

Environmental Reports (Fiscal 2020 Results)

Climate change and other global-scale environmental issues have gained much attention in recent years.

The MGC Group recognizes that not only do its business activities place a burden on the environment, but that environmental problems have a significant impact on its business activities, and is engaged in a variety of initiatives to address them.

➤ **Environmental Management**

Response to Climate Change
➤ **(Disclosure Based on the TCFD Recommendations)**

➤ **Greenhouse Gas Emission Reduction**

➤ **Water Resource Conservation**

➤ **Waste Reduction and Resource Recycling**

➤ **Chemical Emission Reduction**

➤ **Pollution Prevention**

➤ **Biodiversity Conservation**

Scope of This Report

The scope of information tabulated in this report is classified as follows.

Designation	Scope
MGC (Non-consolidated)	Mitsubishi Gas Chemical Company, Inc.
Domestic MGC Group	Those domestic subsidiaries which are members of the MGC Group Environment and Safety Council*
Overseas MGC Group	Those key overseas subsidiaries which are primarily involved in manufacturing
MGC Group	Non-consolidated MGC, along with domestic and overseas MGC Group companies as noted above

Domestic MGC Group companies whose fiscal 2020 results are included in the scope of reporting (members of the MGC Group Environment and Safety Council*)
Eiwa Chemical Industry Co., Ltd.

MGC Advance Co., Ltd.

MGC Ageless Co., Ltd.

MGC Electrotechno Co., Ltd.

MGC Farmix Co., Ltd.

MGC Filsheet Co., Ltd.

MGC Terminal Company, Inc.

JSP Corporation

Shin Sanso Kagaku Co.

Toyo Kagaku Co., Ltd.

Japan Pionics Co., Ltd.

Japan Finechem Co., Inc.

Japan U-PiCA Co., Ltd.

Fudow Co., Ltd.

Yonezawa Dia Electronics Co., Inc

Overseas MGC Group companies whose 2020 results are included in the scope:

AGELESS (Thailand) Co., Ltd.

Brunei Methanol Co. Sdn. Bhd.

Korea Engineering Plastics Co., Ltd.

MGC Advanced Polymers, Inc.

MGC Electrotechno (Thailand) Co., Ltd.
 MGC Pure Chemicals America, Inc.
 MGC Pure Chemicals Singapore Pte. Ltd.
 MGC Pure Chemicals Taiwan, Inc.
 Mitsubishi Gas Chemical Engineering-Plastics (Shanghai) Co., Ltd.
 PT Peroksida Indonesia Pratama
 SamYoung Pure Chemicals Co., Ltd.
 Thai Polyacetal Co., Ltd.
 Thai Polycarbonate Co., Ltd.
 Suzhou MGC Suhua Peroxide Co., Ltd.

*** MGC Group Environment and Safety Council:**

MGC Group companies in Japan that manufacture and process chemical substances and resins as raw materials and MGC undertake environmental and safety activities in accordance with Responsible Care through the MGC Group Environment and Safety Council.

The Council holds the MGC Group Environment and Safety Council Meeting twice each year to raise the levels of environmental and safety measures by developing annual plans for the environmental and safety activities of each company, conducting PDCA on the results, and reporting on and exchanging information concerning the status of accidents and disaster and other topics.

Tabulation Period for this Report

The tabulation periods for this report are as follows.

Designation	Tabulation Period
MGC (Non-consolidated)	April–following March (listed as fiscal year)
Domestic MGC Group	April– following March (listed as fiscal year)
Overseas MGC Group	January – December**

** In the stacked bar chart, figures tabulated by calendar year are accumulated directly on the fiscal year graph.

Number of Companies and Locations Tabulated for This Report

The number of companies and locations tabulated for this report is as follows:

Fiscal year***	MGC (Non-consolidated)		Domestic MGC Group		Overseas MGC Group		Total (MGC Group)	
	Number of Companies	Number of Locations	Number of Companies	Number of Locations	Number of Companies	Number of Locations	Number of Companies	Number of Locations
2015	1	13	12	53	14	16	27	82
2016	1	13	12	53	14	16	27	82
2017	1	13	13	55	14	16	28	84
2018	1	13	12	53	14	16	27	82
2019	1	14	12	53	14	18	27	85
2020	1	13	13	56	14	18	28	87

*** Overseas MGC Group tabulated by calendar year.

Calculation of estimated amount of added value

What is estimated amount of added value?

- Test calculations were conducted on the "intensity of amount of added value" with the aim of understanding changes in added value created by MGC and the MGC Group against the intensity of environmental impacts. The "amount of added value" indicates the amount of value generated through manufacture, services, and similar.

- Amount of added value is generally found using the following formulas.

[Deductive method]

Amount of added value = net sales - external purchases figure (material costs, purchased parts costs, freight costs, external processing costs, etc.)

[Additive method]

Amount of added value = ordinary income + personnel costs + rental costs + depreciation and amortization + financial costs + taxes and public dues

- As this information includes figures which are not made publicly available, direct calculations are difficult.
- Meanwhile, as the ratio of added value per chemical industries company is published in the “Tabulated statistical overview—definite reports (data)” (appendix table 7) in the Ministry of Economy, Trade and Industry's Basic Survey of Japanese Business Structure and Activities, estimated added value was calculated with reference to this information.
 > <https://www.meti.go.jp/statistics/tyo/kikatu/index.html> (in Japanese only) 

All chemical industries: ratio of added value per company (%)

Fiscal year	2015	2016	2017	2018	2019	2020
Value added ratio	25.6	26.8	26.9	25.9	26.3	-

Calculation of estimated amount of added value

- Relational expression of net sales and amount of added value
 The estimated amount of added value was calculated from “amount of added value = net sales X value added ratio”

MGC (non-consolidated) / MGC (consolidated)

Fiscal year		2015	2016	2017	2018	2019	2020
Net sales (non-consolidated)	(Billions of yen)	311.1	299.2	364.4	375.1	351.3	344.9
Net sales (consolidated)	(Billions of yen)	593.9	556.5	635.9	649.0	613.3	597.5
Value added ratio (chemical industries)	(%)	25.6	26.8	26.9	25.9	26.3	26.3
Estimated amount of added value (non-consolidated)	(Billions of yen)	79.6	80.2	98.0	97.2	92.4	90.7
Estimated amount of added value (consolidated)	(Billions of yen)	152.0	149.1	171.1	168.1	161.3	156.7

* In the case of fiscal years for which the Ministry of Economy, Trade and Industry has not released statistics, the value-added ratio of the previous fiscal year is used.

Environmental Management

Environmental Management System (ISO14001) (Non-consolidated)

All MGC plants have obtained Environmental Management System registration (ISO14001).

		ISO14001 Registration Date	
Plant Registered	Registration Number	(1996 version)	(2015 version)
Niigata Plant	1162-1998-AE-KOB-RvA	June 1998	November 2017
Mizushima Plant	JCQA-E-0145	May 2000	May 2018
Yokkaichi Plant Naniwa Plant Saga Plant	JQA-EM0502	August 1998 (As the Yokkaichi Plant)	August 2017
Kashima Plant	JQA-EM0345	February 1999	January 2018
Yamakita Plant	JQA-EM0859	May 2000	May 2018

Production-related Input and Output (Non-consolidated MGC and Domestic MGC Group)

Primary production-related inputs and outputs for the non-consolidated MGC and domestic MGC Group in fiscal 2020 were as follows:

Input		Output	
Raw materials	0.88Mt	Product	1.32Mt
Energy (as crude oil equivalent)	444ML	CO ₂ emissions	0.95Mt -CO ₂
Water intake	37Mm ³	Wastewater	32Mm ³
		External waste discharge	31,000t
		Recycling	44,000t

Environmental Preservation Investments (Non-consolidated)

In fiscal 2015, MGC began undertaking environmental preservation investments. These investments include investment items that, although they may be very effective in reducing environmental loads, may be less likely to be adopted due to long payback periods or for other reasons, as well as investment items that lead to preservation of biodiversity, recruited through proposals from the various MGC sites. A secretariat consisting of the Environment, Safety and Quality Assurance Division and the Production Technology Division at corporate headquarters then select the items to implement and secure the required budget, before executing the investment.

For example, by replacing mercury lamps and fluorescent lights with LED bulbs, it is possible to both save energy and reduce mercury-containing equipment. Replacing air conditioning equipment with energy-saving models has the dual effect of conserving energy and reducing CFCs (thus preventing destruction of the ozone

layer). Further, replacing the equipment with air conditioners that do not use freon as a refrigerant can obtain the additional effect of reducing greenhouse gases.

In fiscal 2020, MGC replaced mercury lamps with LED bulbs in lighting used in its buildings and along roads on their premises, upgraded air conditioning equipment, upgraded freezing machines using fluorocarbon R-22 as refrigerant, and took other measures. These steps had the effect of reducing GHGs by about 288 t-CO₂/year on a pro forma basis.

MGC is committed to continued investment in reducing environmental impact.

