and President), the CFO and CCO (Representative Director and Senior Executive Vice President), and the CTO (Director and Senior Executive Officer) discuss with outside directors to make important decisions on how the AGC Group will address risks and opportunities brought by climate change. At the Board of Directors Meeting, the CEO takes the ultimate responsibility for decisions on climate change-related measures. In addition, the CEO, CFO, and CTO are responsible for executing measures to respond to climate change-related risks and opportunities in the area of their responsibility. Climate change is a theme regarded as a material issue within the AGC Group that promotes sustainability. The Group perceives it as an element that brings key business opportunities and risks. For this reason, policies and issues related to climate change that influence the entire Group are discussed at not only the Board of Directors Meeting but also at the Sustainability Committee chaired by the CEO. The Sustainability Committee is under control of the Management Committee. Its activities include drafting of sustainability policies with the primary focus on climate change related issues, promotion of risk management, and controlling of information disclosure.

	Note also that the Sustainability Committee, chaired by the CEO, discusses the AGC Group strategy related to sustainability management including climate change. Based on the discussion result, the CEO reports the AGC Group climate change strategies as necessary at the Board of Directors Meeting. Climate-change reports made by the CEO in this fiscal year are as follows: ● Creation and public announcement of the AGC Group medium-and-long-term GHG emissions reduction target ● Creation of the roadmap with strategies and measures to achieve the milestone for 2030 set in the AGC Group mid-and-long-term GHG emissions reduction target

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing	Recognition of climate change issues as important problems influencing corporate continuity has been established in society and the economy. Under these circumstances, at the AGC Group too, the Directors understand that they have obligations to make efforts to not only respond to climate change risks and opportunities but also to adapt to and mitigate climate change issues. We recognize that physical and transitional risks are the specific examples of climate change that have a significant influence on our business because of its nature. It is impossible for us to deny that there is also an influence of other risks including market risks, policy risks, and reputational risks. Following a director's duty of loyalty to their company stipulated by the Companies Act of Japan, where the AGC Group head office is located, our Directors are required to report any fact that may cause losses to the company and are responsible for creating a risk management system to fulfil their responsibility to monitor and manage such problems for the company. They understand that climate change issues can be one of the factors of such problems, and the Board of Directors monitors, as necessary, key risks and

	climate-related issues	opportunities brought by climate issues. In 2019, we identified long-term key opportunities and risks for the AGC Group, which would become the basis of sustainability targets. In 2020, we chose AGC Group's major solutions and materials that would match the eight key opportunities identified in 2019 and then divided them into three types of social value: contribution to the realization of a sustainable global environment, contribution to the realization of safe and comfortable urban infrastructure, and contribution to the realization of safe and healthy lifestyles. For key risks, we chose AGC Group's major corporate activities corresponding to the five types of social values identified in 2019 and categorized them into three types of social value: contribution to the realization of a sustainable global environment, contribution to the maintenance of a healthy and secure society, and contribution to realization of fair and safe workplaces. Social value thus obtained was reported to the Board of Directors by the General Manager of the Sustainability Division. In response to the report, the Board of Directors in 2020 approved implementation of the GHG Emissions Reduction Target Setting Project (literal translation) and had a role in the carbon neutrality target setting as announced in the press release in 2021. As a measure to be implemented based on the TCFD scenario analysis result, we adopted a mechanism for verifying the profitability of future carbon costs in investment projects (carbon cost simulation). Also, the Management Committee deliberates on the risk of covering carbon costs in business and capital investment projects. The Board of Directors also recognize this risk if the subject investment needs discussion and resolution.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s)	Responsibility	Frequency of reporting to the board on climate-related

and/or committee(s)		issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The AGC Group EHSQ Management Regulations stipulate that the CEO is the top manager of EHSQ management including climate change.
Responsibility of the CEO is as follows:
(1) Create EHSQ management-related policy including climate change
(2) Appoint an EHSQ manager
(3) Secure resources for EHSQ management
(4) Review EHSQ management
(5) Establish a communication process for EHSQ management

At an EHSQ management review, the CEO receives a report on AGC's strategy on climate change from the GM of the EHSQ Division and issues instructions to each division head. The Sustainability Committee chaired by the CEO deliberates on the AGC Group's strategy on climate change.
Note that, in FY2020, the CEO instructed the division in charge of the environment at the head office to consider implementing internal carbon pricing as a part of the action plan to accelerate the Group's anti-climate change measures.

At the Sustainability Committee meeting held in 2020, adoption of the mechanism for simulating carbon costs in investment projects was discussed and approved with the future vision of fully implementing internal carbon pricing.
Also, the Sustainability Committee and Board of Directors discussed and decided on the target of achieving net zero carbon emissions in 2050 and 2030 milestone targets.

The CEO's position within the framework of the AGC corporate governance is described in:
AGC Integrated Report 2021, "Corporate Governance," pp. 74-79
https://www.agc.com/company/agc_report/pdf/agc_report_2021.pdf

AGC Group's environmental management system is described in:
Sustainability Data Book 2020, p. 61
https://www.agc.com/csr/pdf/agc_sus_jp_2020.pdf

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment

Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Director on board	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target Behavior change related indicator Environmental criteria included in purchases Supply chain engagement Company performance against a climate-related sustainability index	AGC Group's Compensation Principles establish the following basic stance and philosophy on compensation in general: ・The compensation system shall be able to attract, secure, and reward diverse and talented personnel in order to create and enhance competitive advantage. ・The compensation system shall promote continued improvement of corporate value and in doing so allow shareholders and management to share gains. ・The compensation system shall be one that motivates the executives to achieve the performance goals set in the management strategy, which aims at continuous development of the AGC Group. ・The process to decide the compensation system shall be objective and highly transparent. Compensation decision process In line with the Compensation Principles, the Compensation Committee deliberates on the Director and Executive Officer compensation system and compensation amounts, proposes the deliberation result to the Board of Directors Meeting, and examines the compensation payment result. Through these actions, the Compensation Committee enhances objectivity and transparency of the compensation decision process. Composition of compensation For the AGC Group, which provides materials and solutions that are developed with a long-term perspective, the source competitiveness is the business strategy for a single year as well as mid-to-long-term technical development and investments in human resources and equipment. Therefore, the Group has introduced an incentive system as one of the means to encourage AGC officers to develop well-balanced short, medium, and long-term views

			and further motivate themselves to achieve the target for each of time frame. In addition to bonuses linked to organizational performance in a single year, the Group has introduced stock-based compensation, in which the number of shares granted is determined on the basis of performance and other factors within the period of the given Medium-Term Management Plan. In this stock-based compensation system, executives must retain the stocks while they hold office. This is to motivate them to contribute to medium-to-long term enhancement of corporate value and share the gains with shareholders more. In February 2021, the following changes were made to the compensation system to increase its effectiveness in line with the basic Compensation Principles: ・We changed the performance indicator for the bonus program from the *operating profit* to the *return (business profit) on capital employed* in consideration of the importance of the business profitability and asset efficiency. We then added improvement of non-financial capital, progress on portfolio conversion, and other indicators as evaluation items. For the stock-based compensation program, we revised the performance evaluation method to evaluate the achievement level of business performance targets for each fiscal year. The objective of this change is to further motivate officers to contribute to enhancement of corporate value and encourage them to steady implement the Medium-Term Management Plan.
All employees	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target Behavior change related indicator	We have an employee recognition program at AGC Group plants as described below. We give an award when an employee or two or more employees worked together to improve the productivity, increase the yields, enhance the quality, reduce costs, introduce new programs or innovative ideas, or produce a significant business result (including results related to safety or the environment). Reward criteria for excellent conduct related to the environment, including responses to climate change, are described below. We give the subject employee

		Environmental criteria included in purchases	up to a 120,000- JPY monetary reward. An employee, not from the division in charge of the environment and safety of each plant, prevented a problem or took an action that led to prevention of expansion of the problem. An employee from the division not in charge of the environment and safety or an EHSQ General Division employee prevented an environmental problem or took an action that led to prevention of expansion of the problem, and such action was excellent even when taking into consideration that it was within the scope of his/her work.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	Our company usually considers a 3- to 5-year business plan. In the currently implemented business plan, we annually review the previous fiscal year based on the business result and the Medium-Term Management Plan for the previous fiscal year.
Medium-term	1	3	Our company usually considers a 3- to 5-year business plan. We are currently in the period of a 3-year Medium-Term Management Plan, AGC plus-2023 that spans from 2021 to 2023. The key measures of the plan are faster business growth in the strategic business areas, pursuit of "ambidextrous management" to explore new business areas (e.g., energy-related areas), promotion of sustainability management to address social issues quicker through material innovation, and enhancement of competitiveness by accelerating digital transformation.
Long-term	3	30	For 2030 we will work to take part in creation of a sustainable global environment through business activities in order to resolve social issues. For 2050, we will aim to achieve net zero carbon emissions.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

For risks including those in our Group's business, we have identified matters that may have a serious impact on investors' decisions. When losses occur due to a disaster or an accident, we recognize that such an event will have a serious impact on investors' decisions and disclose the information of such event, in line with the rules on timely information disclosure set forth by the Tokyo Stock Exchange, if the losses exceed whichever is the smaller amount (9.8 billion JPY in 2020) between 3% of the net assets or 30% of the recurring profit and current net income.

1. Short to medium-term risks

For short to medium-term risks, we have formulated the AGC Group Enterprise Risk Management Basic Policies based on the Risk Management System described in the Annual Securities Report. These policies are our Group's basic risk management system policies, and we have a risk management and crisis response system in place in line with these policies.

<Risk management>

In accordance with the internal rules, we define risk factors important for our Group, and the risk management state is periodically discussed and monitored by our Management Committee and Board of Directors. For individual risks in the Group's business operations, each Corporate Division, in-house company and strategic business unit (SBU) carries out risk analysis for respective business operations and projects and considers risk response measures. As necessary, these risks are discussed by the Management Committee and Board of Directors. For risks associated with our Group's compliance, environment, accidents, and quality, each responsible division at our company creates and announces guidelines and carries out training and audits as necessary. Note that, key risk factors are re-examined regularly in accordance with their level of impact on Group management should they emerge and the possibility of emergence.

<Responses to risks that emerged>

In line with the internal rules and as a preparation for unforeseen events that may have a serious impact on the Group's management performance and finances, we have a crisis management report line in place to report the situation quickly and entirely and share with the CEO under the “Bad News First” approach. In addition, we have established a system in which the Group Taskforce Headquarters can be set up immediately at the CEO's discretion to allow a quick and appropriate initial response.

