Mitsubishi Chemical Group Corporation - Water Security 2023

W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Mitsubishi Chemical Group Corporation (MCG) was established in October 2005. Its four core operating companies are Mitsubishi Chemical Corporation, (which is merged with two other operating companies of MCG, Mitsubishi Plastic. Inc. and Mitsubishi Rayon Co. in April 2017), Mitsubishi Tanabe Pharma Corporation, Life Science Institute, Inc, which is established in April 2014 for the most advanced and high-quality solutions to contribute widely to people's health, and Nippon Sanso Holdings Corporation which joined MCG in November 2014. MCG's five principal business segments are electronics applications, designed materials, health care, chemicals, and polymers. At the end of March 2023, the MCG comprised of 593 consolidated companies employing a total of 68,639 people around the world.

In April 2022, the MCG shifted from a structure in which each holding company and operating company operated separately to one in which the entire group is managed as a single entity under the concept of "One Company, One Team". In line with this change, the company name was changed from Mitsubishi Chemical Holdings Corporation (MCHC) to MCG on July 1, 2022.

W-CH0.1a

(W-CH0.1a) Which activities in the chemical sector does your organization engage in?

Bulk organic chemicals
Bulk inorganic chemicals
Specialty organic chemicals
Specialty inorganic chemicals

W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

Please select

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	April 1 2022	March 31 2023

W0.3

(W0.3) Select the countries/areas in which you operate.

China
Indonesia
Japan
United States of America

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

JPY

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Companies, entities or groups over which operational control is exercised

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W0.7

(W0.7) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, an ISIN code	JP3897700005

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	In the chemical industry's manufacturing process (direct use), large quantities of high-quality fresh water are required for a number of purposes, for example: cleaning resin discharged from products; and chemical reactions in the manufacturing process of medical products and foods. As a result, water availability is an important consideration in plant location decisions. Therefore, we rated the importance of direct water use as "Vital". We believe that water availability will continue to become an increasingly important factor in the future. Since fresh water used for cleaning is discharged in relatively large quantities, quality control is very important. We are also making efforts to expand the applications of our products in order to expand our business. Therefore, it is expected that the number of products to be cleaned will increase and the need to control the cleaning level according to the product will increase. Thus, increasing the variety of products and controlling each cleaning level are the reasons why we anticipate that water availability will become an increasingly important factor in the future. For indirect use, in the upstream phase of production for materials such as resins that we produce, a huge amount of water mainly for cooling, and steam is used. In the downstream phase, water is used to process and assemble products we produce and so in general the requirement of water use is lower. Although upstream water demand may be lower compared to industries that require agricultural raw materials, the chemical sector's use of water will become more important in the future as water availability decreases and the use of raw materials made from plants increases. Therefore, we rated the importance of indirect use of water as "Important". Noted that cooling and steam, which are the main applications, hardly cause water pollution at the use stage. Therefore, circulation system to reuse used water many times has already established for each of two uses.
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Neutral	When used directly, seawater is essential to cover large amounts of cooling in coastal facilities. Therefore, we rated the importance of direct use of water as "Vital". In inland plants where only fresh water can be used, we recycle cooling and steam applications thoroughly within the site, while cleaning applications are recycled to the best extent possible. Direct use of water other than fresh water can be important in the future. The reason is that droughts due to climate change and other factors may force us to limit the use of fresh water. However, in case a large amount of seawater is used, it can give negative impacts on the natural environment of the water supply area. Instead, we would prefer to recycle water within our own location. For indirect use, in the upstream phase of production of material such as resins that we produce, seawater or recycled water is used similarly to how it is used at our own sites and so the importance of water resources is equal at both our own sites and upstream sites. Downstream processing, in which we purchase resins and other products, (and process and assemble them further), use little seawater, and recycled water is not very important. For this reason, we evaluated its importance as "neutral." We expect this trend will be continued with the following two reasons. First, the upstream site already has a water recycling system in place. Second, the use of seawater in the product assembly process in downstream processing leads to corrosion of the product assembly machine.

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Frequency of measurement	Method of measurement	Please explain
Water withdrawals – total volumes	100%	Continuously	Water withdrawal is usually measured using a flow meter.	Considering the importance of water in our manufacturing process (cooling, cleaning, water as a raw material, etc.), we record using automatic measuring equipment in 100% of our manufacturing facilities. We check and monitor the data of the automatic measuring device once a month.
Water withdrawals – volumes by source	100%	Continuously	Water supplied from municipal water sources is continuously monitored using automated equipment to check compliance with licensing requirements and water costs.	Monitoring is also ongoing to evaluate the efficiency of water use in facilities where large amounts of groundwater and surface water are used. Monthly aggregations are reported to site administrators and used to evaluate the various performance characteristics of the manufacturing industry.
Entrained water associated with your metals & mining and/or coal sector activities - total volumes [only metals and mining and coal sectors]	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	Please select	<Not Applicable>	<Not Applicable>	