Environmental Accounting (Non-consolidated)

Through environmental accounting in accordance with guidelines by the Ministry of the Environment, MGC has quantitatively calculated and released the investment amount and costs of environmental preservation required for the business activities of non-consolidated, as well as the real economic benefits obtained.

- Investment amount

The total amount of investment related to environmental preservation activities in fiscal 2020 was approximately 1.3 billion yen. Major investments include fuel conversion at the Yokkaichi Plant and strengthening solvent recovery at the Kashima Plant.

- Expenses

Total expenses related to environmental conservation activities in fiscal 2020 were approximately 8.7 billion yen. Of these, the highest expense was about 2.7 billion yen for research and development, accounting for around 31% of the total.

- Economic benefits

The reduction of expenses through energy saving measures and the income from the sale of unneeded items generated in our business activities were recorded as real economic benefit.

Environmental Preservation Cost (Investments and Costs Classified According to Business Activity)

Breakdown			Main areas of activity	FY2019 (millions of yen)		FY2020 (millions of yen)	
				Investment	Expenses	Investment	Expenses
Onsite cost	Pollution prevention cost	Air pollution prevention	Emission control by fuel conversion, vent gas recovery	5.7	925.6	95.1	878.3
		Water pollution prevention	Upgrade of wastewater treatment facilities and measuring equipment	106.0	1,669.2	178.1	1,560.5
		Soil, Noise	Measures to prevention of soil infiltration and odor control	79.5	0.1	358.8	0.1
	Global environmental preservation cost		Upgrade of air conditioning equipment, replacement of mercury-vapor lamps and other lighting with LED fixtures	138.6	1,805.7	191.8	1,871.9
	Resource recycling cost		Recycling of waste	0.0	836.6	6.0	1,143.4
	Up or down stream cost		Collection and reuse of product containers	0.0	34.9	0.0	39.8
Management activity cost			Greening of surrounding areas, environmental-related analysis, disclosure of environmental information	25.0	475.3	40.9	547.0

Breakdown	Main areas of activity	FY2019 (millions of yen)		FY2020 (millions of yen)	
		Investment	Expenses	Investment	Expenses
R&D cost	Research and development of energy-saving technologies and eco-friendly products	336.8	2,716.1	442.0	2,747.6
Social contribution cost	Membership dues of nature conservation organizations, donations of books	0.0	8.4	0.0	6.8
Environmental damage cost	Pollution impacts levy	0.0	73.8	0.0	70.7
Total		691.5	8,545.7	1,307.7	8,866.0

Economic benefit

Title	Item	FY2019 (millions of yen)	FY2020 (millions of yen)
Income	Profit on sale of valuable waste, etc.	44.7	47.8
Reduction of expenses	Effects due to energy saving, power savings from solar power generation	398.4	110.8

Compliance with the Ministry of the Environment's Environmental Accounting Guidelines 2005

Period: From April 1, 2020 to March 31, 2021

Scope: Non-consolidated

Methods: Investments were apportioned according to the ratio of the approved or enforced amount of capital expenditure to environmental preservation.

Expenses were apportioned according to the ratio of expenses related to environmental preservation and include depreciation allowance.

Response to Climate Change (Disclosure Based on the TCFD Recommendations)



In May of 2019, MGC declared its support for the recommendations of the Task Force on Climate-related Financial Disclosures (the "TCFD").

Tackling climate change is a major challenge that calls for initiatives on a global scale if we are to achieve a sustainable society. MGC recognizes that solving energy and climate change problems is an important issue, and is working to solve these issues in terms of both mitigating and adapting to climate change.

Specifically, MGC has formulated targets for reducing Scope 1 and 2^{*1} greenhouse gas (GHG) emissions and is working toward their steady reduction. At the same time, MGC is proactively disclosing information on Scope 3^{*2} GHG emissions and is taking action to reduce them in collaboration with its suppliers. MGC is working to improve energy efficiency and the carbon cycle of raw materials, and to promote energy transition toward the goal of achieving a zero-carbon society by 2050. MGC will also contribute to solving energy and climate change problems through business operations by deploying innovative process technologies and factoring whole-lifecycle GHG emissions into its design and development processes.

In March 2021, MGC announced a new objective for achieving carbon neutrality by 2050 with the goal of limiting the increase in average temperature to below two degrees Celsius. MGC encourages the building of energy systems to achieve carbon neutrality, and aims to expand the range of products conducive to carbon neutrality.

^{*1} Scope 1 emissions are GHG emissions directly generated by MGC. Scope 2 emissions are indirect GHG emissions associated with the use of energy (mainly electric power) purchased from external suppliers.

^{*2} Scope 3 emissions are indirect GHG emissions generated in supply chains through organizational activities such as raw material sourcing, manufacturing, distribution, sales and waste disposal.

1. Governance

The Sustainability Promotion Council, composed of directors and chaired by the President, deliberates and makes decisions on addressing climate change risk and other key Sustainability issues (materiality). Important matters to be deliberated at the Sustainability Promotion Council is resolved by the Board of Directors.

The participation of corporate sector heads on the Sustainability Promotion Committee, an advisory body to the Sustainability Promotion Council, ensures key Sustainability issues are adequately deliberated.

To develop a response to climate change, MGC has established the Climate change Action Technical committee, a Sustainability Promotion Expert Committee that advises the Sustainability Promotion Committee. As the administrative office for dealing with TCFD and CDP requirements, the Climate change Action Technical committee promotes cross-business initiatives.

Long-term objectives for reducing GHG emissions have been incorporated in the Medium-Term Management Plan, with management taking a leading role in their implementation.

Climate Change Governance Structure



2. Strategy: Responding to Climate Change Risks and Opportunities

Assumptions behind scenario analysis for fiscal 2021

- Evaluation points: 2030,2050
- Scenario: Increased temperature
Main external information referred to in decarbonization scenario
 - IEA WEO 2021 SDS (World gradually reducing emissions to keep global increase in average temperature to less than 1.5°C)
 - SSP1 (Rapid development progressing on low-income countries, global economic inequality being resolved, and technological development advancing rapidly)
- Main external information referred to in baseline scenario
 - IEA WEO 2021 STEPS (World in which average temperature increases by approximately 2.6°C in around 2100 due to course of emissions according to plans announced by each country at present)
 - SSP2 (Growth anticipated to between that of SSP3 – with little international cooperation, little investment in technological development, and slow economic growth – and that of SSP1 scenario of decarbonization)
- Analysis scope: Polycarbonate and MXDA businesses
- Conduct a quantitative assessment of the financial impact of risks and opportunities in the existing business portfolio and draft a response strategy

Evaluation Results

	Risks and Opportunities (☐ Risks ☐ Opportunities)	Main Initiatives
Risks and opportunities in decarbonization scenario	☐ Strict regulations such as carbon tax ☐ ☐ Shift to renewable resources ☐ ☐ Popularization of biomass plastics ☐ ☐ Reduction of fossil resource prices due to shift from fossil resources ☐ ☐ Rapid advancement of technological development ☐ ☐ Popularization of renewable energy ☐ ☐ Increase in demand for lighter-weight auto bodies	• Further improve energy use efficiency and develop decarbonization processes • Decarbonize raw fuels • Develop decarbonized products • Develop new products that meet the needs of a decarbonized society
Risks and opportunities in baseline scenario	☐ Increased fossil resource prices due to dependence on fossil resources ☐ Slowing of increase in demand for infrastructure such as renewable energy	• Transition from fossil resources • Increase rate of recycled materials • Bring higher added value to products

3. Risk Management

MGC has identified key issues (materiality) related to the environment, society and governance, and manages risk through cross-company materiality management. One material issue that has been identified as extremely important from the perspective of stakeholders and MGC itself is a proactive response to environmental problems. MGC intends to take the initiative on this issue, a requirement for continuing our business operations and activities.

To gain a quantitative understanding of climate change risks, in April 2021 MGC introduced an internal carbon pricing system. In capital investment plans involving an increase or decrease in CO₂ emissions, the cost or effect of applying and converting the internal carbon price (10,000 yen/MT-CO₂ equivalent) will be used to help make investment decisions, promote CO₂ emissions reductions, and encourage the creation of technologies and products that contribute to building a low-carbon society.

