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Mitsubishi Gas Chemical Company, Inc.

Environment

Production-related Inputs and Outputs (Non-consolidated)

Input	
Raw materials, Container/packaging materials	0.71Mt
Energy (as crude oil equivalent)	359ML
Water withdrawal	31Mm^3

Output	
Production volume	1.14Mt
GHG emissions	0.78 Mt-CO_2-e
Water discharge	29Mm^3
External waste discharge	14kt
Recycling	25kt

Raw Materials / Production Volume (Non-consolidated)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Raw material input	kt	743	798	764	704
Production volume	kt	1,469	1,416	1,373	1,144

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

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Greenhouse Gas (GHG) Emissions

Scope1+2

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
		Non-consolidated	Non-consolidated	Non-consolidated	Consolidated
CO_2 emissions from non-energy use	t-CO_2-e	788,451	805,250	768,469	1,282,951
CO_2 emissions from non-energy use	t-CO_2-e	81,146	78,097	78,246	74,596
N_2O	t-CO_2-e	796	753	841	3,688
CH_4	t-CO_2-e	524	513	562	685
HFCs	t-CO_2-e	1,325	4,257	1,212	875
PFCs	t-CO_2-e	0	0	0	0
SF_6	t-CO_2-e	0	0	0	23
NF_3	t-CO_2-e	0	0	0	0
Total*1	t-CO_2-e	872,242	888,869	849,331	1,362,817
Scope1	t-CO_2-e	632,134	599,243	602,661	653,428
Scope2 (market based)	t-CO_2-e	240,108	289,626	246,670	709,389
GHG emissions intensity ratio per unit to sales	t-CO_2-e / million yen	2.4	2.4	2.4	2.3

*1 Due to rounding off figures, there are places where the sums for each item do not match the total.
∗Data for prior fiscal years were revised to reflect changes in the Group's composition and revision of calculation standards.
∗For the above table's reporting boundaries, see MGC Group's Consolidated Subsidiaries on page 32.

Scope 3

Category	Unit	FY2017	FY2018	FY2019	FY2020
		Non-consolidated	Non-consolidated	Non-consolidated	Consolidated
Purchased goods and services	kt CO_2-e	5,329	5,129	5,010	6,110
Capital goods	kt CO_2-e	39	53	45	109
Activities related to fuels and energy not includable in Scopes 1 and 2	kt CO_2-e	90	84	101	235
Transportation and distribution (upstream)	kt CO_2-e	723	715	626	642
Waste generated in operations	kt CO_2-e	<4	<4	<4	6
Business travel	kt CO_2-e	<4	<4	<4	1
Employee commuting	kt CO_2-e	<1	<1	<1	1
Leased assets (upstream)	kt CO_2-e	<8	<8	<8	7
Transportation and distribution (downstream)	kt CO_2-e	177	109	158	212
Processing of sold products	kt CO_2-e	—	—	—	—
Use of sold products	kt CO_2-e	—	—	—	—
End-of-life treatment of sold products	kt CO_2-e	1,760	1,312	2,026	1,824
Leased assets (downstream)	kt CO_2-e	13	14	34	26
Franchises	kt CO_2-e	0	0	0	0
Investments	kt CO_2-e	589	513	586	361
Total	kt CO_2-e	8,737	7,947	8,604	9,533

∗Due to rounding off figures, there are places where the sums for each item do not match the total.
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GHG Emissions/Calculated Value-added GHG Emissions Intensity

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
GHG emissions	kt CO_2-e	872	889	849	780
Calculated value added of GHG emissions intensity	100 million yen/ kt CO_2-e	1.12	1.09	1.09	1.16

∗Calculated value added: The estimated amount of added value calculated based on MGC Alone net sales of MGC multiplied by the value added rate for the chemical industry published by the Ministry of Economy, Trade and Industry.
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GHG Emissions in Transportation Sector

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
By rail	kt CO_2-e	0.54	0.59	0.58	0.57
By ship	kt CO_2-e	11.5	11.3	10.8	9.9
By truck	kt CO_2-e	17.5	17.0	16.2	16.2

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.

Energy Management (Non-consolidated)

Energy Use (Ratio of grid power, renewable energy and self-generated energy)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Total energy use*	MWH	3,531,261	3,424,987	3,482,864	3,200,855
Ratio of grid power	—	9.0%	11.3%	9.8%	9.7%
Ratio of renewable energy	—	0.0%	0.0%	0.0%	0.0%
Total self-generated energy	MWH	296,313	205,432	272,094	243,556

*Calculated based on SASB standards
∗Data for prior fiscal years were revised to reflect changes in the Group's composition.