	% of sites/facilities/operations	Frequency of measurement	Method of measurement	Please explain
Water withdrawals quality	100%	Continuously	Withdrawal quality parameters such as turbidity, hardness, and pH are important for stable operations as well as product quality and are therefore monitored continuously using automated equipment or by sampling at all facilities that use surface water or groundwater.	As for water supplied by third party sources, since the quality of water is normally stable, we do not measure its quality by ourselves. Instead, we do monitor it on a regular basis, normally once a month, using data obtained from the distributors. The distributors constantly and automatically measure the quality of the water supplied. Should they detect any abnormalities in the water quality from their measurement results, they are required to contact us immediately. Therefore, including this indirect monitoring, we are virtually and constantly monitoring the quality of all water withdrawn and used in our operations.
Water discharges – total volumes	100%	Continuously	To evaluate the impact of quality and cost, we monitor the effluent volume at 100% of our facilities. Most of our facilities use automated equipment to continuously measure discharge volume based on the total volumes of wastewater.	At facilities that generate only a small amount of wastewater, the amount of wastewater is instead periodically (monthly) measured and discharged to general wastewater treatment facilities. This is because when the volume of wastewater is intermittent, it makes it impossible to continuously measure the amount of wastewater.
Water discharges – volumes by destination	100%	Continuously	Most of our facilities use automated equipment to continuously measure discharge volume based on the total volumes of wastewater.The destination of the discharge is also recognized and recorded.	We continuously measure the amount of wastewater. The wastewater is discharged into fresh water and seawater as well as public sewage treatment systems. To mitigate averse environmental impacts and to evaluate costs and compliance with regulation the volumes are automatically and continuously measured for most of our sites. For sites with only small volumes of discharge water volumes are measured periodically (monthly). This is because when the volume of wastewater is intermittent, which makes it impossible to continuously measure the amount of wastewater.
Water discharges – volumes by treatment method	100%	Continuously	We continuously measure the volume of wastewater received by wastewater treatment facilities using automated equipment at all facilities.	Water that is discharged into rivers, oceans, and other public water areas are discharged through wastewater treatment facilities to prevent pollution. In order to properly manage the performance of this wastewater treatment facility, it is necessary to monitor the quality and quantity of wastewater received. In public wastewater treatment facilities and where wastewater is discharged to other companies, wastewater treatment is carried out at downstream, so in most cases, the wastewater is discharged without prior measuring of its quality. For facilities with very low discharges, measurements are usually made about once a month.
Water discharge quality – by standard effluent parameters	100%	Continuously	The quality of standard effluents such as COD, nitrogen and BOD is measured and monitored by water samplers at each facility.	Monitors COD, total nitrogen, and other regulatory parameters that are included in the monitored area for wastewater to public waters. The method and frequency of measurement, e.g., daily, monthly, will vary from site to site and case-by-case. In the case of emissions into public waters, measurements are made at all sites exceeding the frequency specified by laws and regulations. Monitoring is voluntarily performed once a month when releasing into public sewage systems.
Water discharge quality – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)	100%	Continuously	Sampling analysis of wastewater is carried out to monitor the quality of the wastewater. The nitrogen content, phosphorus content, other harmful substances and pH in wastewater are measured.	These parameters are monitored daily or continuously. pH is monitored continuously and samples for other parameters are taken daily. This is part of the normal management of our sites.
Water discharge quality – temperature	100%	Continuously	Continuous monitoring of temperature by automated measurement devices is performed for emissions to public waters that may have significant environmental impacts.	We also use the activated sludge method for wastewater treatment facilities that we operate and manage. In the activated sludge method, it is important to control the temperature that affects the activity of aerobic bacteria. Therefore, wastewater treatment facilities use automatic measuring devices to monitor the temperature in real time and we check the record once a month. Such monitoring and measurements are carried out at our Ibaraki factory, etc., which accounts for 60%.
Water consumption – total volume	100%	Monthly	Water consumption is defined as the difference between measured withdrawal and facility emissions.	The measurement frequency of water intake and drainage is the same as the frequency of consumption measurement. In other words, measurement frequency at production sites with a small amount of wastewater will be once every few days. On the other hand, the consumption at a production site with a large amount of wastewater is always measured because the wastewater is automatically and constantly measured. Usage is aggregated monthly to identify abnormalities. If the amount of wastewater is small and is not measured at all times (e.g., in an office), the amount of water taken in and the amount of wastewater discharged are regarded as the same, and the amount of water consumed is defined as 0.
Water recycled/reused	100%	Continuously	The amount of water reused is measured from water meters and reductions in water withdrawals, and the data is compiled for each site.	Approximately 100% of water recycling and reuse facilities are continually measured. Initiatives to increase water recovery and recycling will be undertaken in the future to improve water use efficiency. In order to account the exact amount of recycling, we have educated the manager of each facility on the definition of the amount of recycling. In addition, we have started to examine the insufficient equipment in order to be able to determine the correct volumes of recycled water. As a result of these measures, the proportion of each facility that measures the amount of recycling has increased. Specifically, we measure the amount discharged from a pump that circulates water with an automatic measuring device to know the amount recycled. On the other hand, at each facility, the amount of recycled data is effectively analyzed as information for studying ways to further increase the amount recycled. As a result, the effect is gradually becoming apparent.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Continuously	Internal audit tools are used to measure progress in providing WASH services to employees.	We constantly have safe water and sanitation facilities at all business sites. Also, the suppliers of water to all business sites are constantly monitoring the water quality. In addition, water quality data will be submitted on a regular basis. The status of safe water and sanitation facilities is monitored and reported annually through our Employee Health Management Performance Monitoring.