4. Indicators and Objectives

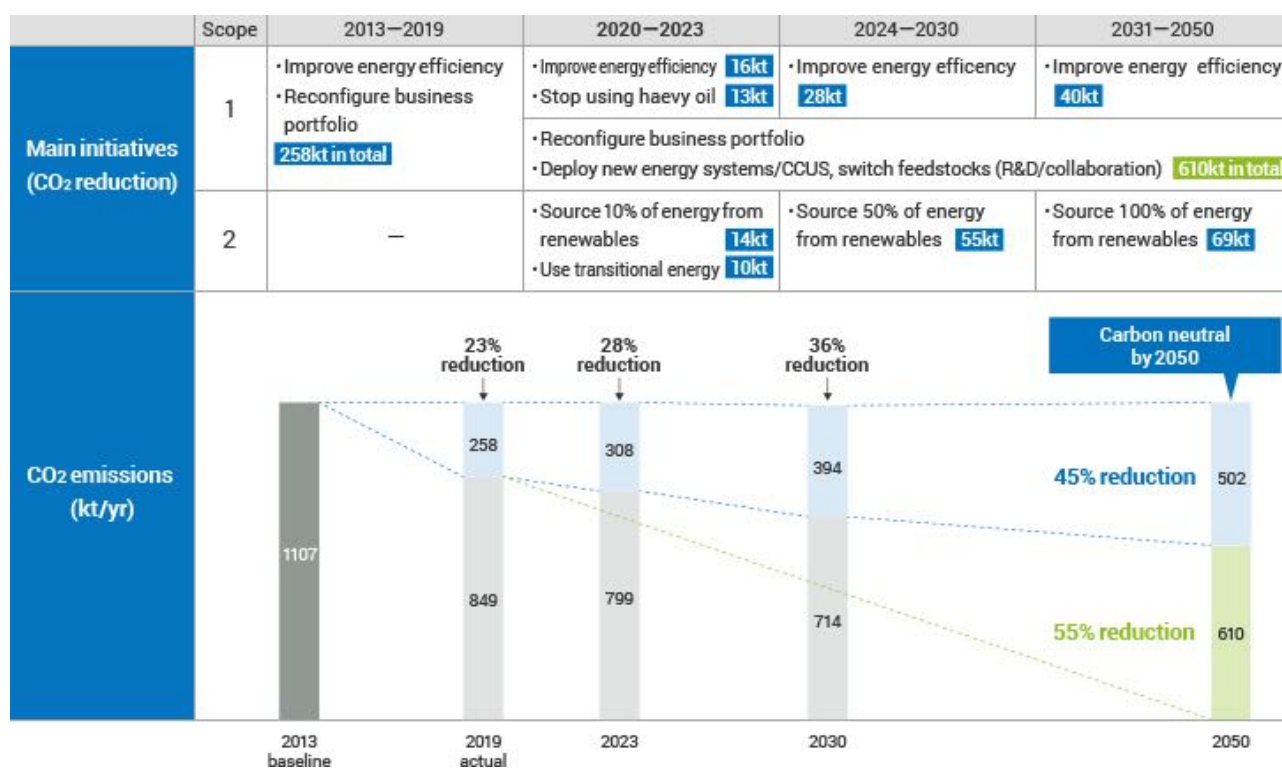
MGC has established long-term objectives for reducing GHG emissions as it works toward achieving carbon neutrality by 2050. To achieve these objectives, MGC has established key performance indicators (KPIs) for GHG emissions and GHG emissions intensity. We are moving forward with short, medium and long-term emissions reduction strategies that include promoting energy savings activities, deployment of renewable energy, and Circular Carbon Methanol production.

Long-term GHG Emissions Reduction Targets

2023 target:
28% reduction from
FY13 baseline

2030 target:
36% reduction from
FY13 baseline

2050 target:
carbon neutrality



Greenhouse Gas Emission Reduction



MGC considers risks associated with climate change to be an important business issue. It is moving forward with efforts to reduce emissions of greenhouse gas (GHG) and to reduce the negative impact of climate change on its business. At the same time, new needs in society associated with climate change also represent a business opportunity. MGC recognizes that contributing to the achievement of a sustainable society through its products and technologies is an important issue.

Basic Approach to Climate Change Mitigation

1. Formulate targets for reducing Scope 1 and 2^{*1} GHG emissions and steadily reduce them through planning, execution, monitoring and reassessment.
2. Assess, manage, monitor and proactively disclose Scope 3^{*2} GHG emissions and take action to reduce them in collaboration with suppliers.
3. Improve energy efficiency and raw materials' carbon cycle and promote energy transition toward realization of a zero-carbon society by 2050.
4. Contribute to solving energy and climate change challenges through business operations by deploying innovative process technologies and factoring whole-lifecycle GHG emissions into design and development processes.
5. Disclose information through climate change initiatives^{*3}.

^{*1} Scope 1 emissions are GHG emissions directly generated by MGC. Scope 2 emissions are indirect GHG emissions associated with use of energy (mainly electric power) purchased from external suppliers.

^{*2} Scope 3 emissions are indirect GHG emissions generated in supply chains through organizational activities such as raw material sourcing, manufacturing, distribution, sales and waste disposal.

^{*3} MGC proactively participates in various collaborative activities to mitigate climate change (climate change initiatives).

Greenhouse Gas Reduction Targets (non-consolidated)

MGC considers the solving energy and climate change problems as one of the priority issues (materiality), and is setting KPIs and working toward achieving the goals.

GHG emissions compared to fiscal 2013: 28% reduction in 2023, 36% reduction in 2030

GHG emissions intensity* compared to fiscal 2013: 19.9% reduction in 2023, 28.0% reduction in 2030

Renewable energy as a percentage of electric power purchased: 10% in 2023, 50% in 2030

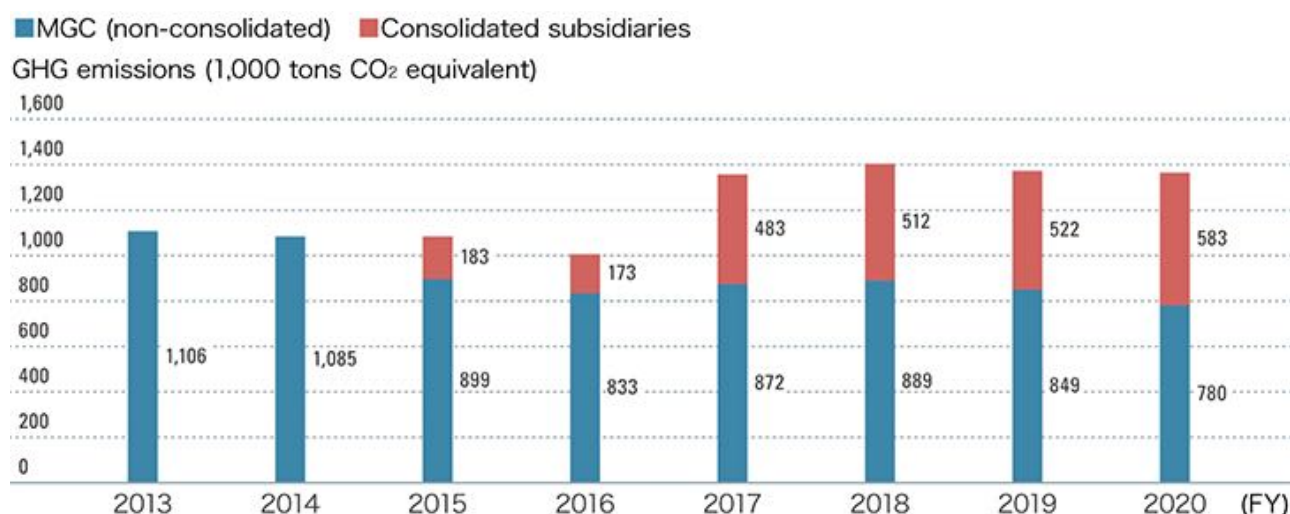
*GHG emissions intensity: volume of greenhouse gas emissions per production volume

GHG Emissions

Results of energy consumption/GHG emissions in fiscal 2020

	Energy consumption	GHG emissions
	(ML crude oil equivalent)	(1,000 tons CO ₂ equivalent)
MGC (non-consolidated)	359	780
Consolidated subsidiaries	216	583
MGC Group	576	1,363

Scope 1 + 2 Emissions (MGC Group)



Note: Domestic MGC Group GHG emissions noted only for fiscal 2015 and later.

Note: Overseas MGC Group GHG emissions noted only for 2017 and later.

Note: In fiscal 2020, we reviewed the organizational scope of Scope 1/2/3, and revised the emissions retroactively till fiscal 2013.