Energy Use (Ratio of renewable/non-renewable energy)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Nonrenewable fuels purchased and consumed (A) (nuclear power, coal, oil, natural gas, etc.)	MWH	2,853,996	2,675,134	2,831,478	2,608,631
Nonrenewable Electricity purchased (B)	MWH-purchased electricity	316,996	388,671	340,631	309,240
Steam, heat, cooling and other nonrenewable energy purchased (C)	MWH	419,329	418,329	377,594	345,762
Renewable energy purchased or generated. (D) (wind, energy solar, biomass, hydroelectric, geothermal etc.)	MWH	0	0	0	10
Non-renewable energy sold (E) (electricity, heating, cooling)	MWH	59,060	57,146	66,839	62,778
Total non-renewable energy consumed (A+B+C-E)	MWH	3,531,261	3,424,987	3,482,864	3,200,855

∗Data for prior fiscal years were revised to reflect changes in the Group's composition.

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Energy Use (crude oil equivalent)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Production and research divisions, Corporate Sector	ML-crude oil equivalent	394	396	393	359
Logistics division	ML-crude oil equivalent	11	11	10	10
Energy intensity	KL/million ton kilo	20	19	19	20

∗Data for prior fiscal years were revised to reflect changes in the Group's composition.

Energy Use/Calculated Value-added Energy Intensity

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Energy use	ML-crude oil equivalent	394	396	393	359
Energy intensity of calculated added value	100 million yen /ML-crude oil equivalent	2.49	2.45	2.35	2.52

∗Calculated value added: The estimated amount of added value calculated based on MGC Alone net sales of MGC multiplied by the value added rate for the chemical industry published by the Ministry of Economy, Trade and Industry.
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Water Resources (Non-consolidated)

Water Resource Risk Management

MGC uses large quantities of water, both as a raw material of chemical products and for various other purposes, including steam-heating and cooling in chemical manufacturing processes, product refining and cleaning containers. 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 effluent standards after treating it to filter out identified pollutants. Data on these water-related environmental impacts are presented in detail below.

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

From a business continuity standpoint, MGC has identified production downtime due to drought or flooding of production facilities as a water-related risk, formulated a business continuity plan (BCPs) that addresses this risk and implemented measures to mitigate it. None of 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.

Meanwhile, MGC sees opportunities in businesses that provide solutions for issues surrounding the coolant water of air conditioning equipment and cooling systems. Such solutions include water treatment agents that maintain healthy coolant water quality by killing disease-causing legionella bacteria and a comprehensive water treatment system service offered through affiliate Dia Aqua Solutions Co., Inc.

Going forward, MGC will set qualitative and quantitative targets for efficient water usage to more effectively preserve water resources.

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Use of Water Resources

Indicator		Unit	FY2017	FY2018	FY2019	FY2020
Water withdrawal	Municipal water supplies (tap water)	Mm^3	440	420	407	497
	Fresh surface water (lakes, rivers, etc.)	Mm^3	10,415	9,892	9,601	10,084
	Ground water	Mm^3	406	391	368	392
	Total	Mm^3	30,919	29,370	31,089	30,838
Water discharge	River/lake/reservoir	Mm^3	18,532	17,182	17,819	18,265
	Sewage system	Mm^3	2,121	2,104	1,959	1,935
	Ocean/sea	Mm^3	8,393	7,962	9,050	8,540
	Other	Mm^3	0	0	0	0
	Total	Mm^3	29,046	27,248	28,827	28,740
Net fresh water consumption*1		Mm^3	1,873	2,122	2,262	2,098
Percentage of water recycled for use*2		Mm^3	—	23,585	460,079	421,920
Ratio of water recycled for use		%	—	45	94	93

*1 Water withdrawal — Water discharge
*2 Value for FY2018 is small due to a narrow survey scope

Water Withdrawal/Calculated Value-added Water Withdrawal Intensity

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Water withdrawal	Mm^3	30.9	29.4	31.1	30.8
Calculated added value of water withdrawal intensity	100 million yen/Mm^3	31.7	33.1	29.7	29.4

∗Calculated value added: The estimated amount of added value calculated based on MGC Alone net sales of MGC multiplied by the value added rate for the chemical industry published by the Ministry of Economy, Trade and Industry.