W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, how do they compare to the previous reporting year, and how are they forecasted to change?

	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Please explain
Total withdrawals	845474	Lower	Increase/decrease in business activity	About the same	Increase/decrease in business activity	Total water withdrawals for FY2022 were 845,474 ML. The initiatives such as reduced water withdrawals and water conservation have resulted in a 2.0% decrease from last year's total water withdrawals of 862,729 ML.
Total discharges	802740	Lower	Increase/decrease in business activity	About the same	Increase/decrease in business activity	The total wastewater discharged in FY2022 was 802,740 ML. This represents a 1.3% decrease from last year's total water withdrawal of 812,927 ML. We believe that this is due to the improved efficiency of freshwater recycling and a decrease in total water withdrawal. We will continue to improve this recycling amount and expect this trend to continue in the future.
Total consumption	42734	Lower	Increase/decrease in business activity	About the same	Increase/decrease in business activity	Total water consumption volumes for FY2022 were 42,734 ML. On the other hand, through our examination, the total consumption of last fiscal year was 49802 ML. As a result, we recorded a fair decrease of 14.2% from the previous year. We believe that this is due to the decrease in total water withdrawal and total wastewater discharged.

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress, provide the proportion, how it compares with the previous reporting year, and how it is forecasted to change.

	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Identification tool	Please explain
Row 1	Yes	1-10	About the same	Maximum potential volume reduction already achieved	Lower	Increase/decrease in business activity	WRI Aqueduct	We used WRI Aqueduct to screen water stress at 106 manufacturing sites around the world in 2020 for the first time. The biggest reason for choosing the WRI Aqueduct is that it is easy to use. Water risk assessments must be conducted independently by personnel at each production site around the world. This is because that personnel in charge has to understand the characteristics of their own area, so of course, it is a very important factor that anyone can easily use it. In addition, we focused on Physical Risks Quantity among the four screening indicators of WRI Aqueduct. The reason is that the average Physical Risks Quantity score is highest when comparing the four WRI Aqueduct scores. In other words, we have focused on evaluating the most severe indicator. In 2020, we used WRI Aqueduct for the first time to screen water stress at 106 production sites worldwide - the main reason for choosing WRI Aqueduct was its ease of use. Water risk assessments have to be carried out independently by the person in charge at each production site around the world. This is because that person in charge has to understand the characteristics of his or her region, so being easy for anyone to use is of course an important factor. Of the four screening indicators of the WRI Aqueduct, we also focused on the 'amount of physical risk'. The reason for this is that when comparing the four WRI Aqueduct scores, the average score for Physical Risks Quantity is the highest. This means that we focused on the most severe indicators. Through the WRI Aqueduct screening, 11 sites were identified as potentially exposed to water stress. The water abstraction at these 11 sites represents 6% of the MCG's total water abstraction. However, this is not the end of the water stress screening process, as the assessment of the WRI Aqueduct is considered as the first screening. Therefore, a questionnaire survey was conducted for 11 sites with high WRI Aqueduct scores and three sites that did not have high WRI Aqueduct scores but had relatively high water abstraction in Japan. The survey also checked the awareness of employees at each site regarding water risks and whether or not they had taken measures to address them. This was the second screening. The water abstraction at the 14 sites where the second screening was carried out corresponds to 19% of MCG's total water abstraction. The results of this questionnaire identified three production sites as being highly water-stressed sites. Overseas, two sites with high total water abstraction and very high Physical Risks Quality scores were identified as high water stress sites. The total water abstraction of the five sites corresponds to 7.1% of the MCG's total water abstraction. As above, water stress was assessed on a two-stage scale. As water stress is not expected to change in the short term, the water stress risk assessment will be repeated every five years and carried out for all new plants.

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	79564	Lower	Increase/decrease in efficiency	Surface freshwater is mainly used for primary cooling and is an important and relevant part of our operations. The actual seawater intake in 2022 was 79564 ML, recording a decrease (3.3% compared to the previous year). We believe this is due to the increased efficiency of freshwater recycling. We are working to improve this recycling rate and expect this trend to continue.
Brackish surface water/Seawater	Relevant	633682	Lower	Increase/decrease in efficiency	Seawater is mainly used for primary cooling water re-cooling. Therefore, sufficient quantities of seawater are relevant for our operations. The actual seawater intake in 2022 was 633682 ML, recording a decrease (1.2% compared to the previous year). This is assessed to be due to improved recycling efficiency. For example, improved recycling efficiency means recycling more often and using fresh water for longer periods. As a result, the frequency of freshwater replenishment is reduced and the freshwater and seawater withdrawals for primary cooling water re-cooling are reduced. By improving this recycling rate, this downward trend is expected to continue.
Groundwater – renewable	Relevant	30420	Lower	Increase/decrease in efficiency	Groundwater (renewable) is mainly used for cooling and is relevant to our operations. The actual groundwater abstraction in FY2022 was 30420 ML. This was a decrease from the previous year (4.9% compared to the previous year). This is assessed to be due to improved recycling efficiency. For example, improved recycling efficiency means recycling more often and using fresh water for longer periods. As a result, the frequency of freshwater replenishment is reduced and the groundwater withdrawals for primary cooling water re-cooling are reduced. By improving this recycling rate, this downward trend is expected to continue.
Groundwater – non-renewable	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	Chemical plants are located on the premise of large-scale use of water, and do not rely on such non-recycled water resources from the viewpoint of sustainability. The survey has not been conducted separately from renewable groundwater, but we consider that this water is not used currently, nor should it be used in the future.
Produced/Entrained water	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	Because of the necessity of stable operations, the utilization of freshwater and seawater with stable water quality is indispensable for chemical plants, and the utilization of produced water is not considered common now, nor should it be in the future. However even at present, there are cases involving droughts, where the facilities located in water stressed areas sometimes accept water temporarily. This demonstrates that it may be necessary to ensure that this water is effectively utilized as freshwater might be constantly depleted in the future.
Third party sources	Relevant	101808	Lower	Increase/decrease in efficiency	We use third-party water sources mainly for cooling. This is appropriate and important for our business. In 2022, we achieved 101808 ML, which is 5.1% less than in the previous year. This is assessed to be due to improvements in recycling efficiency. For example, improved recycling efficiency means more frequent recycling and the use of fresh water for longer periods of time. As a result, the amount of water taken from third parties for primary cooling water recooling is reduced. This reduction is expected to continue as a result of improving the recycling rate.