Scope 3 Emissions (MGC Group)

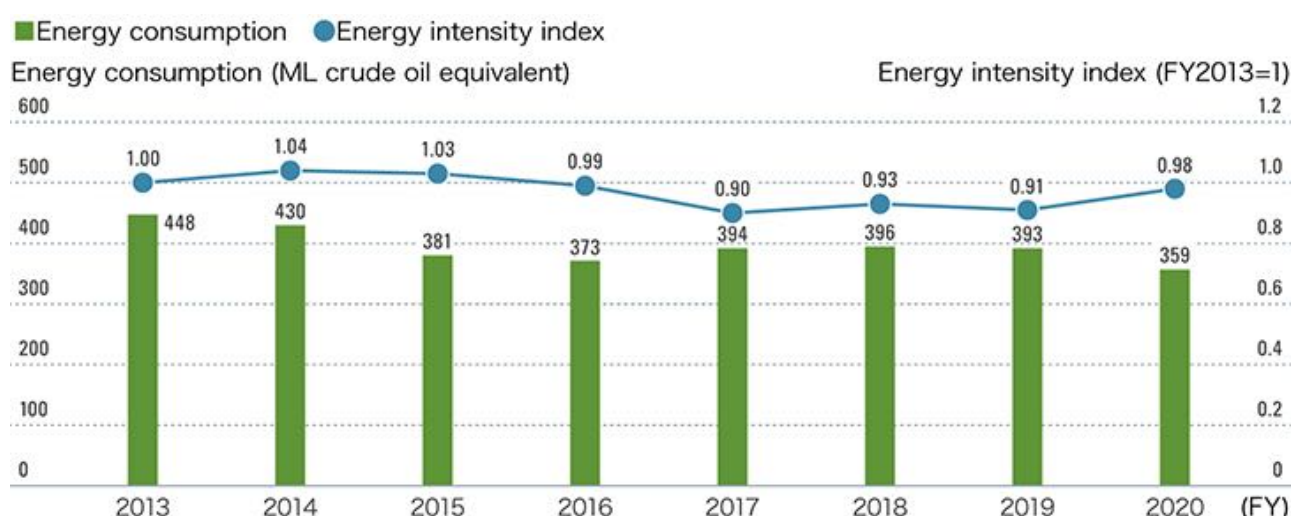
Category		Scope 3 Emissions (1,000 tons CO ₂ equivalent)	
		MGC (non-consolidated)	MGC Group
Cat.1	Purchased goods and services	4,700	6,100
Cat.2	Capital goods	-	110
Cat.3	Fuel- and energy-related activities not included in Scope 1 or Scope 2	110	240
Cat.4	Upstream transportation and distribution	560	640
Cat.5	Waste generated in operations	5.9	5.9
Cat.6	Business travel	<1	1.2
Cat.7	Employee commuting	1	1
Cat.8	Upstream leased assets	7	7

Category		Scope 3 Emissions (1,000 tons CO ₂ equivalent)	
		MGC (non-consolidated)	MGC Group
Cat.9	Downstream transportation and distribution	210	210
Cat.10	Processing of sold products	—	—
Cat.11	Use of sold products	—	—
Cat.12	End-of-life treatment of sold products	1,500	1,800
Cat.13	Downstream leased assets	26	26
Cat.14	Franchises	0	0
Cat.15	Investments	690	360
Total		7,900	9,500

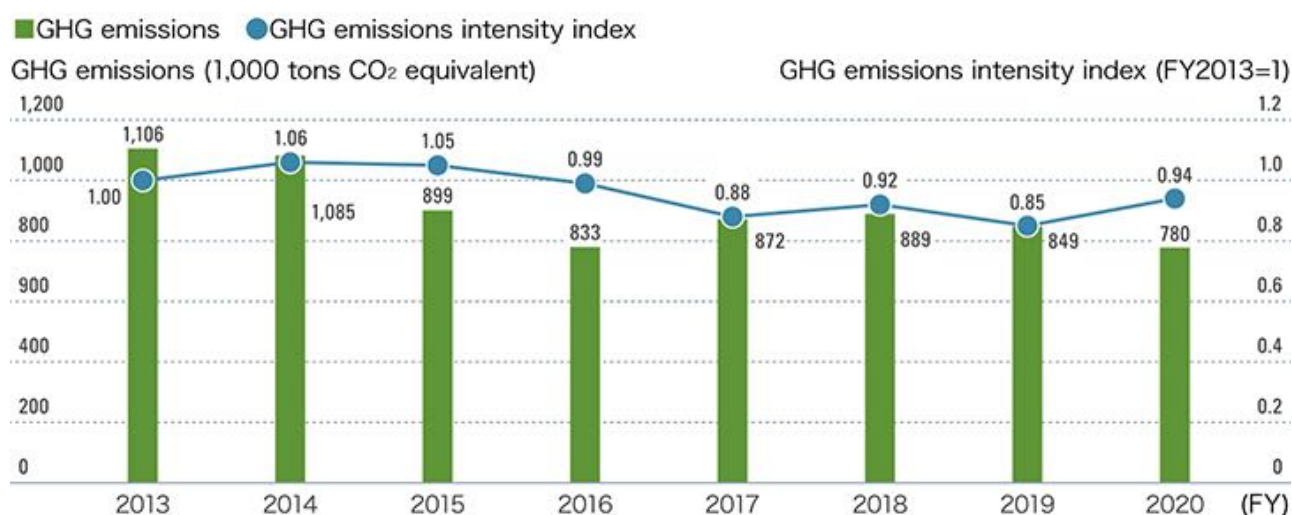
Emission Reduction Initiatives (non-consolidated)

MGC is committed to energy conservation and reduction of GHG emissions. In fiscal 2020, we reduced energy consumption and GHG emissions by reviewing raw material procurement, strengthening heat retention, and changing operation control methods. The effect of these initiatives is 4500 kL crude oil equivalent, and effect of reduction of GHG emissions is 11,000 tons CO₂ equivalent. In the future, we are planning to implement initiatives such as reviewing operation methods, strengthening heat recovery, and enhancing operation control methods.

Energy consumption and energy intensity index of MGC (non-consolidated)



MGC Production Division GHG emissions and GHG emissions intensity index



Third-Party Verification of Greenhouse Gas Emissions (non-consolidated)

Beginning with the fiscal 2016 report, a third-party organization has verified the GHG emission data reports disclosed by MGC to enhance reliability and transparency.

MGC GHG emissions (Scope1,2,3) have undergone third-party verification and have obtained a verification statement in fiscal 2021.

[Scope of Accounting and Verification]

Mitsubishi Gas Chemical Company, Inc., CO₂ emissions, Scope1,2,3(Category2,3,5,6)

[Targeted Period]

April 1, 2020 - March 31, 2021

[Accounting and Verification Standards]

ISO14064-1:2018

ISO14064-3:2019

[Verification Statement]

DNV
VERIFICATION STATEMENT OF
GREENHOUSE GAS ASSERTIONS

Statement No.: SS001-2022-GHG-KOB-DNV Page 1 of 2
Initials: reporting of

**Verification of Mitsubishi Gas Chemical
GHG Monitoring Report (2020)**

< Scope of Verification >
DNV Business Assurance Japan K.K. has been commissioned by Mitsubishi Gas Chemical Company Inc. to perform a verification of the greenhouse gas assertion of "Mitsubishi Gas Chemical GHG Monitoring Report" of Mitsubishi Gas Chemical Company Inc. (Year 2020) (hereafter the "GHG Report") with respect to the following area:
Mitsubishi Gas Chemical Company Inc., Scope 1, 2 and 3 (Category 2/3/5/6)

< Verification criteria and GHG Programme >
The identification, calculation, monitoring and reporting of the GHG emissions were based on ISO14064-1:2018. The verification of the reported GHG inventory was performed in accordance with ISO 14064-3:2019 as well as criteria given, including the requirement from Mitsubishi Gas Chemical's GHG Monitoring and Reporting Procedure to provide for consistent GHG emission identification, calculation, monitoring and reporting.

< Verification Statement >
It is DNV's opinion that with limited assurance level nothing has come to our attention which causes us to believe that the greenhouse gas assertions of the "Mitsubishi Gas Chemical GHG Monitoring Report" of Mitsubishi Gas Chemical Company Inc. (2020) revision 1 dated 10 February 2022 do not accurately reflect Mitsubishi Gas Chemical's GHG emission of 2020 in accordance with the verification criteria identified as stated above.

< Process and Methodology >
The reviews of the Inventory Reports and the relevant documents, and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfillment of stated criteria.
The verification has been performed under supervision of: Independent Validation Verification Body: DNV Business Assurance Japan K.K.


Akira Sakine, GHG Verifier
28th February 2022


Naoki Muroda, Management Representative
1st March 2022

DNV Headquarters, Veritasveien 1, P.O.Box 300, 1302 Høvik, Norway. Tel: +47 67 57 80 00. www.dnv.com

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DNV
VERIFICATION STATEMENT OF
GREENHOUSE GAS ASSERTIONS

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< Quantification of Greenhouse Gas Emission >
The Supply "GHG Report" covers the period from 1 April 2020 to 31 March 2021. It is DNV's opinion that the "GHG Report" results in quantification of GHG emissions that are real, transparent and measurable.

< Organization Boundary of Verification >
☐ Management Control ☐ Equity Share ☒ Others (see below)
Consolidation Methodology: Act on the Rational Use of Energy, Article 15 and 19 (2) Procedure on periodic monitoring and reporting guideline of GHG emissions dated 20 April 2021 based on "Act on the Rational Use of Energy", Article 15 and 19 (2) regarding Chain Business Operators

< GHGs Verified >
☒ CO₂ ☐ CH₄ ☐ N₂O ☐ HFCs ☐ PFCs ☐ SF₆ ☐ NF₃

Total Direct Emissions (Scope 1)	569,858 tonnes CO₂e
Total Energy Indirect Emissions (Scope 2: Market based)	203,751 tonnes CO₂e
Total Other Emissions (Scope 3) Total	231,157 tonnes CO₂e
Category 2 Capital goods	108,963 tonnes CO ₂ e
Category 3 Fuel- and energy-related activities (not included in Scope 1 or Scope 2)	115,921 tonnes CO ₂ e
Category 5 Waste generated in operations	5,957 tonnes CO ₂ e
Category 6 Business travel	316 tonnes CO ₂ e

The reported values above are fully covered by the verification.