2. Long-term risks

In consideration of global social issues, future risk trends, and social issues that our customers address, we identified in the Medium-Term Management Plan key opportunities and risks that may influence long-term direction of company management and corporate value as our Group's material issues. We then set sustainability goals that aim to take advantage of opportunities and respond to risks. As a body to make decisions on sustainability initiatives, we have set the Sustainability Committee with the CEO as the chairperson and the CTO, CFO, and division heads as members. Under supervision of the Board of Directors, the Sustainability Committee

decides how to handle key risks and deliberates on future measures while taking into account the progress toward the goal.

<Climate change issues>
Trends toward decarbonization have been gaining momentum since the Paris Agreement in 2015, and stricter energy-related policies, laws, and regulations are expected, and at the same time, social demand for companies to achieve net zero GHG emissions have been heightened. Facing these risks, our Group has set our vision for 2050 that we "aim at achieving net zero GHG emissions from our business activities and contribute to realizing net zero carbon emissions globally by taking advantage of our products and technology." To realize the 2050 vision, our Group will make efforts to implement GHG emissions reduction measures appropriate for emission sources, such as development of manufacturing techniques and equipment with low GHG emissions. Also, taking this section as a key opportunity, we will strive to create a business model that contributes to increased sales of products that save or generate energy during their life cycle and wider use of renewable energy.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

For the purpose of developing and operating our risk management system as well as that of the subsidiaries, the AGC Group has stipulated the basic policy, roles, and responsibility for such development and operation in the AGC Group Enterprise Risk Management Basic Policies in line with the Regulation for Enforcement of the Companies Act Section 4 Article 100 Paragraph 2 "Rules and other Systems Related to Management of Risk of Loss." Development and operation of a risk management system here means (1) identification of risks and then development and operation of procedures and a system to prevent the emergence of such risks and (2) identification of risks and then development and operation of a method or system to respond to the

emergence of such risks.

AGC Group's basic approaches to enterprise risk management are as follows:
a. Involvement of management
The AGC Group positions enterprise risk management as daily management control, and therefore, top management actively gets involved in the Group's enterprise risk management. More specifically, from the total group optimization point of view, management sets the basic enterprise risk management policy for the Group, monitors management initiatives, and runs the PDCA cycle for the Group as a whole.

b. AGC Group's efforts into enterprise risk management
The AGC Group as a whole works on enterprise risk management. More specifically, based on the basic policy set by management, each in-house company, strategic business unit (SBU), and the Corporate Division promote efforts on enterprise risk management including their responsible affiliates. Meanwhile, for key risks that must be managed by the whole Group, the Corporate Planning General Division works to centrally and comprehensively grasp the management state of such risks including responses to emerging risks.

c. Securing effectiveness and efficiency of enterprise risk management
The AGC Group aims to make integrated risk management both effective and efficient. More specifically, we will promote enterprise risk management as a unified and highly effective initiative in which the Group policy and focus areas of enterprise risk management are shared, and a simple, sufficient, and highly effective initiative in which the level of impact of risks on management, probability of emergence of risks, and business size are considered.

The scope of AGC Group's enterprise risk management has been set based on 3. System to control risk of damage of the AGC Group (Risk Management System) stipulated in the Corporate Policy over Internal Control.

Development and operation of a risk management framework
The AGC Group defines any risks that are expected to have a significant impact on AGC Group management if they emerge as key risk factors and has developed and is operating a mechanism to grasp the state of managing such risks across the Group. Key risks are reviewed and set regularly while taking into consideration their level of impact to the Group’s management, should they emerge, and the possibility of emergence. Among key risks, each in-house company and SBU analyzes risks in business operations and considers measures against them for each business and project. Management then monitors these risks as necessary. For risks associated with compliance, environment, accident, and quality, in-house companies and divisions, primarily SBUs, work to develop various measures to raise their risk management level. At the same time, the Corporate Division, which manages the downside risks listed above provides advice and support for the efforts by in-house companies and SBUs by means of creating and announcing guidelines and providing training. In-house companies and divisions, mainly SBUs, regularly self-inspect their downside risk management level, and management monitors the inspection result. Specific rules on

development and operation of the risk management mechanism described above are stipulated in the AGC Group Risk Management Implementation Rules (literal translation) and are implemented.

In the downside risk self-inspection in 2020, we evaluated business discontinuation risks caused by sudden events including natural disasters such as typhoons, hurricanes, and cyclones due to the impact of climate change and identified high-risk business bases. These high-risk bases have risk mitigation measures and have developed a business continuity plan that specifies important business operations that should continue even when a sudden event occurs.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	In Japan, Tax for Climate Change Mitigation has been introduced as a carbon pricing system. In this taxation system, a surcharge of 289 JPY/tonne of CO2 and 0.7 JPY/liter of gasoline apply to fossil fuels (crude oil, petroleum products, LPG, LNG, and coal) as a part of the Petroleum and Coal Tax. The Act on the Rational Use of Energy also known as the Energy Conservation Act was established in 1979 in response to the oil crisis. The purpose of this act is, with the aim to contribute to securing the effective utilization of fuel resources according to the economic and social environment concerning energy in and outside Japan, to take the measures required for the rational use of energy with regard to factories, etc., transportation, buildings, and machinery and equipment, the measures for levelling demand for electricity, as well as other necessary measures for comprehensively promoting the rational use of energy. The act sets energy-saving targets for relatively large production bases. The Japanese Long-Term Energy Supply and Demand Outlook ("energy mix"), based on the assumption that the economy grows by 1.7% per year, plans intensive energy-saving of about 50.3 million kl (crude oil conversion) by 2030 after implementation of energy-saving measures compared to the reference year of 2013. However, due to slow large-scale investments in the industry and business sectors, the rate of improvement of energy consumption efficiency has been sluggish. Under these circumstances, the investment promotion tax system for energy-saving and renewable energy sophistication, revised evaluation criteria for business operators using energy in factories or workplaces, and the revised Industry Top Runner Program (Benchmark methodology) including expanded inclusion of subject business types became effective in 2018. At the AGC Group, the glass business using a large amount of energy accounts for 46% of total sales. Therefore, carbon pricing such as the

		Tax for Climate Change Mitigation may increase manufacturing costs, and depending on the balance between such costs and the amount of investments into energy efficiency, there is a risk of such taxation affecting product costs and competitiveness.
Emerging regulation	Relevant, always included	■ Actions in line with the Paris Agreement and trends toward decarbonization in various countries have become apparent. The financial impact of conforming to laws and regulations on executing these actions become risks. ■ Countries have set their NDC in line with the Paris Agreement, and accordingly, many countries with a carbon tax have raised or are considering raising the carbon tax rate. This may have a financial impact on us in countries where AGC Group companies are located. ■ France: A medium-to-long term large increase of carbon tax is predicted. We have our Group plant that manufacture naked glass. There is a possible financial impact as a result of increased carbon tax in the case when the plants failed to further reduce or reduce at all any GHG emissions. ■ China: Chinese Emissions Trading System (applies to naked glass plate manufacturing in 2021 and onward). ■ Japan: The Japanese government has declared the goals of carbon neutrality by 2050 and achievement of decarbonization. In February 2021, the Carbon Pricing Subcommittee (literal translation) meeting of the Ministry of the Environment (MOE) resumed. Meanwhile, the Ministry of Economy, Trade and Industry (METI) launched a study group to examine the economic method to create a global carbon neutrality which will contribute to the growth strategy. The Japanese carbon tax is said to be on the lower end in the world and its future hike is a possibility. To achieve carbon neutrality in 2050, it is a possibility that a national program may be created using a system based on the current Tax for Climate Change Mitigation. ■ The U.S.: The Republican Party has proposed a carbon tax. If it is introduced, it may have an influence on our Group's operation bases. ■ The carbon pricing system has been created in emerging economies. ■ The future development of the Carbon Border Adjustment Mechanism (CBAM) will have an influence on our company. There is currently a possibility that the EU will introduce a carbon border tax. If this becomes a reality, it may have a financial impact on our company too.
Technology	Relevant, always included	[Process] ■ A lot of CO2 is emitted from the melting process in glass manufacturing and the electrolyzation process in chemicals manufacturing. Therefore, a shift to CO2-less manufacturing techniques is necessary. Costs of development of such techniques may have a financial impact. [Products and service] ■ When demand for acquiring the building LEED certification and

		building ZEBs increase, product specifications that match such demand are required. Costs of development of such techniques may have a financial impact.
Legal	Relevant, always included	■ The glass and chemicals manufacturing industry, which we are a part of, is a relatively energy-intensive industry. Therefore, failure to correctly calculate and disclose GHG emissions may lead to an accusation from investors that we provide incorrect information.
Market	Relevant, always included	■ If our customers, who are automobile manufacturers, general contractors, and electronic device companies, strengthen their efforts to reduce GHG emissions across their value chains, there may be a heightened need for us as a material manufacturer to change our manufacturing process, raw fuels, or raw materials.
Reputation	Relevant, always included	■ Based on the information submitted to the CDP, analysts and company rating firms assess reporting companies' efforts into ESGs and climate change responses, quantitatively evaluate them by comparing with competitors, and give the ESG score. These pieces of information in a centralized form may be used by investors as investment decision-making tools. If AGC's rating in the area of climate change is not desirable, there is a risk that we may not be chosen by investors and fail to raise funds. ■ Stakeholders may demand companies reduce the environmental impact.
Acute physical	Relevant, always included	■ Plants equipped with a glass melting furnace and those for basic chemicals are located in a coastal area and therefore prone to typhoons. If a plant cannot operate due to a typhoon, sales decrease. Since business partners that are not ready for such an event may no longer be chosen by customers, there is a risk of losing customers.
Chronic physical	Relevant, always included	■ Plants equipped with a glass melting furnace and those for basic chemicals are located in a coastal area and may therefore be affected by tidal waves and raised sea levels, or severe tidal wave damage. If a plant can no longer operate, it cannot make products and sales decrease. Since business partners that are not ready for such an event may no longer be chosen by customers, there is a risk of losing customers. ■ Since plants need raw material procurement involving long-distance maritime transportation, they may be affected by extreme weather. In the case of extreme weather, there is a risk that the manufacturing process stops, production become impossible, and sales decrease. ■ The AGC Group has high-temperature workplaces with, for example, a glass melting furnace. If inside or outside the workplace is hot, employees are likely to develop heat stroke. If the outside temperature keeps rising, there is a risk of rising expenses to prevent heat stroke (e.g., air conditioning).