Water Consumption/Calculated Value-added Water Consumption Intensity

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Water consumption	Mm^3	1.9	2.1	2.3	2.1
Calculated added value of water consumption intensity	100 million yen/Mm^3	523	458	409	432

∗Calculated value added: The estimated amount of added value calculated based on MGC Alone net sales of MGC multiplied by the value added rate for the chemical industry published by the Ministry of Economy, Trade and Industry.

Water recycling achievement status

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Water recycling rate	%	-	45	94	93
Target: at least 95%	-	-	×	×	×

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Resource Recycling (Non-consolidated)

Waste

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Volume of waste generation	Ton	82,130	80,575	83,969	79,483
Recycled volume	Ton	24,733	23,700	24,228	25,133
Final disposal volume	Ton	466	580	671	406
Recycling rate	%	30	29	29	32

Zero waste emission rate

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Amount of final disposal/total amount of waste generated	%	0.57	0.72	0.80	0.51
Target: at most 0.3%	-	×	×	×	×

PRTR Substances (Non-consolidated)

Emissions of PRTR Substances

Indicator		Unit	FY2017	FY2018	FY2019	FY2020
Emissions of PRTR Substances	Atmosphere	Ton	213	227	270	266
	Water bodies	Ton	15	8	10	11
	Soil	Ton	0	0	0	0
	Total*	Ton	228	234	280	277

*Due to rounding off figures, there are places where the sums for each item do not match the total.

High-emission Substances Notified under the PRTR Law

Government-designated number	Substance	Unit	FY2017	FY2018	FY2019	FY2020
296	1,2,4-Trimethylbenzene	Ton	91	99	150	152
186	Dichloromethane	Ton	78	87	74	77
300	Toluene	Ton	12	10	12	12
80	Xylene	Ton	22	16	18	10

Reduction of PRTR Chemical Discharges

In its Responsible Care Medium-term Plan 2020, MGC set a target of reducing its plants' discharges of chemicals regulated by Japan's PRTR Law by 10% relative to FY2017. It regrettably fell short of the target. MGC will continue to reduce such PRTR chemical discharges in pursuit of its Responsible Care Medium-term Plan 2023's voluntary 10% reduction target relative to FY2020.

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Pollution Prevention (Non-consolidated)

Air Emissions

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Volatile organic compounds (VOCs)	Ton	296	318	376	339
NO_X	Ton	573	478	472	508
SO_X	Ton	62	55	54	64
Dust	Ton	12	17	25	31

Control of Water Discharge

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
BOD	Ton	23	31	33	47
COD	Ton	137	114	125	121
Total oxygen demand	Ton	161	144	157	169
Total phosphorus emissions	Ton	60	72	59	51
Total nitrogen emissions	Ton	257	230	247	193

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Environmental Accounting (Non-consolidated)

Environmental Accounting

Breakdown			Unit	FY2017		FY2018		FY2019		FY2020	
				Amount invested	Expenses	Amount invested	Expenses	Amount invested	Expenses	Amount invested	Expenses
Onsite cost	Pollution prevention cost	Air pollution	Million yen	57	771	10	1,021	6	926	95	878
		Water pollution	Million yen	56	1,602	83	1,750	106	1,669	178	1,561
		Soil/noise pollution	Million yen	17	0	138	12	80	0	354	0
	Global environmental protection cost		Million yen	90	1,928	115	1,664	139	1,806	192	1,872
	Resource recycling cost		Million yen	0	932	70	1,119	0	837	6	1,143
Up or down stream cost			Million yen	0	56	0	43	0	35	0	40
Management activity cost			Million yen	25	488	43	471	25	475	41	547
R&D cost			Million yen	259	2,498	222	2,376	337	2,716	442	2,748
Social contribution cost			Million yen	0	10	0	9	0	8	0	7
Environmental damage cost			Million yen	0	78	0	71	0	74	0	71
Total*			Million yen	504	8,363	680	8,536	692	8,546	1,308	8,866

*Due to rounding off figures, there are places where the sums for each item do not match the total.