< Verification Opinion >
☒ Unmodified Opinion
☐ Modified Opinion
☐ Adverse Opinion

As an independent third party, DNV has no financial dependencies on Mitsubishi Gas Chemical Company Inc.

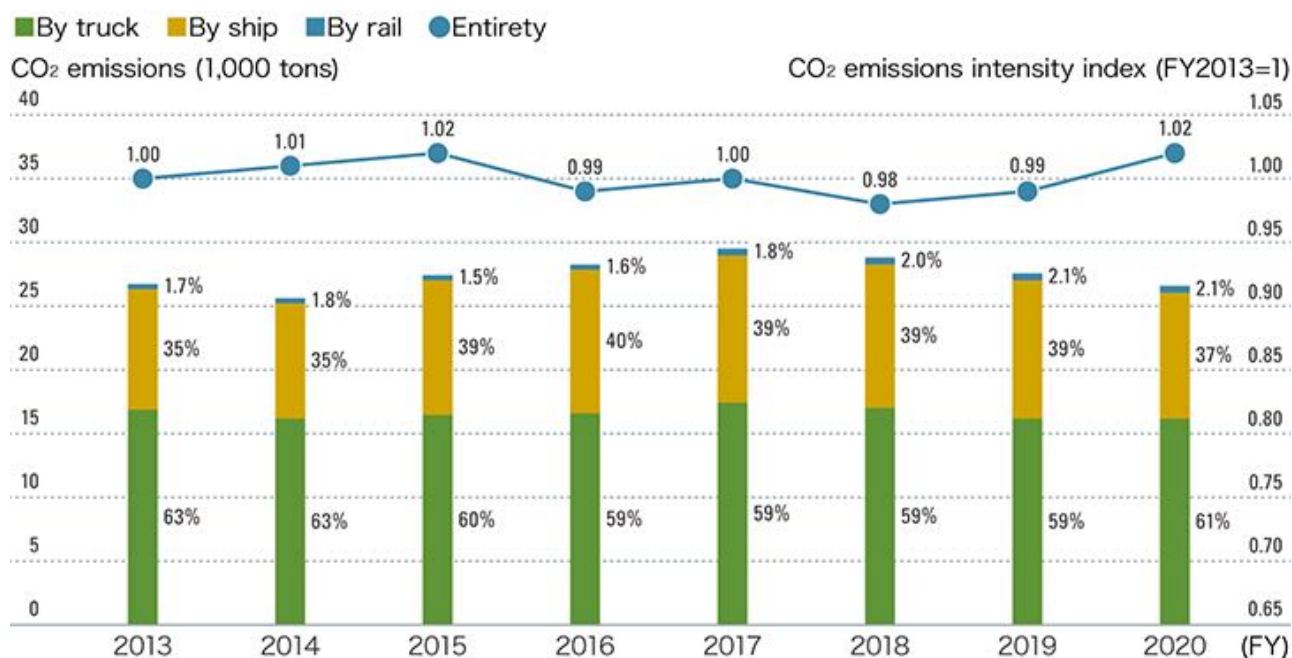
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Initiatives in the Transportation Sector (non-consolidated)

In the Transportation Sector, MGC is implementing measures with a focus on modal shifts to more environmentally-friendly transportation methods to reduce energy consumption and GHG emissions.

Energy consumption in fiscal 2020 declined by 4% year-on-year.

MGC transportation sector CO₂ emissions



Wasabizawa Geothermal Power Plant Commences Operations

The Wasabizawa Geothermal Power Plant (Yuzawa City, Akita Prefecture), a joint venture of Electric Power Development Co., Ltd., Mitsubishi Materials Corporation, and MGC, began commercial operations in May 2019. It is the first large-scale geothermal power plant constructed in Japan in 23 years. Geothermal power plants generate electricity using subterranean steam, making geothermal power a renewable form of energy that produces virtually no CO₂ during generation.

In September 2019, construction started on the Appi Geothermal Power Plant (Hachimantai City, Iwate Prefecture), also a joint venture with Electric Power Development and Mitsubishi Materials.

Through these geothermal power projects, MGC is contributing to the increased use of renewable energy.



MGC Group products that contribute to reducing GHG emissions and that help lessen society's impact on the environment are featured on the Spotlight on Eco-Friendly Products page.

Water Resource Conservation

MGC recognizes that water, a blessing of nature, is essential for business activities, and that it is important to enable sustainable use of water without compromising on water quality, and is working on a variety of relevant initiatives.

Water Resource Risk Management

MGC uses large quantities of water, both as a raw material for manufacturing chemical products and for various other purposes, including steam-heating and cooling in chemical manufacturing processes, and as water for product refining and for cleaning product containers. In this way, MGC recognizes that it is essential to provide sufficiently high-quality water in continuing its business.

To sustainably use water resources essential to manufacturing chemicals, MGC manages a variety of risks. Specifically, MGC monitors its actual water consumption and uses water efficiently by measuring water withdrawal, water discharge, water usage and water recycling. In drawing from water sources, MGC restricts its intake to permitted quantities in accord with applicable laws or agreements with municipalities. Additionally, MGC discharges wastewater into rivers, the sea or other public water bodies in compliance with required effluent standards after treating it to filter out identified pollutants. Data on these water-related environmental impacts are published in "Pollution Prevention" page and "Sustainability Data Book".

Additionally, MGC maintains a sanitary water-use environment at all its sites to provide MGC employees and the employees of our partners with access to properly functioning, safely managed sanitary facilities (wash service).

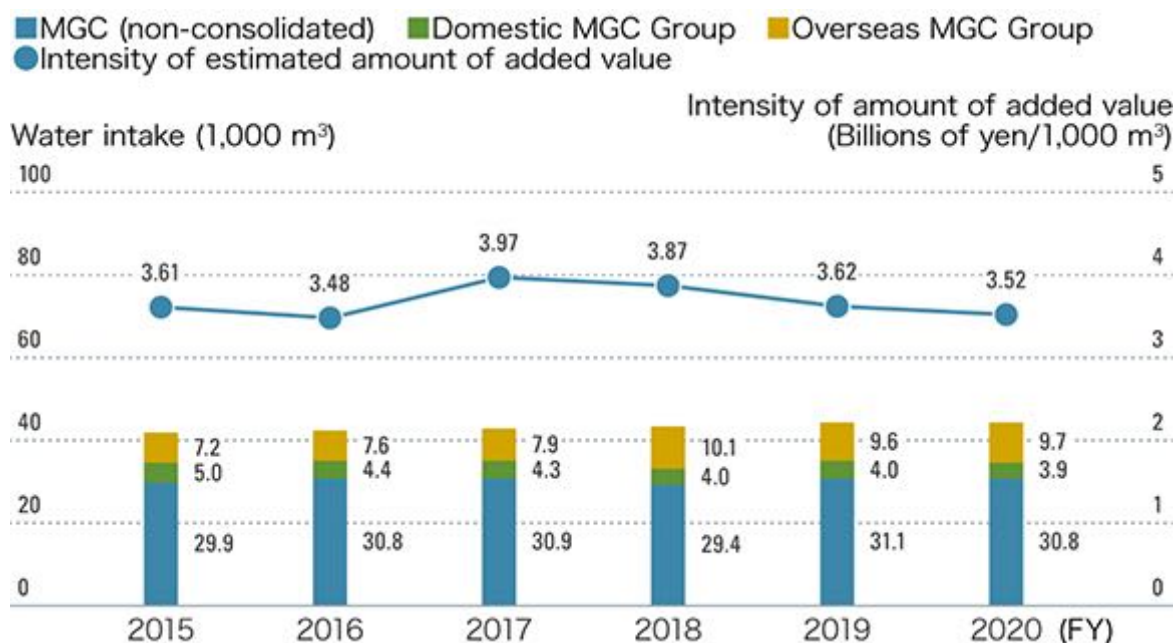
From a business continuity standpoint, production downtime due to drought or flooding of production facilities have been identified as a water-related risk at each production site. Each production site has formulated the business continuity plan (BCP) that addresses this risk and implemented measures to mitigate it. None of the river-basins in the areas in which MGC's plants are located has experienced either adverse impacts on production activities due to water stress or conflicts with stakeholders regarding use of water resources.

As for water-related opportunities, businesses developed by MGC and its Group companies include businesses that provide solutions for issues surrounding the coolant water of air conditioning equipment and cooling systems. We provide solutions to water issues, such as water treatment agents that have the effect of sterilizing disease-causing legionella bacteria and that maintain healthy coolant water quality, and a comprehensive water treatment system service offered through affiliate Dia Aqua Solutions Co., Inc.