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

AGC Glass Europe's flat glass manufacturing business is subject to the EU Emissions Trading System (EU ETS). In this system, companies are required to give up the emissions allowance (European Union Allowance, EUA) equivalent to the previous GHG emissions. One emissions allowance corresponds to one tonne of CO2. A plant receives a certain number of free emissions allowances. When the actual emissions exceeded the free emissions allowances received, its company must purchase an additional emissions allowance on the market (securities exchange). The number of free emissions allowances that AGC Glass Europe receives corresponds to 77% of predicted emissions. It is estimated that, between 2021 and 2025, AGC Glass Europe will be short approximately 330,000 EUAs a year.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

3,003,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

It is estimated that, between 2021 and 2025, AGC Glass Europe will be short approximately 330,000 EUAs a year. The price of CO2 is decided in the market and therefore is hard to predict. It is expected to go up in the future, but cost estimation is challenging. Recently, it was 25 € on average in 2019 but soared to 56 € by May 2021. In June 2021, 1 EUA was approximately 50 €, meaning there will a cost of approximately 16.5 million € per year. According to experts, the price of an EUA may exceed 70 € by 2025. The financial impact has been calculated by multiplying the predicted shortage of 330,000 EUAs per year by the estimated carbon price of 70 € per EUA. The rate of 130 JPY per € is used in €-JPY conversion.

Cost of response to risk

3,003,000,000

Description of response and explanation of cost calculation

AGC Glass Europe aims for a 30% reduction of CO2 emissions by 2030 from the 2020 level and carbon neutrality by 2050. To reduce Scope 1-3 CO2 emissions, the company has set a large-scale action plan such as conversion of fuel for glass melting furnace. At the current stage, the cost of this program cannot be evaluated yet.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

In addition to the carbon tax in Japan, on April 22, 2021, Prime Minister Yoshihide Suga announced a 46% GHG emission reduction by FY2030 from the FY2013 level and stated that the government "will continue to try to achieve the 50% level." These may

require companies in Japan to further reduce GHG emissions.

For the AGC Group total, sales in Japan and other Asian countries account for approximately 67%. These regions have quite a few glass manufacturing businesses and chemicals manufacturing plants. Meanwhile, in Japan, the cost of renewable energy procurement is high, and the amount available for purchasing is still low. Electrification of energy used in glass and chemicals manufacturing is facing a high barrier. Assuming that carbon pricing is introduced at a rate of 50 € per tonne of CO2 (about 6,500 JPY) for Scope 1 GHG emissions, which is as high as the European rate, AGC's production costs in Japan are estimated to increase by approximately 7.1 billion JPY.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

7,100,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

1,090,000 (tonnes of CO2) x 6,500 (JPY)

Cost of response to risk

2,180,000,000

Description of response and explanation of cost calculation

The increase of the NDC by the Japanese government, which was a 46% reduction of GHG emissions from the 2013 level, was decided as recently as April 2021. The AGC Group as a whole is currently considering GHG emission measures. The Group had so far promoted GHG emission reduction centering around saving energy. If the carbon pricing system becomes more demanding, however, GHG emission reduction through energy-saving activities alone would be difficult.
As for the costs, assuming our Group will stick to the energy-saving measures until the carbon price reaches 2,000 JPY per tonne of CO2, it is obtained by 2,000 (JPY) x 1,090,000 (tonnes of CO2) because the 2020 Scope 1 emissions in Japan were 1,090,000 tonnes.

Comment

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver
Current regulation
Carbon pricing mechanisms

Primary potential financial impact
Increased direct costs

Company-specific description
The Chinese emissions trading system is expected to apply to naked glass manufacturing business as a part of the building material sector from 2021. When this becomes a reality, three companies operating furnaces in the AGC Group's Chinese bases will need GHG emission reduction or trading, possibly influencing the increase of direct costs.

Time horizon
Long-term

Likelihood
About as likely as not

Magnitude of impact
Low

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)
33,500,000

Potential financial impact figure – maximum (currency)
53,500,000

Explanation of financial impact figure
In the Chinese emissions trading system, the price of CO2 per tonne is expected to start at 41 CNH (about 670 JPY) and hike to 66 CNH (about 1,070 JPY) by 2025. The total CO2 emissions for the three AGC Group companies in 2020 were 550,000 tonnes of CO2. If for example their emissions go over the emission allowance by 10% and

therefore offset that amount, which is 55,000 tonnes of CO2, it will cost 33,500,000 to 53,500,000 JPY, where the price in the Chinese emissions trading market predicted for 2025 is 670 to 1,070 JPY per tonne of CO2.
Lower end: 55,000 tonnes of CO2e*670 = 33,500,000
Higher end: 55,000 tonnes of CO2e*1070 = 53,500,000

Cost of response to risk

53,500,000

Description of response and explanation of cost calculation

We are now considering risk response measures including saving energy and using renewable energy. The estimated risk response cost is obtained by 1,070 JPY/tonne of CO2 x 550,000 tonnes of CO2 assuming that measures are implemented until the CO2 price reaches 1,070 JPY per tonne of CO2 at the maximum.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

In buildings, a lot of heat is lost through windows (glass) and lowering of this loss is an important task. The AGC Group has spent a long time working on improvement of the

heat insulation properties of glass by applying a coating and now has a rich line up of super-insulating coated glass also known as low-emissivity (Low-E) glass.
Recently, we collaborated with Panasonic to jointly develop Vacuum Insulated Glass of the highest class in the industry. (The heat transfer coefficient of a single vacuum insulated glass unit approximately 6 mm thick is 0.7 W/ (m²K); as of October 15, 2018 based on AGC research). Sales of this product have already begun in Europe, which is the largest insulated glass market. The AGC Group also plans to sell it for use in buildings including homes in Japan.
Furthermore, this Vacuum Insulated Glass we developed delivers thermal insulating performance equivalent to the industry's highest thermal insulation glass (triple-glazing Low-E glass (with argon gas in the hollow layer)) with about 1/4 to 1/5 the thickness, making it possible to install into existing sashes when replacing glass windows.

Product introduction page:
https://www.agc.com/news/detail/1197903_2148.html

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

710,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Sales from the glass business are expected to increase by approximately 9% in 2023 from the 2020 level. Accordingly, we expect a sales increase in the glass business including Low-E glass from 651 billion yen (2020) to 710 billion yen (2023). These sales consist of sales of Low-E glass, fire-resistant glass, acoustic insulation glass, and other types of glass.

Cost to realize opportunity

8,478,000,000

Strategy to realize opportunity and explanation of cost calculation

We believe that the transition to a low-carbon or decarbonized society is an opportunity for increased sales of energy-saving products for buildings and homes.

1) Net-zero energy buildings (NZEBs) and net-zero energy houses (NZEHs) are attracting attention. Recently, we built an office building using our eco-friendly products, such as Low-E glass, at the Kashima Plant. The building was able to produce more energy than it consumes and was rated highest in the “ZEB” in the three-level classification system of ZEB series. Outside visitors are accepted for a tour in a part of this building. This may lead to a wide range of AGC Group customers recognizing the benefit of our eco-friendly products to increase construction of NZEBs and NZEHs, possibly increasing sales of our architectural glass.
2) To contribute to acceleration of the global transition to a low-carbon or decarbonized society, we offer a wide variety of thermal insulated glass units. For example, Thermobel Advanced 0.8 is double-glazing glass with very high thermal insulation properties. It features excellent thermal insulation properties of a standard triple insulation glazing and also an advantage of double-glazing glass (thin and light). This is achieved by combining a Low-E coating of a certain makeup and a space filled with an insulating gas. With this structure, light transmission is maximized allowing maximum use of solar heat. Thermobel Advanced 0.8 is the best insulation double-glazing glass currently available in the European market.
3) Another example is new-generation double-glazing glass developed using vacuum technology. This new product named FINEO is both thermal and acoustic insulation properties and has capabilities equal to or higher than triple glazing. FINEO is double-glazing glass consisting of two glass sheets. Each glass sheet is as thin as 3 mm. One of the glass sheets has a super-insulating coating. Two sheets are separated by a 0.1 mm vacuum gap. The product thickness (1 cm or thinner) is 1/4 to 1/5 compared to the traditional double-glazing glass and weighs 1/3 of it. Development of FINEO was the result of R&D over several years, and we built its brand-new and specific production line in Belgium.
Costs of realizing the opportunity: the R&D costs for the whole AGC Group was 46.444 billion JPY in FY2020. Glass unit R&D costs were 8.478 billion JPY. The breakdown is Low-E glass development costs and development costs of other types of glass.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Demand for energy-saving products for automobiles is expected to increase.
AGC achieved 99% UV blocking (based on ISO 9050) for all windows (windshield, front door glass, rear door glass, rear window) on an automobile for the first time in the world (survey by AGC in November 2015) (99% UV cut glass in all direction). Note that the UV blocking rate of traditional tempered glass is around 90%.
See "比較 1" (Comparison 1) on https://www.agc.com/hakken/norimono/010_uv.html (Products sold in the Japanese market. The website is in Japanese only.)
The glass is also equipped with heat-absorbing capability; it reduces the skin frizzing caused by infrared rays.
See "比較 2" (Comparison 2) on https://www.agc.com/hakken/norimono/010_uv.html (Products sold in the Japanese market. The website is in Japanese only.)
This realizes comfortable driving, reduces heat inside the car that becomes increasingly higher due to climate change, and decreases the air conditioner use, contributing to GHG emissions reduction from the car leading to reduction of GHG emissions from automobile companies and drivers. As s a result we predict an opportunity to increase our product sales.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

710,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Sales from the glass business are expected to increase by approximately 9% in 2023 from the 2020 level. Accordingly, we expect that sales of our glass business, including 99% UV cut glass in all directions, will increase from 651 billion yen (2020) to 710 billion yen (2023). The glass business sales come from 99% UV cut glass in all directions, antifog glass, light control glass, and other kinds of glass.

Cost to realize opportunity

8,478,000,000

Strategy to realize opportunity and explanation of cost calculation

<Case study>
On a cold day, glass loses its heat due to a low outside temperature and its temperature decreases. This makes the surface temperature of automobile glass inside the vehicle easily go below the dew point of the air in the vehicle, resulting in condensation. The windshield sweats inside, impairing forward visibility.
An air conditioner is used to clear the glass, but this lowers the fuel economy and increases GHG emissions.
To address the issue, AGC has been carrying out R&D of antifogging film material. As a result, we succeeded in developing automobile glass with a highly durable antifogging film, which is applied as a coating to the inside surface of the automobile glass to absorb moisture. Currently, we offer automobile windshields with an antifogging film to contribute to reduction of GHG emissions from automobiles.
Costs of realizing the opportunity: the R&D costs for the whole AGC Group was 46.444 billion JPY in FY2020. Glass unit R&D costs were 8.478 billion JPY. The cost breakdown is 99% UV cut glass in all directions, antifog glass, light control glass, and other kinds of glass.