Economic Benefits Associated with Environmental Protection Measures

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Income	Million yen	29	30	45	48
Reduction of expenses	Million yen	1,064	183	398	111

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Biodiversity Conservation Project Expenditures (Non-consolidated)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Biodiversity conservation project expenditures	Million yen	99	101	113	108

Environment-related Accidents / Violations of Environmental Laws and Regulations (Non-consolidated)

Indicator	Unit	FY2017	FY2018	FY2019	FY2020
Violations of environmental laws and regulations	Cases	0	0	0	1
Accidents/pollution with potential to cause environmental problems	Cases	0	0	1	1
Complaints regarding environmental problems	Cases	0	0	0	0
Total environmental fines/penalties	¥000	0	0	0	0

Status of External Certification

ISO 14001 Certification Status (Non-consolidated)

∗ 100% of domestic manufacturing plants are certified

Certified Facility	Registration Number	Date Acquired	
		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

Status of External Certification (As of November 2021)

Japan

Company	Business Sites	ISO 14001	OHSAS 18001	ISO 45001	ISO 9001
MITSUBISHI GAS CHEMICAL COMPANY, INC.	Niigata Plant	●			●
	Mizushima Plant	●			●
	Yokkaichi Plant	●			●
	Kashima Plant	●			●
	Yamakita Plant	●			●
JSP CORPORATION	Hokkaido Plant	●			●
	Kanuma No.1 Plant	●			●
	Kanuma No.2 Plant	●			●
	Kanuma No.3 Plant				
	Mirafoam Plant	●			●

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Company	Business Sites	ISO 14001	OHSAS 18001	ISO 45001	ISO 9001
JSP CORPORATION	Kashima Plant	●			●
	Yokkaichi No.1 Plant	●			●
	Yokkaichi No.2 Plant	●			●
	Kansai Plant	●			●
	Kitakyushu Plant				
	Kyusyu Plant	●			●
JAPAN FINECHEM COMPANY, INC.	Sakaide Factory	●			●
	Niigata Factory	●			●
	Hiratsuka Division	●			●
TOHO EARTHTECH,INC.	Factory				●
	Construction Business Headquarters	●			●
Yutaka Chemicals Corporation	Hiratsuka Factory				●
	Shimizu Factory				●
	Mizushima Factory				●
Japan U-Pica Company Ltd.	Shonan Factory				●
	Mine Factory	●			●
Fudow Company Limited	Fujinomiya Factory	●			●
	Hiratsuka Factory	●			●
	Gamagori Factory				●
	Tokai Office				●
J-CHEMICAL, Inc.	Shizuoka Factory				＊
KYOUDOU KASANKASUISO CORP.	Factory				
MGC Filsheet Co., Ltd.	Tokorozawa Factory				●
	Osaka Factory				●
	Shirakawa Factory				●
MGC Electrotechno Co.,Ltd.	Factory	●			●
Yonezawa Dia Electronics Co., Inc.	Factory	●			●
MGC AGELESS Co.,Ltd.	Factory				●
EIWA CHEMICAL IND. CO.,LTD	Kinuura Factory				●
	Ujitawara Factory				●
TOYO KAGAKU ,INC.	Headquarters Factory	●			●
	Mitake Factory	●			●
	Mizushima Factory	●			●

＊Included in the certification of Yutaka Chemicals Sites as it is located within the Yutaka Chemicals sites premises

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Asia

Company	Business Sites	ISO 14001	OHSAS 18001	ISO 45001	ISO 9001
■Korea					
Samyoung Pure Chemicals Co., Ltd	Cheonan Plants	●		●	●
	Ulsan Plants	●		●	●
■Taiwan					
MGC Pure Chemicals Taiwan, Inc.	Plant	●		●	●
■China					
Taixing Lingsu Specialty Materials Co., Ltd.	Plant	●			●
MITSUBISHI GAS CHEMICAL ENGINEERING-PLASTICS (SHANGHAI) CO., LTD.	Plant	●			●
Suzhou MGC Suhua Peroxide Co., ltd.	Plant	●			●
■ Singapore					
MGC PURE CHEMICALS SINGAPORE PTE. LTD.	Plant	●		●	●
■Indonesia					
PT PEROKSIDA INDONESIA PRATAMA	Plant	●		●	●
■Thailand					
THAI POLYACETAL CO., LTD	Plant	●		●	●
AGELESS (THAILAND) CO., LTD.	Factory			●	●
MGC ELECTROTECHNO (THAILAND) CO., LTD	Factory	●			●

Americas

Company	Business Sites	ISO 14001	OHSAS 18001	ISO 45001	ISO 9001
MGC ADVANCED POLYMERS,INC.	Factory	●			●
MGC PURE CHEMICALS AMERICA, INC	Arizona Facility	●		●	●
	Texas Facility			●	●
	Oregon Facility				●

* Total 38sites (68%) of 56 production sites acquired ISO 14001 certification.
* Total 0sites (0%) of 56 production sites acquired OHSAS 18001 certification.
* Total 9sites (16%) of 56 production sites acquired ISO 45001 certification.