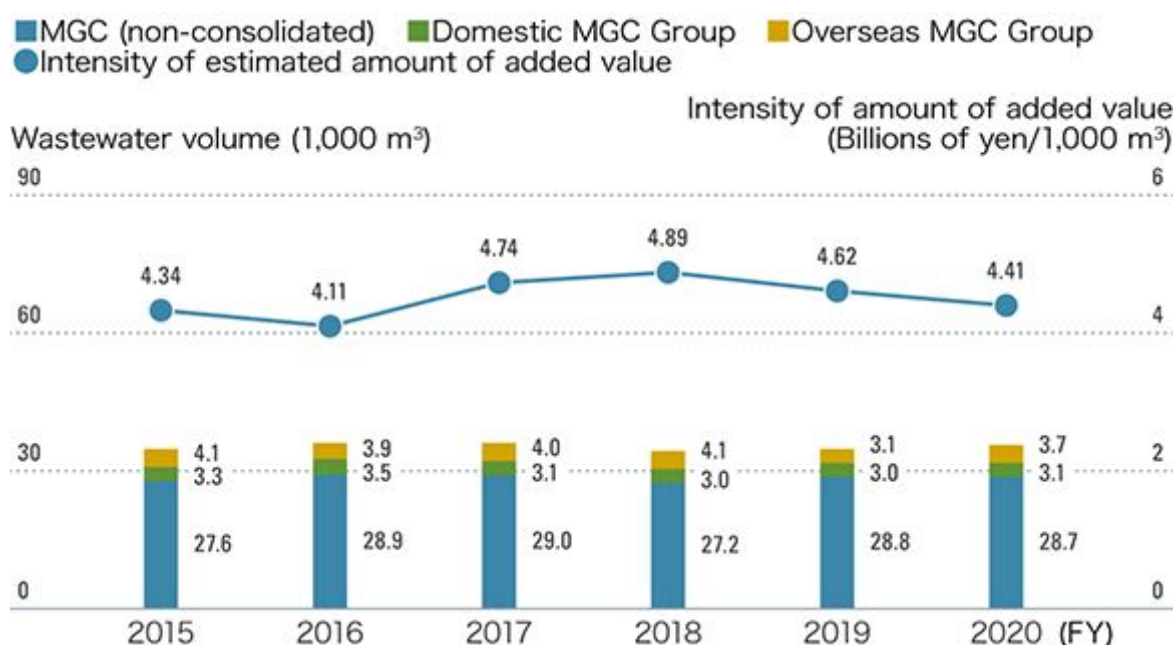
Going forward, MGC aims to achieve qualitative and quantitative targets for efficient water usage established in the RC Medium-term Plan 2023 (2021–2023), to more effectively preserve water resources.

Water Intake / Wastewater Volume (MGC Group)

Water intake/Intensity of estimated amount of added value



Wastewater volume/Intensity of estimated amount of added value



*For the data for the overseas MGC Group, the total value for the calendar year is added as is in the fiscal year value.

*The data for the overseas MGC Group comprised 13 companies at 15 locations in 2016, and 14 companies at 16 locations in other years.

Waste Reduction and Resource Recycling

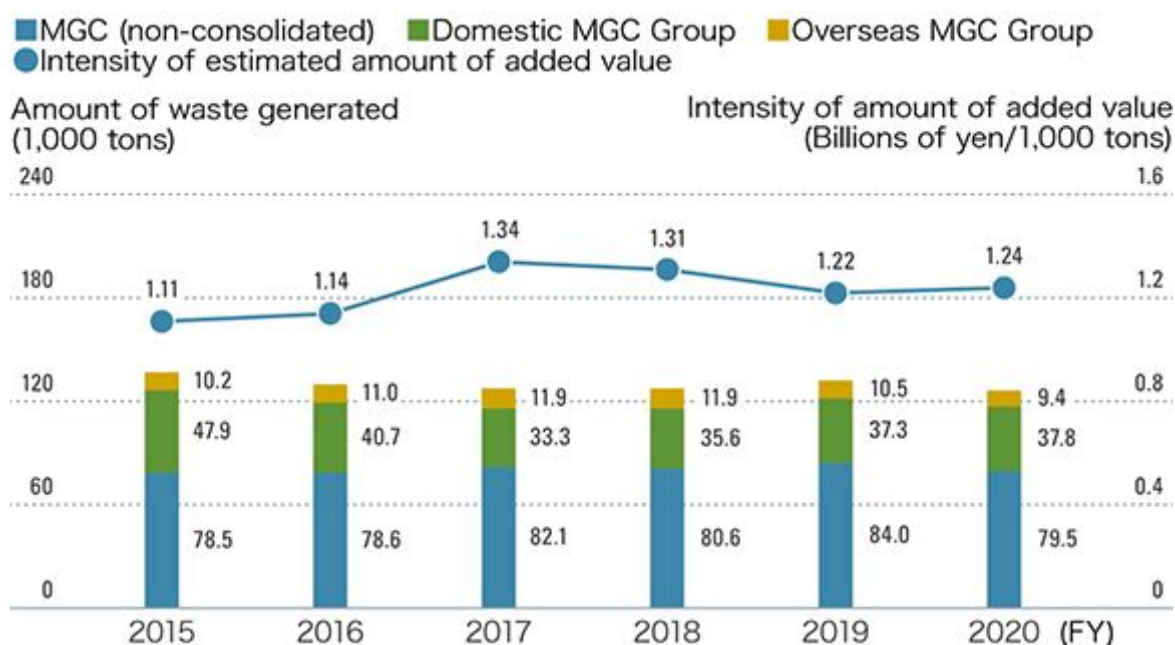
Each MGC Group company is striving to reduce waste by promoting the 3Rs of waste (Reduce, Reuse, Recycle), and to undertake the proper disposal of waste in accordance with law.

Basic Approach to Resource Use

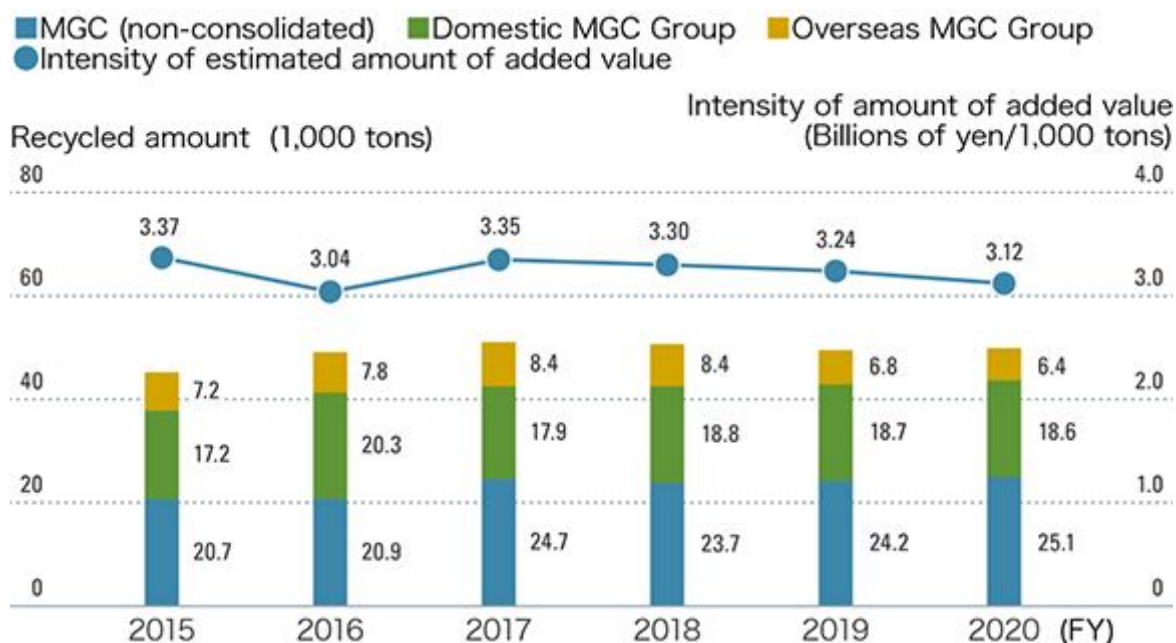
The MGC Group promotes efficient utilization of fuel and other resources (including product raw materials) and development of innovative process technologies at its domestic and overseas production sites and contributes to reduction in GHG emissions.