Comment

Identifier
Opp3

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Primary potential financial impact
Increased revenues resulting from increased demand for products and services

Company-specific description
The refrigerant (gas) used to cool the air is one of the key factors to decide the performance of an air conditioner or refrigerator. HFC was used as a substitute refrigerant of CFCs or HCFCs, but there was a problem that it had a large impact on global warming. This led to an international agreement to reduce the amount of HFC use in stages and replace it with a green refrigerant that has a significantly lower impact on global warming.
To address this new issues, we used a molecular design technique and organic synthetic technique that we have cultivated in the chemicals business and successfully developed three kinds of green refrigerant (composition and proprietary manufacturing methods).
Product characteristics are as follows:

1) Products can be retrofitted, meaning that the refrigerant can be replaced without modifying the current devices or equipment.
2) The product lineup covers a wide range of applications including solvents, urethane foaming agents, and refrigerant for refrigerators and air conditioners (high pressure and low pressure).
Our products were recognized for the outstanding environmental technologies and won the Minister of the Environment Prize at the Green & Sustainable Chemistry (GSC) Awards (2020).
Under the next-generation refrigerant brand AMOLEA™, we hope that promotion of wide application and stable supply of green refrigerants and contribution to reduction of global GHG emissions will increase product sales.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

560,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Sales from the chemicals business are expected to increase by about 24% in 2023 from the 2020 level. This means sales of the chemicals business, including AMOLEA™, are expected to increase from 451.2 billion JPY (2020) to 560 billion yen (2023). The breakdown is the gas & solvents business including AMOLEA™, chlor & alkali business, fluorochemicals business, urethane business, life science business, and other businesses.

Cost to realize opportunity

8,649,000,000

Strategy to realize opportunity and explanation of cost calculation

The refrigerant (gas) used to cool the air is one of the key factors to decide the performance of an air conditioner or refrigerator. It is required to have not only excellent thermophysical properties, which will lead to saving energy, but also various other properties such as low toxicity and incombustibility so that it will not damage the ozone layer even if leaked. Traditionally, HFCs were used as substitute refrigerants for CFCs

or HCFCs, but there was a problem that they had a large impact on global warming. This led to an international agreement to reduce the amount of HFC use in stages and replace it with a green refrigerant that has a significantly lower impact on global warming. To address this new issue we continuously worked on development of HFO products that could offer significantly more eco-friendly properties than traditional refrigerants. The HFO products thus developed include the AMOLEA™1234yf, AMOLEA™X, and AMOLEA™Y series that are primarily used as refrigerants and AMOLEA™1224yd that is mainly used as a refrigerant and foaming agent. Without compromising performance and the important properties such as incombustibility and low toxicity, we have dramatically reduced the global warming potential (GWP) of our refrigerants. Furthermore, by developing our unique reaction processes and high-efficiency reaction catalyst and making full use of our existing chemical chain (manufacturing process), between 2015 and 2019, we launched a new business for the two HFO products and achieved a stable supply of these products.
By promoting switching over to these three types of HFO products, we will work toward sustainable environmental impact reduction for countries across the world and a decrease in global warming.
Costs of realizing the opportunity: the R&D costs for the whole AGC Group was 46.444 billion JPY in FY2020. The R&D costs for the Chemicals Division were 8.649 billion JPY, and this figure is estimated as the cost of realizing the opportunity. The breakdown is the gas & solvents business including AMOLEA™, chlor & alkali business, fluorochemicals business, urethane business, life science business, and other businesses.

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization's low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, but we intend it to become a scheduled resolution item within the next two years	

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
IEA B2DS IEA Sustainable development scenario IEA NPS IEA CPS Nationally determined contributions (NDCs)	1) Reason for selecting this scenario Given the global reach of AGC Group's business and based on data published by IEA, we selected two scenarios which have been frequently used worldwide as the most basic scenarios: one forecasting the global temperature increase by 2°C and the other by 4°C by the end of this century. In addition, we selected NDCs. With the 2°C increase scenario, we consider it is important to assess of the level of cost increases along with the diffusion of carbon pricing and changes in other associated costs. With the 4°C increase scenario, we recognize the importance of consideration of countermeasures against possible physical impacts of intensifying floods, high tides, and sea level rises arising from climate change on the production bases and our suppliers. As for Japan's NDCs, we consider it important to contemplate power supply configuration and energy costs in light of national policies of Japan not only as many AGC Group's manufacturing sites are located in Japan but also approximately 70% of our sales are originated from Japan and Asia area (2020). 2) Timescale for the target scenarios, reason for setting such timescale, and target coverage The reason that we have set a timescale to 2030 is as follows. Firstly, Japan and other countries in which AGC has been operating have formulated NDCs targeted to 2030 and been proceeding with the formulation of legislation by that time. Secondly, a long-term viewpoint is indispensable in formulating AGC's business strategies. The target covers AGC Group's businesses worldwide and Scope 1 and 2 emissions. 3) Analysis result and impacts on business objectives and strategies AGC Group emits a large amount of GHGs as its plants and other manufacturing facilities consume large quantities of energy. We thus estimated that carbon pricing and the expanding scope of GHG emission regulations would impact significantly on our businesses by 2030. In response to this estimate, we have changed our strategy to accelerate capital investment and technology development towards shifting from fuel combustion melting to electric melting in glass manufacturing facilities. 4) Impact on our strategies and business plan: case study In Europe, the EU Emissions Trading System (EU-ETS) has already been introduced. AGC Group's plants in EU are also subject to the System. Accordingly, AGC Group established the Internal Carbon Pricing (ICP) system

	almost at the same time as the introduction of EU-ETS. Subsequently, the Group has assessed, in making investment decisions, the profitability of large-scale capital investment projects taking future carbon cost into account. Based on the result of calculation under the ICP system, we have so far reduced our dependence on fuel combustion by introducing electric melting facilities at facility renewal opportunities of glass plants in the EU. In addition, we have installed solar panels as a power source for furnaces.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	We expect increases in demand for products that contribute to mitigation of and adaptation to climate change along with the accelerated global movement towards a decarbonized or low carbon society. For example, higher demand for more resilient buildings and automobiles might create need for more durable glass products. With this awareness, we endeavor in a medium term to develop eco-glass, alternative CFCs with low climate warming potential (GWP), and ion exchange membranes for sodium electrolysis and expand their markets. In a long term, we strive to transform our business portfolio comprising existing operations which emit a large amount of GHGs to the one comprising strategic businesses with low GHG emissions as well as potential for high growth in markets (those related to life science or electronics, etc.). In recent years, the ratio of operating profit from our strategic businesses against that from the whole businesses has increased from 12% in 2017 to 59% in 2020. We are planning to further raise the ratio of operating profit from strategic businesses during the period of next Medium-Term Management Plan from 2021 to 2023.
Supply chain and/or value chain	Yes	Having identified significant impacts of climate change on raw material procurements and product distributions among AGC Group's value chains, we revised AGC Group Purchasing Policy in January 2020. With this revision, we have endeavored to raise the awareness of whole supply chain on sustainability issues and prompt all suppliers to address such issues by taking environmental and social actions including those against global warming. Based on the policy, we will conduct questionnaire surveys among our

		suppliers to check their actual activities. Moreover, we, together with our suppliers, have been promoting measures that put less burdens on environment but are effective, such as improvements of transport lots and transportation modal shifts.
Investment in R&D	Yes	One of the application technologies of hydrogen is fuel cells, which utilize electricity that is converted from energy generated in the process of reaction between hydrogen and oxygen to generate water. As fuel cells are used for fuel cell vehicles, one of the next-generation mobility, its demand is expected to increase. An important part of fuel cells is the electrolytic membrane. It has been a technological challenge to equip the electrolytic membrane with high power generation performance and high durability. AGC Group strategically promoted development of fluorinated electrolyte polymer equipped with high power generation performance and high durability for fuel cells by utilizing its knowledge gained from a long-term R&D on fluorine materials. As a result, we productized our concept. In our fluorochemicals business, we now aim to boost sales of our fluorochemicals business of 2025 to approximately 1.5 times that of 2020. Furthermore, we expect that sales of and operating profit from new products that will contribute to solutions to key sustainability issues, such as fluorinated electrolyte polymer for fuel cells, will reach 30% and 50% of the net sales and operating profit, respectively, in 2025. Our products have been established as No. 1 dominantly due to their high power generation performance and durability. We will keep this position by engaging in further R&D activities.
Operations	Yes	Climate change issues have significantly been impacting on each manufacturing site's efforts to reduce GHG emissions. We have set our strategic milestone as 30% reduction in GHG emissions (from Scope 1 and 2) in 2030 compared to 2019. Towards achieving it, each manufacturing site has been promoting conversions to low-carbon fuels and energies, introductions of the latest and highly efficient facilities, and streamlining of manufacturing processes, among efforts. Specific examples include maintenances and renewals of electrolysis plant facilities in chemical plants in Japan and overseas to improve their efficiency, conversions of combustion fuel used in glass plants in Japan and overseas to LNG, and acceptance and active utilization of surplus renewable energy electricity at the electrolysis plant in the chemical plant in Chiba Prefecture, Japan. Such efforts will reduce AGC Group's GHG emissions over a long

		term.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets Liabilities	[Capital expenditure and capital allocation: Case study] In a medium term, we consider that there would be unavoidable rises in the energy price due to conversions from coal and heavy oil to LNG and other low-carbon fuels and renewable energies. In addition, IEA scenarios estimated carbon prices in developed countries as $100/t-CO2 in 2030 and $140/t-CO2 in 2040. Various countries including China and South Korea are introducing carbon price measures. AGC Group emits approximately 11. 4 million tons (Scope 1 and 2) annually (results of 2019). The Group would be required to bear approximately 114 billion yen a year if the carbon price hits 10,000 yen/t-CO2 in a long term. In order to avoid it, we strive to achieve our target, the milestone to 2030, to reduce GHG emissions by 30% in 2030 (compared to 2019). When taking this target into account in formulating our capital expenditure plan, we need to increase our capital expenditure. In this way, climate change has significant impact on our capital expenditure and allocation plan. We have started an effort to transform our business portfolio from the existing operations which emit a large amount of GHGs. The long term goal is to establish a business portfolio consisted of strategic businesses which emit less GHGs and have high market growth potential (life science, electronics related businesses, etc.). The ratio of investments in strategic businesses stipulated in the Medium-Term Management Plan from 2018 to 2020 was 35% (the total amount allocated for investments: 670 billion yen). This ratio significantly increased from 17% (the total amount allocated for investments: 511.3 billion yen) for the period of previous Medium-Term Management Plan (from 2015 to 2017). We will further increase this ratio for the period of next Medium-Term Management Plan from 2021 to 2023. Moreover, we must develop novel manufacturing methods in order to reduce GHG emissions while maintaining our growth over a medium to long term. We thus are planning to prioritize for a medium to long term the development of novel manufacturing methods in allocating our management resources. [Acquisition and divestment]