W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water	Relevant	75532	Lower	Increase/decrease in efficiency	The main use of freshwater is primary cooling water, which may be discharged to surface water once it has been verified that there is no change in water quality. It is therefore important and relevant to the company as a discharge destination. In FY2022, the volume of water discharged to surface water was 75532ML, a decrease (3.6% compared to the previous year) was recorded. This is due to an increase in the efficiency of freshwater recycling. This decrease is due to the improved recycling efficiency of freshwater, and we will continue to improve the recycling rate.
Brackish surface water/seawater	Relevant	703910	Lower	Increase/decrease in efficiency	The main use of seawater is for cooling, and it is returned to the sea after ensuring that there is no change in water quality. Seawater is an important discharge destination: the total volume discharged to the sea in FY2022 was 703910 ML. As a result, a decrease (1.1% compared to the previous year) was recorded. This decrease was due to improved freshwater recycling efficiency. Discharges to the sea are located adjacent to the operation site. The efficiency of freshwater recycling has reduced the amount of seawater intake, resulting in a decrease in the amount of wastewater discharged to the sea. This trend is expected to continue as efforts are made to improve recycling rates.
Groundwater	Relevant	35	About the same	Change in accounting methodology	Most plants do not discharge to groundwater. As the main use of groundwater is for cooling water and there are no processes that degrade the quality of the water, some uncontaminated effluent is returned to groundwater.
Third-party destinations	Relevant	23263	Higher	Facility expansion	The amount of wastewater discharged to third parties in FY2022 was 23,263 ML. On the other hand, through our examination, the total amount of wastewater discharge to third parties was 22,357 ML in last fiscal year. As a result, we recorded a increase of 4.1%. The increase is due to an increase in operations at Fite Road in the USA and additional sites added to the scope of the count.

W1.2j

(W1.2j) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	Primary reason for comparison with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Relevant	18012.6	About the same	Maximum potential volume reduction already achieved	71-80	Freshwater used in the production process of our chemical plants is used not only for cooling but also for chemical reactions. To discharge the freshwater used in the chemical reaction, the advanced treatment of the wastewater is performed. The treatment complies with the Water Pollution Control Act. Specifically, additional treatment is carried out as necessary to remove suspended, colloidal, and dissolved components (nutrients, heavy metals, inorganic substances and other pollutants) remaining after secondary treatment. The amount of waste water treated in FY2022 was 18,013 ML. On the other hand, through our examination, the amount of wastewater treated in FY2021 was 18,545 ML. As a result, the processed wastewater amount was almost same as that in the previous year. We are continuously addressing to reduce the discharge of pollutants into public waters by installing and improving the advanced wastewater treatment facilities.
Secondary treatment	Relevant	669.33	About the same	Maximum potential volume reduction already achieved	71-80	Fresh water is used in the production process at the plant, not only for cooling but also for production. Secondary treatment is used to discharge the wastewater. It is therefore relevant and important to our business. The treatment complies with the Water Pollution Control Act. Specifically, biological treatment is carried out to break down organic matter and reduce solids and a combination of chemical and biological treatment is carried out to remove nutrients (nitrogen and/or phosphorus). In 2022, the secondary treatment volume was 669 ML; in 2021, the secondary treatment volume was 669 ML, which is the same. Wastewater is treated with activated sludge in order to comply with discharge standards for public waters, which are stricter than sewage discharge standards. At the two domestic plants that carry out secondary treatment, the quality of the effluent, including pH, COD, nitrogen, and phosphorus, is constantly measured and if an abnormality is detected, the discharge is immediately stopped and stored in a reserve tank.
Primary treatment only	Relevant	27032.88	About the same	Maximum potential volume reduction already achieved	71-80	Fresh water used in the production process in chemical plants is used not only for cooling but also for cleaning. Primary treatment is carried out to discharge the fresh water used for this cleaning. It is therefore relevant and important to our business. The treatment complies with the Water Pollution Control Act. Specifically, suspended and suspended solids are physically removed by sedimentation. The volume of primary treated wastewater in 2022 was 27,033 ML. On the other hand, our study showed that the primary treated effluent in 2021 was 27,252 ML, which was the same as last year.
Discharge to the natural environment without treatment	Relevant	515576.34	Lower	Increase/decrease in business activity	71-80	Much of the freshwater used in the production processes of chemical plants is used for cooling. Freshwater used for cooling is not polluted and is discharged without treatment. Discharges are made in compliance with water regulations in the area. The volume in 2022 was 515,576 ML. On the other hand, according to our study, the volume in 2021 was 522,261 ML. As a result, the volume of untreated wastewater decreased by 1.3%. This was due to the more efficient use of freshwater used for cooling by increasing the number of freshwater cycles used for cooling.
Discharge to a third party without treatment	Relevant	6502	Higher	Increase/decrease in business activity	91-99	Much of the freshwater used in chemical plant production processes is used for cooling. Freshwater used for cooling is not polluted and is discharged without treatment. It is therefore relevant to our operations. The water is discharged to a third-party treatment plant in compliance with local water regulations. The total volumes in 2022 were 6,502 ML. On the other hand, according to our study, the volume in 2021 was 5,163 ML. As a result, the volume of untreated wastewater increased by 25.9%. The increase is mainly due to the addition of two US companies, Continental Carbonic Products, Inc. and Western International Gas & Cylinders, Inc. to the scope of disaggregation from FY2022.
Other	Not relevant	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>	No relevance to our business sites.