Reducing Waste (MGC Group)

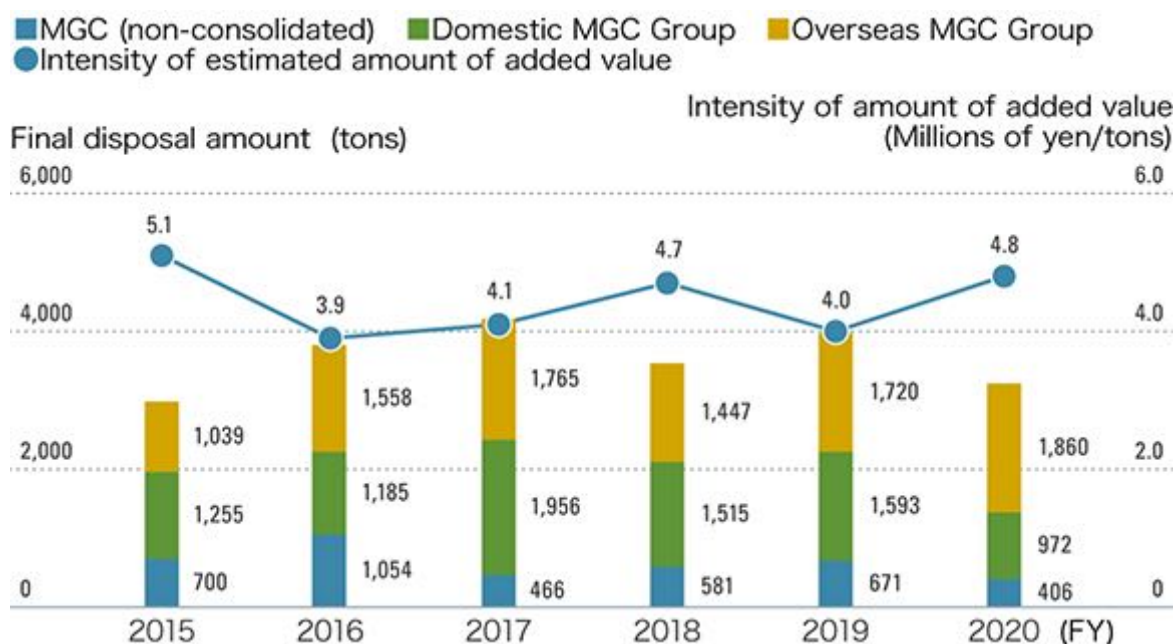
Amount of waste generated/Intensity of estimated amount of added value



Recycled amount/Intensity of estimated amount of added value



Final disposal amount/Intensity of estimated amount of added value

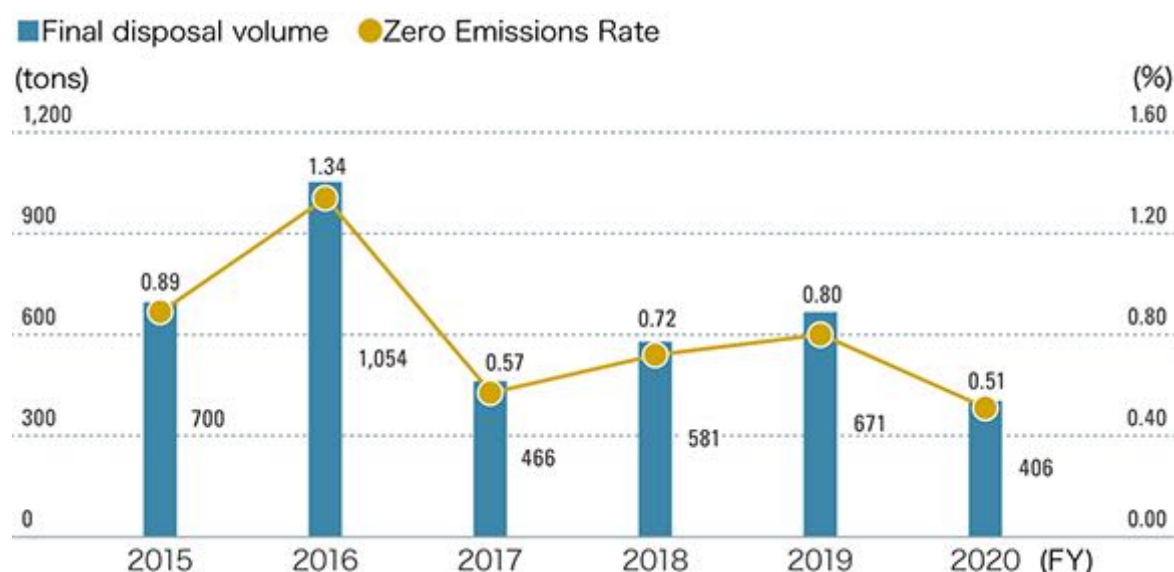


Zero Emissions (Non-consolidated)

The non-consolidated MGC defines zero emissions as final disposal of waste of 0.3% or less of waste generated, and works to encourage recycling and reduction of final disposal.

The zero emissions rate for fiscal 2020 was 0.51%, and although the final disposal volume shows a downward trend, zero emissions have not been achieved since fiscal 2014. Increases in the amount of final disposal since fiscal 2014 have been due to ongoing temporary circumstances, including waste generated in conjunction with a business reorganization, and the occurrence of waste catalyst. In addition, waste activated sludge that previously was sold for value is now disposed of in landfills, contributing to the increase in final disposal volume.

Final disposal volume and Zero Emissions Rate (Non-consolidated)



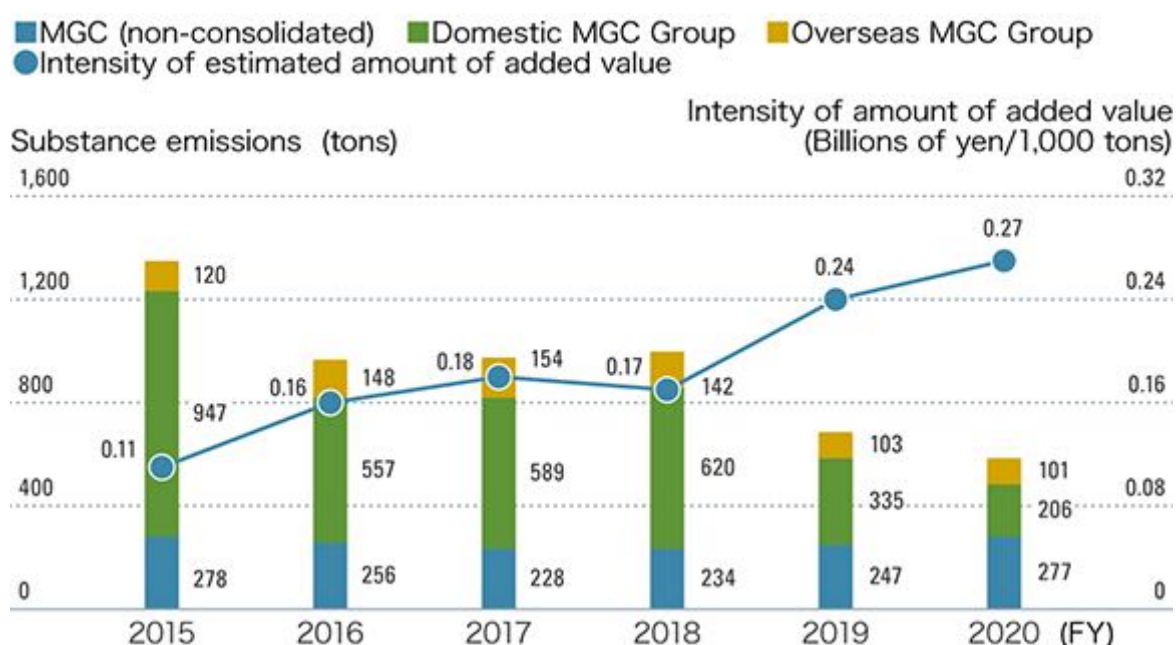
Chemical Emission Reduction

Each MGC Group company assesses and submits notifications on substances subject to the chemical substance emission notification system of the country in which it is based (PRTR in Japan), while working to reduce the amounts released and transferred.

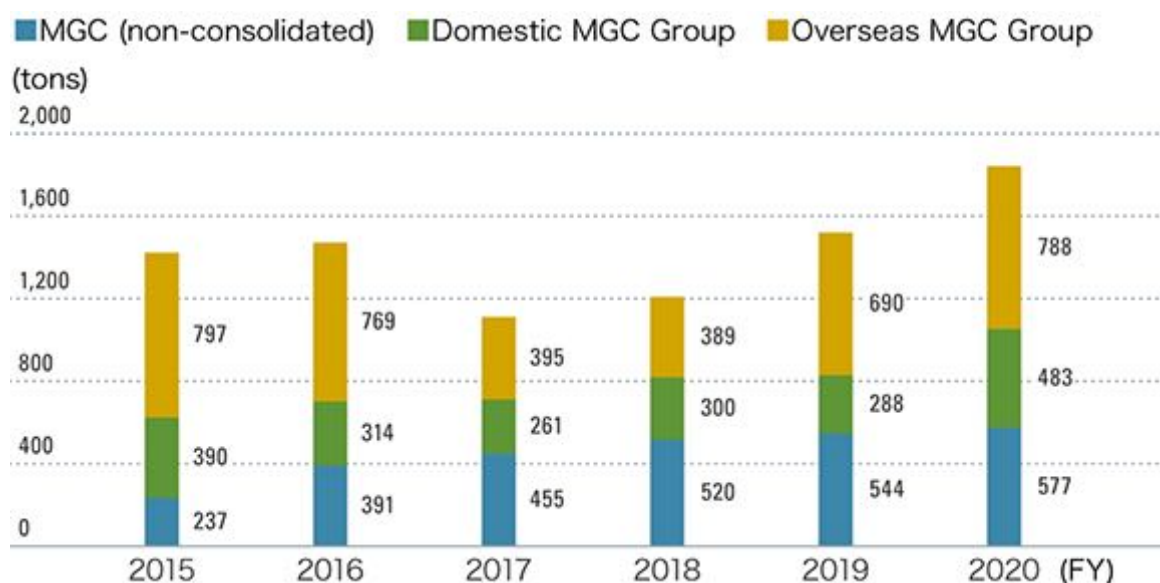
Substances Subject to Notification under the PRTR Law (MGC Group)

Many countries have systems that require notifications regarding chemical substance emission in a similar way to Japan's PRTR Law (TRI in the US, etc.). In its tabulation, MGC has aggregated substance emissions reported by the non-consolidated MGC and by domestic MGC Group companies based on the PRTR Law, and emissions reported by overseas group companies under the laws of their respective countries and regions for substances listed under Japan's PRTR system or for which there is a CAS number.