		There may be some impact on our acquisitions or divestments during the period of next Medium-Term Management Pan from 2021 to 2023. Although neither an acquisition nor divestment with the aim of reducing GHG emissions is ongoing at present, but we may consider acquisitions to obtain GHG emission reduction technologies or divestments from businesses with low carbon productivity in pursuit of achieving 30% reduction of GHG emissions (Scope 1 and 2) by 2030 and net zero carbon emissions by 2050. [Access to capital] We may face some impact during the period of next Medium-Term Management Plan from 2021 to 2023. In a medium term, there are risks of declines in our profit due to strengthened carbon pricing measures of governments of each country and in equity capital reflecting an increase in R&D expenses. As a result, we might see a decline in the equity ratio, financial rating, and ultimately in our fund-raising capability. [Assets] We may face some impact during the period of next Medium-Term Management Plan from 2021 to 2023. In a medium term, external stakeholders might negatively assess products or manufacturing facilities with low carbon productivity in our business portfolios, and as a result, we might incur losses. [Liabilities] We may face some impact during the period of next Medium Term Management Plan from 2021 to 2023. In a medium term, our equity capital might decline, and the debt ratio might increase due to a decline in profit arising from strengthened carbon pricing measures of governments of each country and increased R&D costs.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).
No answer

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?
Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number
Abs 1

Year target was set
2020

Target coverage
Company-wide

Scope(s) (or Scope 3 category)
Scope 1+2 (market-based)

Base year
2019

Covered emissions in base year (metric tons CO2e)
11,369,483

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)
100

Target year
2030

Targeted reduction from base year (%)
30

Covered emissions in target year (metric tons CO2e) [auto-calculated]
7,958,638.1

Covered emissions in reporting year (metric tons CO2e)
11,238,997

% of target achieved [auto-calculated]
3.825621036

Target status in reporting year
New

Is this a science-based target?
No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

We have been promoting GHG emission reduction activities under the AGC Group-wide targets.

Target reference number

Abs 2

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2019

Covered emissions in base year (metric tons CO2e)

11,369,483

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2050

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

11,238,997

% of target achieved [auto-calculated]

1.1476863108

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

Towards achieving net zero emission in 2050, we have been promoting GHG emission reduction activities under the AGC Group-wide targets.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Intensity metric

Metric tons CO2e per unit revenue

Base year

2019

Intensity figure in base year (metric tons CO2e per unit of activity)

753

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2030

Targeted reduction from base year (%)

50

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

376.5

% change anticipated in absolute Scope 1+2 emissions

30

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

800

% of target achieved [auto-calculated]

-12.4833997344

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

We have been promoting GHG emission reduction activities under the AGC Group-wide targets.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Net-zero target(s)

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number

NZ1

Target coverage

Company-wide

Absolute/intensity emission target(s) linked to this net-zero target

Abs1

Int1

Target year for achieving net zero

2050

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

AGC Group has announced to promote sustainability management in its new Medium-Term Management Plan “AGC plus-2023.” Based on a relationship of trust with customers, AGC Group has been working to solve socials issues in response to

demands of the times through R&D activities from a long term viewpoint and challenges to commercialize R&D outcomes. We have determined to contribute to the realization of sustainable Earth and society through sustainability management. Towards this goal, we will continue to fulfil our mission of “AGC, an everyday essential part of our world” by utilizing our unique materials and solutions. Specifically, we will create a wide variety of social values through diverse global businesses and advance to the next stage towards the realization of sustainable global environment. We have introduced quantitative climate change targets: ultimately to net zero carbon emission. AGC Group’s net zero carbon emissions means that the amount of emission calculated by subtracting the volumes of GHG absorption and removal from the volume of GHG emission.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	
To be implemented*	35	283,193
Implementation commenced*	1	249
Implemented*	3	115,088
Not to be implemented	0	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes

Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

88

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
280,000

Investment required (unit currency – as specified in C0.4)
247,000

Payback period
<1 year

Estimated lifetime of the initiative
<1 year

Comment
Glass Division of Kashima Plant has introduced energy-saving measures, such as the introduction of LED lighting, equipment of inverters with motors, and introduction of 5C C-MAG.

Initiative category & Initiative type
Low-carbon energy consumption
Other, please specify
Conversion of fuel used in a power station in an industrial park in which AGC Group has invested.

Estimated annual CO2e savings (metric tonnes CO2e)
100,000

Scope(s)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
1,000,000,000

Investment required (unit currency – as specified in C0.4)
14,000,000,000

Payback period
4-10 years

Estimated lifetime of the initiative
11-15 years

Comment

We replaced the boiler of the power station with gas turbine to improve the energy efficiency of the power station with the aim of reducing the volume of CO2 to be generated.

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

15,000

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,000,000,000

Investment required (unit currency – as specified in C0.4)

70,000,000,000

Payback period

4-10 years

Estimated lifetime of the initiative

21-30 years

Comment

Energy intensity improves by replacing monopolar electrolysis cells with bipolar electrolytic cells, which have higher energy efficiency.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	The legacy of the AGC Group is about more than the high-quality products we make for customers around the world. It's about more than the trust we have gained over our century-long history. It's about more than our continued pursuit of ingenuity, diversification, and global growth. Our legacy is about doing all those things and more, with an ethical foundation. We know a stable moral outlook allows us to fulfill our responsibilities, exceed expectations, and establish consumer loyalty. The AGC Group Code of Conduct reflects the Shared Values found in

	the AGC Group Vision. Integrity is one of those Shared Values. The Code defines requirements for all AGC Group companies and their employees to ensure we do business with integrity according to applicable laws, rules, regulations, company policies, and business ethics. The four Shared Values—Innovation & Operational Excellence, Diversity, Environment, and Integrity—help us achieve the AGC Group Vision, while the AGC Group Code of Conduct sets forth the Company's expectations for each of us to demonstrate integrity in our daily actions. Towards the realization of sustainable society, AGC Group puts highest priorities on environmental protection and conservation in conducting all business activities from R&D, planning, design, production, sales, and distribution. We invest in advanced technologies that lead to waste reductions and energy saving at each plant under the faith that consideration to global environment outweighs profits. These efforts will bring many opportunities and values to our company and stakeholders and enable next generations to inherit the beautiful and safe environment. Our basic policy on climate change regulation requirements and standards is to comply with legislation concerning climate change and environment applied to each site. In addition, we have established an environmental management system. Under the system, we identify legislation applied to each site and assess the status of compliance. When non-compliance occurred, the event will be reported to the management and corrective action will be taken immediately. AGC Group Code of Conduct is available at the following URL. https://www.agc.com/csr/integrity/coc.html
Dedicated budget for low-carbon product R&D	The legacy of the AGC Group is about more than the high-quality products we make for customers around the world. It's about more than the trust we have gained over our century-long history. It's about more than our continued pursuit of ingenuity, diversification, and global growth. Our legacy is about doing all those things and more, with an ethical foundation. We know a stable moral outlook allows us to fulfill our responsibilities, exceed expectations, and establish consumer loyalty. The AGC Group Code of Conduct reflects the Shared Values found in the AGC Group Vision. Integrity is one of those Shared Values. The Code defines requirements for all AGC Group companies and their employees to ensure we do business with integrity according to applicable laws, rules, regulations, company policies, and business ethics. The four Shared Values—Innovation & Operational Excellence, Diversity, Environment, and Integrity—help us achieve the AGC Group Vision, while the AGC Group Code of Conduct sets forth the Company's expectations for each of us to demonstrate integrity in our daily actions.

	In light of this code of conduct, each member of AGC Group practices Integrity through working in compliance with legislation and corporate ethics. In particular, we recognize the necessity of paying special attention to the “focus on developing products that benefit the environment rather than harm it” and “setting ambitious goals to shrink our environmental footprint and address sustainability challenges” among the codes of conduct. AGC Group Code of Conduct is available at the following URL. https://www.agc.com/csr/integrity/coc.html We also make environmental protection an essential part of our business by assessing and improving our operations, using renewable energy through solar and other methods, recycling where possible, and reducing waste. Our energy-saving innovations in green product development and resource management systems help us reuse chemicals, conserve water, and prevent water pollution. AGC also encourages all our business partners to implement policies and take active steps to care for the environment. We must all work together to stop the consequences of climate change, air and water pollution, deforestation, and many other environmental threats. We strive for continual improvement by developing specific programs that address the environmental cost and impact of our activities, products, and services.
Dedicated budget for energy efficiency	The Act on the Rational Use of Energy, which has been applied to manufacturing sites in Japan, requires annual 1% reduction of energy intensity. To meet this requirement, we annually secure a budget for energy saving measures.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

1. AGC Group has been working for a long time on how to improve the heat insulation performance of glass by coating. We therefore have a rich line-up of super-insulating coated glass products, also called low-emissivity (low-e) glass products. To communicate the importance of providing products that contribute to energy saving, GHG emission reduction, and healthy building construction in Europe, where the heat insulation performance is regarded as an important factor due to its cold weather, AGC Glass Europe supports activities of Glass for Europe, an industry association for glass manufacturers for buildings, vehicles, and transportation in Europe. According to this association, more than 85% of glass equipped in buildings in Europe are less-efficient single-glazing glass or double-glazing glass (no metal coating on the contact sides of neither plates). The activity of Glass for Europe aims to encourage consumers to use energy-efficient windows by labelling window products' energy efficiency in grades from A to G (the window energy label system introduced in the EU). With our rich lineup of low emissivity products, we provide solutions that satisfy every comfortability requirement. This is our new business opportunity.