W1.2k

(W1.2k) Provide details of your organization's emissions of nitrates, phosphates, pesticides, and other priority substances to water in the reporting year.

	Emissions to water in the reporting year (metric tonnes)	Category(ies) of substances included	List the specific substances included	Please explain
Row 1	500	Nitrates Phosphates	<Not Applicable>	We recognize the importance of careful implementation of the handling and treatment of hazardous substances. We check the quality of the effluent at each of our sites and continuously control the presence of hazardous substances in the water. For this reason, we are working to ensure that total phosphorus and total nitrogen are counted and not discharged. We will continue to put in place internal hazardous substance controls to ensure that there are no discharges into the water.

W1.3

(W1.3) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1	4634530000000	845573		Regarding the problem of global water depletion, we are planning to contribute to the solutions as a company which solve water issues through our products, and thus see an increase in our revenue over time. However, as part of our Environment Materiality, it is important for us to reduce our impact on water resources and therefore see a decrease in total water withdrawals over the years, which we predict will lead to an overall increase in water efficiency.

W-CH1.3

(W-CH1.3) Do you calculate water intensity for your activities in the chemical sector?

Yes

W-CH1.3a

(W-CH1.3a) For your top five products by production weight/volume, provide the following water intensity information associated with your activities in the chemical sector.

Product type
Bulk inorganic chemicals

Product name
Industrial gases (N2, O2 and Argon)

Water intensity value (m3/denominator)
2.57

Numerator: water aspect
Freshwater withdrawals

Denominator
Other, please specify (KNm3)

Comparison with previous reporting year
About the same

Please explain
When calculating the water intensity associated with industrial gas production, we use KNm3 in the denominator to measure absolute quantities. The water intensity associated with industrial gas in 2022 was 2.57, a change of less than 1% (0.83%) compared to 2.42 in 2021, which we recognize as almost the same. The reason for this is that both production and water withdrawals are the same as in the previous year. The fact that the water intensity has changed by such a small amount indicates that abstraction in the company is well managed and freshwater use is efficient. In order to continue to reduce the specific water consumption, the company is reducing the amount of water intake by thoroughly recycling cooling water and effectively utilizing surplus industrial water through the introduction of industrial water membrane filtration treatment, etc. As a result of the above efforts, the water consumption intensity of the product is expected to remain the same or decrease in the future. The company uses the results of these water intensity assessments for each of its products as one of the indicators of its water withdrawal targets and the progress of its environmental initiatives.

Product type
Bulk inorganic chemicals

Product name
Coke

Water intensity value (m3/denominator)
1.78

Numerator: water aspect
Freshwater withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
Mitsubishi chemical group uses tons as the denominator unit when calculating the water intensity of coke production; the water intensity in FY2022 was 1.78, an increase of approximately 11.3% compared with 1.6 in FY2021. The reason for this is that the amount of seawater used for cooling related to plant operations remained almost constant and the total water withdrawal remained at the same level as in FY2021, while coke production decreased. In addition, industrial water is used for environmental measures, etc., irrespective of the production volume, such as road sprinkling on site. The water intensity is considered to have increased because the supply of cold water was increased, although there was a slight decrease in water withdrawal in line with the decrease in production. In order to reduce the water intensity, the Group has been reducing water withdrawal by thorough recycling of cooling water, etc. and effectively utilizing surplus industrial water through the introduction of industrial water membrane filtration treatment, etc. By continuing these efforts in the future, it is expected that the water intensity related to coke will remain the same or decrease. The company uses the results of these water intensity assessments for each of its products as one of the indicators of its water withdrawal targets and the progress of its environmental initiatives.