Substance emissions (in accordance with the PRTR Law)



Substance transfers (in accordance with the PRTR Law)



*Past data has been reviewed and numerical values have been corrected.

High-emission Substances Notified under the PRTR Law (Non-consolidated MGC and Domestic MGC Group)

Among the substances notified under the PRTR Law, those listed below were emitted by the non-consolidated MGC and domestic MGC Group in total in amounts of 10 tons or more.

Government-designated number	Substance	Emissions (tons)				
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
128	Chloromethane	534	567	590	308	187
296	1,2,4-Trimethylbenzene	75	99	113	162	162
186	Dichloromethane	58	78	87	74	78
300	Toluene	13	14	12	14	14
80	Xylene	18	24	17	20	11

Japan Chemical Industry Association PRTR-targeted Substances (Non-consolidated)

The Japan Chemical Industry Association (JCIA), of which MGC is a member, has specified 328 Class I Designated Chemical Substances stipulated by the PRTR Law, and a JCIA-specified 90 substance plus 1 substance group as voluntary PRTR-targeted substances considered volatile organic compounds (VOCs). The JCIA tabulates the emissions of member companies, and the entire chemical industry is working toward reducing emissions of these PRTR substances.

The amount of said substances emitted by MGC in fiscal 2020 totaled 71 substances and 351 tons, a decrease of around 9% from the 387 tons* of emissions in fiscal 2019. This was due to resolutions of issues associated with exhaust gas recovery equipment in fiscal 2019. MGC will continue its efforts to reduce emissions of chemical substances occurring in conjunction with shutdown of equipments and similar factors, by implementing measures to reduce problems at manufacturing plants and through preventive measures.

*Data has been reviewed and the figures reported last year have been revised.

Pollution Prevention

To prevent pollution and to maintain sound habitats for living things, MGC Group companies monitor the volume of environmentally hazardous substances in wastewater and waste gas and work to reduce discharge volumes.

Preserving Air Quality (Non-consolidated MGC and Domestic MGC Group)

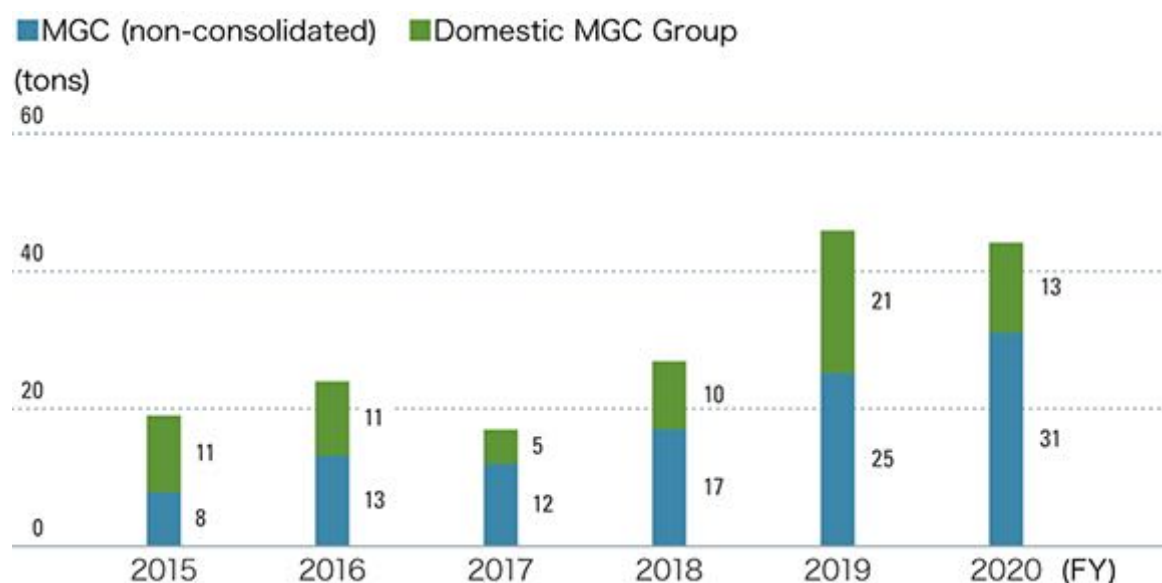
Emission of SO_x



Emission of NOx



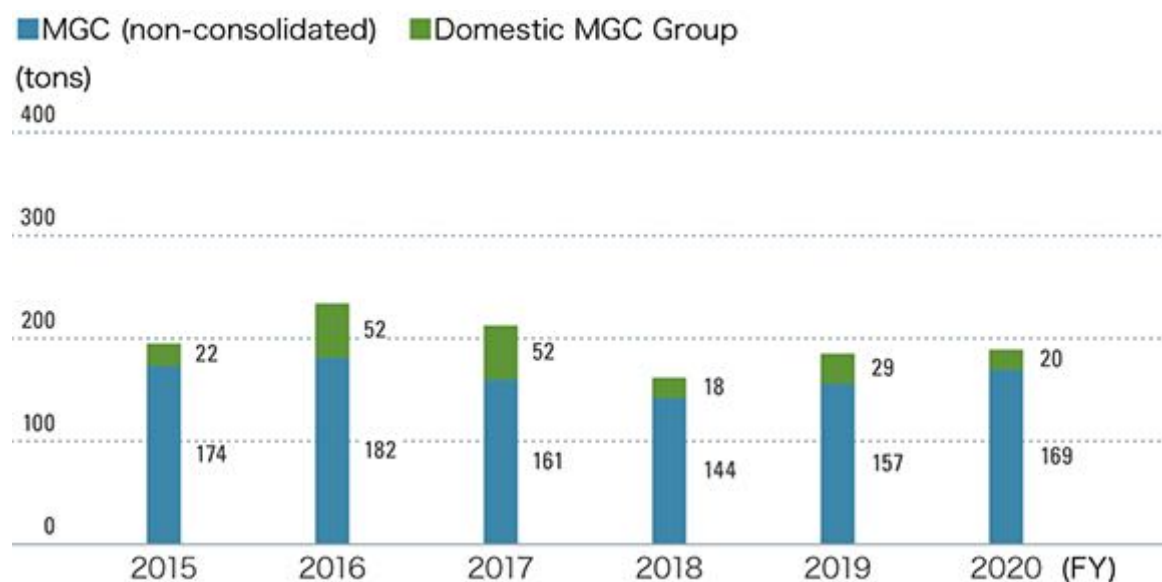
Emission of soot and dust



* Past data has been reviewed and corrected.

Preserving Water Quality (Non-consolidated MGC and Domestic MGC Group)

Emission of COD



Emission of total nitrogen



Emission of total phosphorous



Biodiversity Conservation



Biodiversity Conservation (Non-consolidated)

Endorsing the aims of the Keidanren (Japan Business Federation) Declaration of Biodiversity, MGC signed on as a promotional partner of the Declaration in 2009. In 2014, MGC became a member of the Keidanren Nature Conservation Committee with the aim of engaging in activities to protect the natural environment and conserve biodiversity.

Companies that manufacture chemicals handle a large volume and variety of chemical substances. Each Group company takes comprehensive measures and exercises due care to prevent leaks and other incidents that may have an impact on human health and ecosystems.

MGC strives to mitigate climate change by conducting reliable chemical management founded on responsible care, conserving energy, and reducing emissions of GHG and to maintain a rich natural environment and preserve biodiversity.

Furthermore, we contribute to sustainable development through the development of technology that can be assessed as eco-friendly products, and the proliferation of these products.

We undertake activities that support biodiversity through close-at-hand activities at each plant, such as flower-growing campaigns within plant sites and maintenance of forest preserves in surrounding areas, as well as addressing the issues of plastic in the oceans by cleaning up rivers and harbors neighboring our sites.

TOPICS

“Bookcase for Biodiversity” donation program

We have been cooperating in the promotion of understanding and enlightenment activities on biodiversity through our participation in the “Bookcase for Biodiversity” donation program, implemented by the Japan Committee for UNDB (United Nations Decade of Biodiversity). In fiscal 2020, we donated books to the Shirakawa Public Library, in Shirakawa, Fukushima Prefecture and Children's Future Plaza Kamakura in Katsushika, Tokyo.

> https://undb.jp/recommend/donated_books/ (in Japanese only) 