2. Our UV Verre Premium™ Cool On, one of AGC Group's automotive glass products, and other products have seen increased demand along with the increasing demand for tempered glass that insulates ultraviolet ray. UV Verre Premium Cool on™ is the world's first tempered front door glass for automobiles. The product blocks approximately 99% of UV and infrared rays, alleviates uncomfortable glare, and prevents temperature increases in the car. While achieving comfortable driving environment, the product contributes to reductions in GHG emissions from vehicles by preventing room temperature increases and, as a result, reducing the use of air conditioners.

3. AGC Inc. has succeeded in developing three types of green refrigerants (compositions and original manufacture method) for various purposes by utilizing its molecule design and organic synthesis technologies obtained in its chemicals business. With the next-generation refrigerant brand "AMOLEA™," we will promote the diffusion and stable supply of green refrigerants to contribute to GHG emission reduction on the global level.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

The GHG Protocol for Project Accounting, ISO 14064-2 Greenhouse gases – Part 2, Guidelines for Quantifying GHG emission reductions of goods or services through Global Value Chain by the Ministry of Economy, Trade and Industry

% revenue from low carbon product(s) in the reporting year

Comment

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start
January 1, 2020

Base year end
December 31, 2020

Base year emissions (metric tons CO2e)
6,594,743

Comment
We included emissions from fuel combustion, material combustion and processes, and temporary emissions in Scope 1 emissions by referring to the GHG protocol.

Scope 2 (location-based)

Base year start
January 1, 2020

Base year end
December 31, 2020

Base year emissions (metric tons CO2e)
4,806,114

Comment
We included grid electricity we purchased and steam in Scope 2 emissions. We referred to IEA data for each country's emission factor.

Scope 2 (market-based)

Base year start
January 1, 2020

Base year end
December 31, 2020

Base year emissions (metric tons CO2e)
4,643,318

Comment

We included grid electricity we purchased and steam in Scope 2 emissions. When emission factors provided by the contracted power companies are valid, we used them.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Act on the Rational Use of Energy
IEA CO2 Emissions from Fuel Combustion
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superceded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol: Scope 2 Guidance

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

6,594,209

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

4,806,114

Scope 2, market-based (if applicable)

4,643,318

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3,828,681

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Upstream emission of purchased goods (main raw materials): Σ((Weight of goods procured from non-group companies by goods)×(intensity by good, physical volume base))
Upstream emission of purchased products and services (indirect procurement: Σ((Amount of goods and services procured from non-group companies by account title)×(Intensity by product, monetary base)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

684,007

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Σ((Amount of capital investment)×(Intensity by capital formation division))

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,102,111

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Σ((Volumes of fuel, electricity, and steam consumed)×(Intensity by type))

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,013,685

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Transportation and distribution from specified consigners: Figure in ton-kilometer based on Act on the Rational Use of Energy×(Intensity by mode of transportation)
Procurement transportation:Σ{(Weight of procurement)×(Transportation distance)×(Intensity by mode of transportation)}
Exports to overseas:Σ[(Weight of exports)×{(Transportation distance)×(Intensity by mode of transportation)] (marine container, air transportation of products, in-country transportation by overseas sites)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

181,553

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Σ((Waste volume by type and treatment method)×(Intensity by type and treatment method))

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

45,351

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.

Σ{Travel cost by mode of travel×(Intensity by mode of travel)}

We calculated GHG emission of AGC Inc. based on its domestic travel and transportation expenses.
We estimated GHG emission of AGC Group worldwide based on the ratio of employees of each Group company against the total of all Group companies.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

52,855

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
Σ{(Commuting expense by mode of commuting×(Intensity by mode of commuting)}

We calculated GHG emission of AGC Inc. based on its domestic travel and transportation expenses.
We estimated GHG emission of AGC Group worldwide based on the ratio of employees of each Group company against the total of all Group companies.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We own leased assets and control their operation. Recognizing our responsibility for emissions from leased assets, however, we have determined to include such emissions in our company’s Scope 1 and 2 emissions. Therefore, this category is not relevant to us.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

As we produce intermediate products (parts and materials), transportation (by other company) from our company to processing plants (our customers) is subject to accounting in Category 9. However, our company is the specified consigner of all shipments from our company and thus has control over them. Accordingly, they are subject to accounting in Category 4 based on the GHG protocol. Therefore, this category is not relevant to us.

Processing of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

269,260

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.

・(Weight of architectural glass sold)×(LCA data* intensity of processing)×(Electricity emission factor)

・ (Weight of fluorine gas sold)×GWP×(Leakage factor during gas filling)"

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,945,208

Emissions calculation methodology

As for products that directly emit GHGs when used by purchaser, we calculate emissions by multiplying emission intensity of each product by the anticipated use condition.

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.

・(Weight of fluorine gas sold)×GWP×(Leakage factor during the use or inspection)
・(Weight of fluorine solvents sold)×GWP
・(Weight of sodium bicarbonate sold)×(Weight of CO2 generated through thermolysis (per unit weight of sodium bicarbonate; source: reaction formula))"

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,580,709

Emissions calculation methodology

Judging that the amount calculated by subtracting the volume of waste generated during the manufacturing process from the volume of resources input is equivalent to the volume of waste arising from sold products, we calculate emissions by multiplying the amount by the emission intensity of waste treatment method.
We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.
・Σ[{Weight of shipment by product)×(Intensity by waste type)],
・(Weight of fluorine gas sold – Volume of leakage at gas filling and during the use)×(100% - domestic refrigerant recovery rate)×GWP,
・Weight of SF6 sold×GWP×Leakage rate at disposal "

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Downstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

224,174

Emissions calculation methodology

We referred to the Inventory Database for Environment Analysis (IDEA) for LCA of the Sustainable Management Promotion Organization for emission intensities.

Σ {(Area of leased building)×(Intensity by floor area)×(Emission intensity)}

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

We have judged that this category is not relevant to AGC Group as the Group has no franchise.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

AGC Group owns equity method affiliated companies not for the investment purpose. From the viewpoint of influence, GHG protocol's standard based on which whether if emissions from equity investments should be included or not, we have judged that this category is not relevant to us as AGC Group's influence on these companies are not significant.

Other (upstream)

Evaluation status

Please explain

Other (downstream)

Evaluation status

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biogenic carbon relevant to your organization in metric tons CO2.

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	200	We use approximately 2,000 tons of timber (waste timber) a year as biomass. The volume of CO2 emission from timber combustion is approximately 0.1 t-CO2/t-dry. Our volume of CO2 emission from timber combustion calculated is 200t-CO2.

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00000796

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

11,238,997

Metric denominator

unit total revenue

Metric denominator: Unit total

1,412,300,000,000

Scope 2 figure used

Market-based

% change from previous year

42

Direction of change

Increased

Reason for change

The volume of production and production efficiency decreased due to Covid-19.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	6,197,191	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	11,577	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	2,256	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	188,140	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	147,691	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	47,887	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Japan	1,206,424
China	380,574
Indonesia	1,953,775
Philippines	33
Singapore	4,017
Republic of Korea	69,264
Taiwan, Greater China	126,945
Thailand	347,510
Viet Nam	42,754

Austria	7
Belgium	347,041
Czechia	304,758
France	320,925
Germany	125,857
Hungary	1,437
Italy	104,156
Morocco	0
Netherlands	25
Poland	450
Russian Federation	364,220
Slovakia	36
Spain	97,334
United Kingdom of Great Britain and Northern Ireland	16,084
Brazil	276,863
Canada	164
Mexico	26
United States of America	504,062

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division
By activity

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Building and Industrial Glass	2,882,553
Automotive Glass	657,371
Electronics	614,208
Chemicals	2,404,495
Others	37,115

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
CO2 emissions originated from fuel combustion	5,032,834
CO2 emissions originated from processing raw materials	1,018,939
GHG generation associated with emission of methane and fluorine-based gases into the air other than CO2	397,552
Process emissions of CO2 other than above	145,418

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities		

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Japan	1,456,119	1,262,986	2,650,826	354
China	493,463	506,547	800,149	0
Indonesia	762,789	810,391	995,938	0
Philippines	54	54	76	0
Singapore	3,360	3,360	8,636	0
Republic of Korea	170,996	170,996	319,678	0
Taiwan, Greater China	351,224	351,224	628,309	0
Thailand	1,004,039	1,004,039	1,857,776	0
Viet Nam	12,795	12,795	28,133	0
Austria	1,345	353	5,867	0
Belgium	40,254	41,224	192,510	0
Czechia	139,794	106,555	277,221	0

France	6,726	4,016	114,774	0
Germany	19,904	21,690	51,048	0
Hungary	21,188	16,947	82,028	0
Italy	17,026	14,114	61,578	0
Morocco	26,946	29,551	42,421	0
Netherlands	593	668	1,479	0
Poland	24,701	24,456	36,470	0
Russian Federation	75,159	89,963	205,957	0
Slovakia	71	22	250	0
Spain	5,972	7,270	23,916	0
United Kingdom of Great Britain and Northern Ireland	5,879	5,879	25,920	0
Brazil	7,502	0	75,168	75,168
Canada	143	143	1,041	0
Mexico	5,515	5,515	12,100	0
United States of America	152,560	152,560	372,370	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division
By activity

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Building and Industrial Glass	395,871	370,853
Automotive Glass	761,020	740,668
Electronics	1,075,283	1,018,327
Chemicals	2,486,275	2,408,761
Others	87,665	104,709

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Grid power consumption	4,594,009	4,431,192
Purchased steam	212,240	212,240

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Chemicals production activities			

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)		
Methane (CH4)		
Nitrous oxide (N2O)		
Hydrofluorocarbons (HFC)		
Perfluorocarbons (PFC)		
Sulphur hexafluoride (SF6)		
Nitrogen trifluoride (NF3)		

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	36,528	Decreased	0.3	Our volume of emission from Scope 1 and 2 was 11,435,915t-CO2 in 2019. We increased the use of renewable energy and reduced GHG emission by 36,528 tons, equivalent to 0.3% (36528/11,435,915=0.3%). The renewable energy electricity procured through grid significantly increased from 67,156MWh in 2019 to 147,086MWh in 2020. We converted our renewable energy consumption to CO2 using 0.457t-CO2 / MWh.
Other emissions reduction activities	249	Decreased	0	Our volume of emission from Scope 1 and 2 was 11,435,915t-CO2 in 2019. We increased the use of renewable energy and reduced GHG emission by 249 tons, equivalent to 0.0000001% (249/11,435,915=0.0000001%). We achieved the 249t-CO2 reduction of GHG emission by introducing an electricity saving measure, that is, the introduction of LED lighting, in multiple sites in Japan.
Divestment				
Acquisitions				
Mergers				
Change in output				
Change in methodology				
Change in boundary	1,912	Decreased	0.0001	The volume of emission decreased along with the closure of certain sites in the U.S.
Change in physical operating	1,982	Decreased	0.0001	We reconstructed our production mix considering the impact of Covid-19 pandemic. As a result, GHG emission

conditions				intensities have improved, and we achieved a 1,982t-CO2 reduction.
Unidentified				
Other				