Product type
Bulk organic chemicals

Product name
Ethylene and propylene

Water intensity value (m3/denominator)
7.09

Numerator: water aspect
Freshwater withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
Mitsubishi Chemical Group uses tons as the denominator unit when calculating the water intensity of ethylene and propylene production The water intensity in FY2022 was 7.09, an increase of approximately 18.2% compared to 6 in FY2021. The reason for the increase was due to a period of production stoppage for periodic repairs. In the future, the company aims to reduce water consumption intensity by reducing water withdrawal through thorough recycling of cooling water, etc., effectively utilizing surplus industrial water through the introduction of industrial water membrane filtration treatment, etc., and optimizing operations. By continuing these efforts, it is predicted that the

unit water consumption of the product in question will remain the same or decrease in the future. The company uses the results of these water intensity assessments for each of its products as one of the indicators of its water withdrawal targets and the progress of its environmental initiatives.

Product type
Bulk organic chemicals

Product name
Methyl methacrylate and methacrylic acid.

Water intensity value (m3/denominator)
17.55

Numerator: water aspect
Freshwater withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
Mitsubishi Chemical Group uses tons as the denominator unit when calculating the water intensity to produce MMA and MMA derivatives The water intensity in FY2022 was 17.55, an increase of approximately 14% compared to 15.4 in FY2021. The reason for the increase was due to a period of production stoppage for periodic repairs. The Group believes that the overall structure of its production sites has changed, and the efficiency of water use has deteriorated. We aim to reduce water consumption per unit of production by reducing the amount of water withdrawn through thorough recycling of cooling water and other water, effectively utilizing surplus industrial water through the introduction of industrial water membrane filtration treatment and other measures and optimizing operations. By continuing these efforts, it is predicted that the unit water consumption of the product in question will remain the same or decrease in the future. The company uses the results of these water intensity assessments for each of its products as one of the indicators of its water withdrawal targets and the progress of its environmental initiatives.

Product type
Bulk organic chemicals

Product name
Polyethylene and polypropylene

Water intensity value (m3/denominator)
2.52

Numerator: water aspect
Freshwater withdrawals

Denominator
Ton

Comparison with previous reporting year
Higher

Please explain
The Mitsubishi Chemical Group uses tons as the denominator unit when calculating the water intensity of polyethylene and polypropylene production The water intensity in FY2022 was 2.52, an increase of approximately 9.6% compared to 2.3 in FY2021. More than 90% of the water intake is seawater for cooling used in the ethylene plant. The reason for the increase was due to a period of production stoppage for periodic repairs. The Group aims to reduce water intensity by reducing water withdrawals through thorough recycling of cooling water, etc., and by effectively utilizing surplus industrial water through the introduction of industrial water membrane filtration treatment and other measures. By continuing these efforts, it is predicted that the unit water consumption of the product in question will remain the same or decrease in the future. The company uses the results of these water intensity assessments for each of its products as one of the indicators of its water withdrawal targets and the progress of its environmental initiatives.

W-OG1.3

(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?
Please select

W1.4

(W1.4) Do any of your products contain substances classified as hazardous by a regulatory authority?

	Products contain hazardous substances	Comment
Row 1	Yes	<Not Applicable>

W1.4a

(W1.4a) What percentage of your company's revenue is associated with products containing substances classified as hazardous by a regulatory authority?

Regulatory classification of hazardous substances	% of revenue associated with products containing substances in this list	Please explain
Annex XVII of EU REACH Regulation	Less than 10%	We assess the hazards of our chemical products and implement countermeasures for some of them. In addition, we have established and operate a database of all substances related to our products. Regarding hazardous substances that are restricted under the EU REACH Regulation and other regulations, etc., as well as those determined by our internal assessments, we will ensure that: 1. New products to be launched in and after 2030 will not contain the above described substances; and 2. For existing products containing the above described substances, adequate chemical safety will be secured for all possible usages assumed over the entire lifecycle. If our assessments determine that it is difficult to secure such safety, even if the relevant substances meet the laws and the regulations, manufacture and sales of the products will be deceased or alternative study of the substance will be carried out.

W1.5

(W1.5) Do you engage with your value chain on water-related issues?

	Engagement	Primary reason for no engagement	Please explain
Suppliers	No	We are planning to do so within the next two years	The MCG Group understands the importance of creating a sustainable future. Although we are working on various environmental projects related to water security, such as the collection of supplier water risk information, our water-related supplier engagement activities have yet to yield substantial results. Currently, as a basis for supplier engagement, we request a water-related risk assessment when considering new suppliers. In the future, we plan to incorporate water-related dialogue, such as water abstraction and discharge to natural water, into our supplier engagement and use the information gained from the dialogue to help suppliers better manage their water resources and water risks. Specific timelines and activities are still being worked out, but we are considering adding water-related items to our dialogue with suppliers within the next two years. We are considering adding water-related items to our dialogue with suppliers within the next two years.
Other value chain partners (e.g., customers)	Yes	<Not Applicable>	<Not Applicable>

W1.5e

(W1.5e) Provide details of any water-related engagement activity with customers or other value chain partners.