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 5% but less than or equal to 10%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating	MWh from	MWh from non-	Total (renewable

	value	renewable sources	renewable sources	and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	23,697,286	23,697,286
Consumption of purchased or acquired electricity		0	8,871,905	8,871,905
Consumption of purchased or acquired heat		0	29	29
Consumption of purchased or acquired steam		0	810,139	810,139
Consumption of purchased or acquired cooling		0	1,055	1,055
Consumption of self-generated non-fuel renewable energy		15,753		15,753
Total energy consumption		15,753	33,380,414	33,396,167

C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)		
Consumption of purchased or acquired electricity		
Consumption of purchased or acquired heat		
Consumption of purchased or acquired steam		
Consumption of purchased or acquired cooling		
Consumption of self-generated non-fuel renewable energy		
Total energy consumption		

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application

Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Crude Oil

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

35,293

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

2.62

Unit

metric tons CO2 per liter

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 1

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

49,379

MWh fuel consumed for self-generation of electricity

57

MWh fuel consumed for self-generation of heat

0

Emission factor

2.71

Unit

metric tons CO2 per liter

Emissions factor source

Acton Promotion of Global Warming Countermeasures

Comment

A Heavy oil

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1,428,033

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3

Unit

metric tons CO2 per liter

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

C Heavy oil

Fuels (excluding feedstocks)
Petrol

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
7,620

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
2.32

Unit
metric tons CO2 per liter

Emissions factor source
Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)
Gas Oil

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
63,304

MWh fuel consumed for self-generation of electricity
811

MWh fuel consumed for self-generation of heat
0

Emission factor
2.58

Unit
metric tons CO2 per liter

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)
Kerosene

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
23,738

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
2.49

Unit
metric tons CO2 per liter

Emissions factor source
Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)
Liquefied Natural Gas (LNG)

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
2,777,497

MWh fuel consumed for self-generation of electricity
215,641

MWh fuel consumed for self-generation of heat
0

Emission factor
2.7

Unit

metric tons CO2 per metric ton

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

54,910

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

0.0631

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC guidelines

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

11,410,236

MWh fuel consumed for self-generation of electricity

74

MWh fuel consumed for self-generation of heat

0

Emission factor

2.22

Unit

metric tons CO2 per GJ

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Ethylene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1,049

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3.14286

Unit

metric tons CO2 per metric ton

Emissions factor source

Calculated by ourselves

Comment

C2H4+3O2→2CO2+2H2O

Fuels (excluding feedstocks)

Other, please specify

Off gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

205,121

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

1.99543

Unit

kg CO2 per m3

Emissions factor source

Information obtained from our suppliers

Comment

Fuels (excluding feedstocks)

Propane Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

5,171

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan LP Gas Association. Guidelines on CO2 emission factor of propane, butane, and LP gas

Comment

Fuels (excluding feedstocks)
Propylene

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
4,418

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
3.14286

Unit
metric tons CO2 per metric ton

Emissions factor source
Calculated by ourselves

Comment
$2C_3H_6+9O_2 \rightarrow 6CO_2+6H_2O$

Fuels (excluding feedstocks)
Hydrogen

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
716,236

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
0

Unit
kg CO2 per m3

Emissions factor source
Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)
Other Petroleum Gas

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
38

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
2.34

Unit
kg CO2 per m3

Emissions factor source
Act on Promotion of Global Warming Countermeasures

Comment
Petroleum hydrocarbon gas

Fuels (excluding feedstocks)
Town Gas

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
2,553,608

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
0

Emission factor
2.23

Unit

kg CO2 per m3

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Acetylene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

4

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3.38462

Unit

metric tons CO2 per metric ton

Emissions factor source

Calculated by ourselves

Comment

C2H2＋5/2O2→2CO2+H2O, thus 88g of CO2 are generated from 26g of acetylene = 88/26 = 3.4

Fuels (excluding feedstocks)

Butane

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

92

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan LP Gas Association. Guidelines on CO2 emission factor of propane, butane, and LP gas

Comment

Fuels (excluding feedstocks)

Coke

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

369

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

3.17

Unit

metric tons CO2 per metric ton

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Anthracite Coal

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

126,265

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

2.52

Unit

metric tons CO2 per metric ton

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Subbituminous Coal

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

4,263,434

MWh fuel consumed for self-generation of electricity

4,263,434

MWh fuel consumed for self-generation of heat

0

Emission factor

1.852

Unit

metric tons CO2 per metric ton

Emissions factor source

Certificates of analysis issued by coal suppliers

Comment

Fuels (excluding feedstocks)

Wood

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

5,264

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

Emission factor

0

Unit

metric tons CO2 per metric ton

Emissions factor source

Act on Promotion of Global Warming Countermeasures

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	1,158,660	1,136,535	37,879	15,753
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity		
Heat		
Steam		
Cooling		

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Power purchase agreement (PPA) with a grid-connected generator without energy attribute certificates

Low-carbon technology type

Hydropower

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Japan

MWh consumed accounted for at a zero emission factor

354

Comment

Sourcing method

Power purchase agreement (PPA) with a grid-connected generator without energy attribute certificates

Low-carbon technology type

Hydropower

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Brazil

MWh consumed accounted for at a zero emission factor

75,168

Comment

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1		

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Third party verification/assurance underway

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/ section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/ section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3 (upstream)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3 (downstream)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3 (upstream & downstream)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Purchased goods and services

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Capital goods

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Upstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Waste generated in operations

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Upstream leased assets

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Investments

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Processing of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Use of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: End-of-life treatment of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream leased assets

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Franchises

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance

Limited assurance

Attach the statement

AGC_ASSURANCE REPORT201912.pdf

Page/section reference

P1

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C5. Emissions performance	Year on year change in emissions	ISAE3410 “Assurance Engagements on	AGC discloses GHG data that covers all consolidated companies worldwide. A third party validation organization

	(Scope 1)	Greenhouse Gas Statements"	checked in the validation process the year-over-year change in Scope 1 emission reported in the GHG data.
C5. Emissions performance	Year on year change in emissions (Scope 2)	ISAE3410 "Assurance Engagements on Greenhouse Gas Statements"	AGC discloses GHG data that covers all consolidated companies worldwide. A third party validation organization checked in the validation process the year-over-year change in Scope 2 emission reported in the GHG data.
C5. Emissions performance	Year on year change in emissions (Scope 3)	ISAE3410 "Assurance Engagements on Greenhouse Gas Statements"	AGC discloses GHG data that covers all consolidated companies worldwide. A third party validation organization checked in the validation process the year-over-year change in Scope 3 emission reported in the GHG data.
C5. Emissions performance	Energy consumption	ISAE3410 "Assurance Engagements on Greenhouse Gas Statements"	AGC discloses GHG data that covers all consolidated companies worldwide. A third party validation organization checked in the validation process the year-over-year change in energy consumption reported in the GHG data.

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

France carbon tax

Japan carbon tax

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

19

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2020

Period end date

December 31, 2020

Allowances allocated

1,164,224

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

12,224,890

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

Our Scope 1 emissions from glass manufacturing sites (glass melting furnaces) in Europe are subject to the EU ETS. We didn't purchase any EUA, and the balance between actual emissions and the free emissions allowance is covered with the excess amount of the previous years. Being our emissions from the electricity division counted as Scope 1 emissions, our Scope 2 emissions are excluded from the ETS. In other words, our Scope 2 emissions are totally covered by the EU ETS. As no free emissions allowance is allocated to the electric sector, we are required to buy EUAs that cover all our emissions.

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

France carbon tax

Period start date

January 1, 2020

Period end date

December 31, 2020

% of total Scope 1 emissions covered by tax

0.04

Total cost of tax paid

13,470,378

Comment

In 2014, the Carbon Tax was introduced by reforming a domestic fossil fuel consumption tax with the aim of taxing on companies' CO2 emissions that are not subject to the EU ETS. While the initial tax rate was 7 €/tCO2, the French Energy Transition Law of 2015 has stipulated to raise the rate to 100 €/tCO2 by 2030.

Japan carbon tax

Period start date

January 1, 2020

Period end date

December 31, 2020

% of total Scope 1 emissions covered by tax

9.75

Total cost of tax paid

497,955,543

Comment

In order to strengthen global warming measures (measures to control CO2 emissions arising from energy consumption), such as diffusions of renewable energies and energy-saving measures, towards the realization of low-carbon society, the Government of Japan introduced Tax for Climate Change Mitigation in a phased manner from October 1, 2012. On April 1, 2016, the tax rate was raised to the final figure that was planned at the initial phase. This tax system requires broad and fair allocations of environmental burdens generated by CO2 emissions from consumptions of all types of fossil fuels including oil, natural gas, and coal. Specifically, the tax rate per unit volume (in kilolitre or ton) is set based on the CO2 emission intensity of each fossil fuel to adjust the tax amount for 1 ton of CO2 emissions from each fossil fuel consumption at 289 JPY. Scope 2 emissions are also subject to the tax system.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

The third trading phase of EU ETS, which started from 2013, ended in 2020. AGC Glass Europe's emissions reduced by 19% from 2012 to 2020. The fourth trading phase of EU ETS has started this year and will end in 2030. Since the introduction of EU ETS in 2005, AGC Glass Europe emissions were reduced by 29.6% by 2020. AGC Glass Europe has launched a large-scale project to further reduce its GHG emissions by 30% by 2030, with the ultimate goal to achieve carbon-neutrality in 2050.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit purchase

Project type

Hydro

Project identification

Project N° 2098. The 84 MW New Bong Escape Hydropower Project, Azad Jammu and Kashmir (AJK), Pakistan.

https://cdm.unfccc.int/Projects/DB/DNV-CUK1218539340.1/view

Verified to which standard

Other, please specify

ACM0002 ver. 20

Number of credits (metric tonnes CO2e)

1,051

Number of credits (metric tonnes CO2e): Risk adjusted volume

1,051

Credits cancelled

Yes

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Drive low-carbon investment

GHG Scope

Scope 1

Application

We use our internal carbon price to evaluate the profitability of major EU projects concerning energy saving and GHG emission reductions.