Type of stakeholder
Investors & shareholders

Type of engagement
Innovation & collaboration

Details of engagement
Collaborate with stakeholders on innovations to reduce water impacts in products and services

Rationale for your engagement
Increasing customer water use is essential as a more efficient means of solving the problem of water scarcity, and we aim to supply a cumulative 10 billion tonnes of water over the 10 years from 2016 to 2025. Our target markets are developing countries in Asia and Africa, where water scarcity is significant but demand for water in daily life and agriculture is very high. In these countries, it can be difficult to simply provide water supply systems, as they often have not only water supply problems, but also inadequate energy, logistics, agricultural inputs and other infrastructure. Therefore, as part of our engagement with various stakeholders, we propose appropriate system configurations according to the social conditions in each country and, with financial support from ODA and the Japan International Cooperation Agency, develop and test business models for regions and industries that utilise the water they have access to, in order to promote more effective systems. Sources.

Impact of the engagement and measures of success
The deterioration of existing water supply systems and increasing turbidity and salinity in rivers are serious problems in Myanmar due to the prolonged wet and dry seasons. These problems are presumed to be influenced by climate change. Therefore, ensuring usable drinking water is an urgent issue. In 2017, we established a joint venture company, MW Aqua Solutions Ltd, with Wellthy Corporation and Myanmar Water Engineering & Products Ltd, to analyze and monitor water quality. It acts as a total solutions provider. MW Aqua Solutions Co., Ltd. has also launched an initiative to contribute to the stable supply of drinking water in the region. The initiative aims to supply a cumulative 10 billion tons of water over the 10 years from 2016 to 2025. To achieve this target, a milestone has been set to supply a cumulative 5 billion tons of water between 2016 and 2022. The results show that the engagement has been successful, with a cumulative supply of 5.31 billion tons of water by 2022, which is generally in line with the target.

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?
No

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

	Water-related regulatory violations	Fines, enforcement orders, and/or other penalties	Comment
Row 1	No	<Not Applicable>	

W3. Procedures

W3.1

(W3.1) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?

	Identification and classification of potential water pollutants	How potential water pollutants are identified and classified	Please explain
Row 1	Yes, we identify and classify our potential water pollutants	In Japan, the Water Pollution Control Law regulates substances that are highly toxic to living organisms and the environment as hazardous substances. Substances regulated by Japan's Water Pollution Control Law are controlled and reduced not only at our Japanese sites, which account for 70% of wastewater, but also globally as substances of the highest priority for water pollution control. We strive to minimise the risk of these hazardous substances leaking as impurities to our customers during the use and disposal stages of our products. -Compliance standards In accordance with our Product Stewardship Policy established in 2015, we disclose risk information on product safety throughout the lifecycle and work with stakeholders to minimise the impact on human health, safety and environment. In these activities, chemical substances are classified according to the type and degree of hazard according to international standards such as REACH and the GHS classification. The International Council of Chemical Associations (ICCA) promotes voluntary initiatives in the chemical industry under its Global Product Strategy (GPS), which emphasises risk-based management of chemicals through the supply chain and disclosure of risk management information on chemicals and products. -Indicator Several aspects of water discharged into water bodies and natural systems are carefully monitored BOD, COD and pH are used as a basis, with other indicators and categories added depending on the pollutant.	<Not Applicable>

W3.1a

(W3.1a) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.

Water pollutant category
Other synthetic organic compounds

Description of water pollutant and potential impacts
Benzene is contained in large quantities in cracked gasoline, a by-product in the production of ethylene and propylene by naphtha crackers, and also in coke oven gas in the production of coke. Moreover, benzene is supplied to the user as a raw material for solvents and resins. Therefore, our management of benzene covers our direct operations and our customers. As there is concern over its carcinogenicity, mutagenicity, and reproductive toxicity to the organism, and its acute toxicity to aquatic organisms even in very small amount, it is regulated in the Water Pollution Control Law of Japan as a hazardous substance that may affect living organisms and the environment.

Value chain stage
Direct operations

Actions and procedures to minimize adverse impacts
Beyond compliance with regulatory requirements

Please explain
We have implemented the following benzene leakage prevention measures and have confirmed every year that there are no leakage accidents at our operating sites. There were no accidents in FY2022 and thus we consider our monitoring strategy a success.
(1)Most benzene is newly formed in the cracker reaction. In order to prevent leakage to water, it is usual to monitor the concentration in wastewater, and a equipment is designed to prevent its leakage to public water systems. Therefore, although it is handled on the order of tens of thousands of tons in the sites, the leak to the public water system is zero under normal operating states. (2)The frequency of measurement at the points discharged to the public water system varies depending on the site, but has been confirmed to be non-leaking, with once to 4 times per month. In order to detect a trace leak caused by a equipment trouble before it reaches the public water area, the risk of the leak is further suppressed by constructing a system to measure, shut off, and recover the leak at a frequency of several hours in the wastewater ditch around the benzene manufacturing and use facility. In addition, as measures to prevent leakage during product use, recommendations for environmental pollution measures such as the installation of exhaust ventilation and wastewater facilities are described in the safety summary of benzene and shared with customers.

Water pollutant category
Other synthetic organic compounds

Description of water pollutant and potential impacts
Cyan compounds are synthesized as intermediates in the production process of resins and inorganic cyanide compounds are produced as by-products. As they are not contaminated in our raw materials and resin products, our management of them focuses only on our direct operations. They are highly lethal toxics even in very small amount that cause intracellular respiration inhibition by cyanide ions. So they are regulated under the Japanese Water Pollution Law as hazardous substances that may affect living organisms and the environment.