Actual price(s) used (Currency /metric ton)

35

Variance of price(s) used

Our price is based on the current market prices and estimated prices of EUA by 2030. Basically, it is 35 €.

Type of internal carbon price

Shadow price

Impact & implication

In Europe, the EU Emissions Trading System (EU-ETS) has already been introduced. The AGC Group's plants in the EU are also subject to the System.
Accordingly, the AGC Group established the Internal Carbon Pricing (ICP) system soon after the introduction of EU-ETS. Since then, the Group has assessed, in making investment decisions, the profitability of large-scale capital investment projects taking future carbon cost into account.
Based on the result of calculation under the ICP system, we have so far reduced our dependence on fuel combustion by introducing electric melting facilities at facility renewal opportunities of glass plants in the EU. In addition, we have installed solar panels as a power source for furnaces.
As a result, AGC Glass Europe's emissions reduced by 19% from 2012 to 2020 in the third trading phase of EU ETS (2013 to 2020). The fourth trading phase of EU ETS has started this year and will end in 2030. Since the introduction of EU ETS in 2005, AGC Group Europe emissions were reduced by 29.6% by 2020.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Code of conduct featuring climate change KPIs

% of suppliers by number

100

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

Impact of engagement, including measures of success

Comment

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

The AGC Group's successful realization of its voluntary climate change measures as well as those expected by all stakeholders depends on all AGC Group employees' awareness, understandings and behaviours, and engagements of internal and external stakeholders. Based on this concept, we introduced a new environmental education initiative "Earthcue TV" in 2020 mainly for employees who have engaged in tasks that have no explicit relationship with environmental issues and climate change measures. We created the word "Earthcue," which consists of "Earth" and "(res)cue" to mean "to rescue Earth." The initiative's target is neither AGC's suppliers nor our customers but our employees and aims to encourage them to act earth-friendly in their private life.
The "Earthcue TV" features a series of approximately 2-minute educational, animation-like movies produced with the aim to nurturing common awareness on climate change and other environmental issues, AGC Group's impact on these issues, and AGC Group's quantitative targets among all AGC Group employees. These movies are mainly accessed via the website on the intranet installed by the Headquarters. Overseas employees who cannot access them are provided with these movies via compatible device, intranet, or internet that is available to them. These movies are produced in Japanese, English, Chinese, Indonesian, and Thai languages to reach as many employees as

possible. Approximately 40,000 employees in Japan, other countries in Asia, and Europe have been able to watch these movies so far.
In order to receive feedback regarding “Earthcue TV,” employees who watched these movies can send a “Good” label on the intranet installed by the Headquarters. We have received many “Good” labels for each movie and our employees in Europe and China, in particular, have evaluated these educational movies positively as highly beneficial.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers
Trade associations
Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Energy efficiency	Support	Meetings with the ministries of environment and economy of Brazil in February 2020	Following the meeting in 2019, we explained a possible benefit of utilization of the Green Climate Fund in relation to introductions of energy-saving technologies to chemical plants in Brazil (conversion of caustic soda and chlorine manufacturing methods from the amalgamation process to the ion exchange membrane method reduces energy consumption by approximately 30%).
Clean energy generation	Support	Meetings with the ministries of the environment and energy of Chile in March 2020	Following the meeting in 2019, we explained possible benefits of utilizations of bilateral credits and the Green Climate Fund towards the introduction of solar thermal power generation in Chile. The ministry of environment of Chile expressed its expectation on solar thermal power generation projects as its history of the utilization of bilateral credit system has been small-scale. The energy ministry also expressed its expectation on solar thermal power generation as a baseload power generation.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

KEIDANREN (Japan Business Federation)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

KEIDANREN (Japan Business Federation) is a comprehensive economic organization with membership that consists of 1,444 representative companies of Japan, 109 nationwide industrial associations, and regional economic organizations for all 47 prefectures (as of April 1, 2020).
Since the disclosure of Keidanren's Commitment to a Low Carbon Society in 1997, KEIDANREN has continuously been implementing climate change initiatives. Its recent initiative, the "Challenge Zero," aims to actively advertise and support efforts of companies and organizations to create innovations towards the decarbonized society. Participating companies and organizations endorse the Declaration on Challenge Zero and disclose their specific action plans. Through the promotion of Challenge Zero, KEIDANREN will encourage ESG investments in companies that strive to achieve the decarbonized society as well as innovation creations through the industry-academia-public partnership.

How have you influenced, or are you attempting to influence their position?

AGC Inc. is a member of KEIDANREN and regularly participates in the working group for climate change discussion. It also has taken a part in KEIDANREN's new initiative "Challenge Zero" as one member among 137 participating companies (as of July 8, 2020) and has presented its innovation challenge to realize "green refrigerants" for multiple applications.

Trade association

Flat glass manufacturers association of Japan

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Flat Glass Manufacturers Association of Japan, which consists of three major glass manufacturers, is an industry association that has been founded to achieve sound growth of Japan's glass industry and contribute to the realization of sustainable society. The association participates in KEIDANREN's Commitment to a Low Carbon Society as its action against global warming. Its specific targets include reductions in GHG

emissions arising from the flat glass production process and promotion of diffusion of energy-saving glass products, such as low-e double-glazing glass.

How have you influenced, or are you attempting to influence their position?

Through the participation in the association's activities, AGC Inc. collaborates with the government and related organizations, for example, by occasionally making comments on climate policies. Furthermore, we communicate with our agents and consumers through the association.

Trade association

Japan Chemical Industry Association

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Japan Chemical Industry Association (JCIA) has a membership of approximately 180 companies and organizations including 80 organizations that engages in manufacturing and handling of chemical products and associated services. JCIA has been actively implementing its activities to achieve its mission, "to strive for stable growth of chemical industry," under the basic principle of co-existence and co-prosperity with society. Such activities have contributed to the prosperity of the Japanese economy as well as have elevated the level of chemical industry of Japan. JCIA plays the role as the representative of Japan in the International Council of Chemical Associations (ICCA), which consists of chemical associations worldwide. In addition, it also globally conducts voluntary activities to solve issues that chemical companies and associations in the world have been facing, such as environmental conservation, chemical safety, and global warming measures.

The chemical industry of Japan participated in KEIDANREN Voluntary Action Plan on the Environment from FY1997 to FY2012 to reduce CO2 emissions by energy saving activities. Since FY2013, it has participated in KEIDANREN's Commitment to a Low Carbon Society and been conducting global warming measures focusing on four pillars of (1) CO2 emission control from domestic business activities, (2) strengthened collaborations among stakeholders who are engaging in reductions of CO2 emissions from supply chains as a whole by introducing low carbon products/technologies, (3) international contribution by introducing chemical products and processes from Japan, and (4) developments of innovative technologies for a medium or long term with the aim of applying them practically in 2020 or thereafter.

How have you influenced, or are you attempting to influence their position?

The chairman of AGC Inc. has assumed the position of director of the association as the representative of AGC Group, specialized in chemical businesses. Such engagement in the association's activities has made us able to contribute to the sound development of chemical industry by involving in researches on chemical production, distribution, and consumption, and planning and promotions of researches and countermeasures concerning issues surrounding chemical technologies, labour, environment, and safety.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

AGC determined to join the Japan Climate Initiative (JCI) in 2020.
JCI has been actively implementing concrete activities to appeal to the Government of Japan and society for their actions towards the realization of society that can respond to climate change. Its activities include publishing newspaper advertisements to request an increase in the renewable energy ratio in the energy mix, acting as an official partner of “Race to Zero,” one of the initiatives of the United Nations Framework Convention on Climate Change (UNFCCC), holding opinion exchange meetings for JCI member companies and the Minister of the Environment Koizumi and the Minister of State for Regulatory Reform Kono.
Through the participation, as a part of our effort towards our explicitly-articulated net-zero carbon target, in such a framework that enables its participants to directly approach policy makers, we are able to capture policy trends in a timely manner, exchange information and cooperate with other companies, and express our opinions on climate change measures. Based on these activities, we expect to accelerate heat source conversions in Japan, which may support our activities towards the achievement of our GHG emission reduction targets as well as help us explain our progress in energy conversions to external parties.

AGC has determined to be a corporate member of WWF Japan in 2020.
Efforts to improve sustainability in the framework of SDGs has increasingly expanded in Japan, especially in the corporate sector. There is a tendency that further focus on such efforts and an improvement in corporate brand images correlate. Having included efforts towards net-carbon zero and solutions to other environmental issues in the new Medium-Term Management Plan, AGC Group has strengthened its focus on and scaled up its environmental activities. Participation in the WWF Japan membership brings us two significant benefits. Firstly, WWF Japan is a world-known organization with good impression. Becoming its corporate member proves our proactive attitude towards environmental conservation to society, and thus leads to an improvement in our Group’s image among internal and external communities. Secondly, WWF Japan is influential in climate change and water-related discussions with its various initiatives in these fields. We have joined it with an intention to actively participate, and take leadership in the future, in frameworks for or other solutions on climate change and other various environmental issues.
In addition, WWF Japan’s activities fit well with our biodiversity conservation activity that has been promoted under an AGC environmental project. We expect to broaden our activity in this area and scale it up from in-house to broader one to gain interests from as many employees as possible.

AGC has determined to join ACT Glass.
The Assessing Low-Carbon Transition (ACT) is an initiative launched by CDP and the French Agency for Ecological Transition (ADEME) during COP21 in 2015 to promote sectoral disclosures for sectoral analysis. It develops data-driven ACT methodologies for how to integrate climate change measures into business strategies and how to reduce GHG emissions, aiming to improve the feasibility of GHG reduction efforts of each company (capacity to realize the shift to a low-carbon economy).
ACT has been acknowledged as a global climate agenda of UNFCCC, and started pilot programs in automobile, electricity, and retail industries, which have significant impact on climate change, in 2017. It started full-scale projects in automobile, electricity, and other sectors in the end of 2019. At present, it covers 14 sectors including glass and chemical sectors.

Our merits of participation in ACT are ACT's objective assessments of our approach towards the achievement of our emission reduction targets and appropriateness of our actions towards the achievement of net-zero carbon emissions.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Under the leadership of our standardization promotion team (literal translation), we have been lobbying for international standardization.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

agc_report_2021.pdf

Page/Section reference

P15, P18, P32, P46-49, P58, P60-61, and P72-73

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

agc_sus_jp_2020.pdf

Page/Section reference

P58-81

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	CEO	Chief Executive Officer (CEO)