Value chain stage
Direct operations

Actions and procedures to minimize adverse impacts
Beyond compliance with regulatory requirements

Please explain
We have implemented the following cyan compounds leak prevention measures and have confirmed every year that there are no accidents at our operating sites. There were no accidents in FY2022 and thus we consider our monitoring strategy a success.
(1)It is subject to the regulations of the Water Pollution Control Law of Japan, and monitoring for leaks in public water systems is performed at the final outlets once to four times per month. As a by-product of production, the volume handled at the site is as high as at several thousand tons, but the amount of leakage in the past 10 years is below the detection limit at any of the production sites handling such substances. (2)In order to prevent leakage into the water, not only the concentration in the wastewater is monitored, but a mechanism is constructed to prevent leakage into the water system. Measurements are made about once an hour in the side ditches near the facilities where the equipment is manufactured and used. In the event of a leak, the amount of leakage is constantly suppressed to zero by a system that shuts off and collects the water at that step. By achieving all of these aspects, we rate our method of management as successful.

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?
Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Value chain stage
Direct operations
Supply chain
Other stages of the value chain

Coverage
Full

Risk assessment procedure
Water risks are assessed as part of an established enterprise risk management framework

Frequency of assessment
Annually

How far into the future are risks considered?
3 to 6 years

Type of tools and methods used
Tools on the market
Enterprise risk management
Databases

Tools and methods used
WRI Aqueduct

Contextual issues considered
Impact on human health
Water regulatory frameworks
Status of ecosystems and habitats
Access to fully-functioning, safely managed WASH services for all employees

Stakeholders considered
Customers
Employees
Investors
Local communities

Comment

W3.3b

(W3.3b) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

	Rationale for approach to risk assessment	Explanation of contextual issues considered	Explanation of stakeholders considered	Decision-making process for risk response
Row 1	Water stress (risk of disruption of water supply) in MCG's sites with high water use due to more than 100 production sites and dispersed around the world was assessed in 2017 using the Global Water Tool provided by the World Business Council for Sustainable Development (WBCSD). Every year since then, the current status and future projections of water stress have been assessed using the WRI Aqueduct. The WRI Aqueduct is used to assess water risks at national and international production and research sites. Each item is scored on a five-point scale from 0 to 5 (low to very high) and the information is presented as a world map, providing detailed information for each region. More than 98% of production sites are located in locations with an overall score of 4 or less on the five-point scale, which combines the quantity of physical risk, quality of physical risk and regulatory and reputational risk. In addition, more than 84% of all site water abstraction takes place in low-risk locations with a score of 3 or less. Based on a two-axis matrix of tool output and water use, 22 production sites with high water risk were selected and interviewed for detailed risk.	As part of our environmental policy, we use international tools such as WRI Aqueduct, in-house methods, scenario analysis and external consultants to examine the various water-related risks to which we could potentially be exposed. Our risk assessment process involves surveys of our direct operations and the entire supply chain for risks related to the 'water regulatory framework', 'ecosystem/habitat conditions' and 'Wash services'. -The regulatory framework for water involves both reputational and legal risks. Failure to comply with legal standards relating to water abstraction and wastewater discharge can lead to fines and operational restrictions, not to mention damage to the company's brand, and can reduce overall efficiency and lead to reduced profits. -We do not consume large quantities of water in our operations, but we discharge most of our wastewater into nature after tertiary or primary treatment. However, we include 'ecological and habitat conditions' in our risk assessment because, in the unlikely event of adverse effects on the watersheds and ecosystems to which we discharge wastewater, there would be damage to ecosystems and wildlife, as well as the risk of litigation from local residents. -We believe that access to safe drinking water and sanitation is a human right. We therefore ensure 'access to safe water, sanitation and hygiene (WASH)' in all our facilities worldwide and consider it a key element when assessing water-related risks.	As part of our environmental policy, we use internationally available tools such as WRI Aqueduct, in-house methods and scenario analysis to examine the various water-related risks we potentially have. While we recognise that all stakeholders are important to us, when it comes to water-related risks, we specifically consider our customers, employees, investors and local communities. - 'Customers' are integral to the success of our business and are always considered when assessing water-related risks. Many of our products are used as part of our customers' products. As such, problems in the manufacturing process could cause significant damage to customers. -We consider our employees to be at the heart of our business. Managing water quality is also about creating a safe and secure working environment, which is directly linked to the trust we have in our employees. If trust in our employees is undermined, our business could be severely affected, making it impossible for us to continue our operations and potentially reducing our sales. We recognise the importance of taking into account the physical and economic water-related risks to our employees. -We consider 'investors' to be irreplaceable in all our business activities, including sustainability. The support of investors is essential in determining our business plans and policies in relation to climate change and water security. Therefore, consideration must be taken to gain the trust of investors.	In order to assess the risks from plant operations and conflicts among stakeholders, which are difficult to evaluate with water risk tools, we used internal knowledge and identified five production sites (two basins) with risks that ultimately affect operations. It has been confirmed that the risk has already been recognized and controlled at these facilities, and problems such as shutdown have not become apparent for the past 20 years. However, we have not made any additional business decisions regarding water as we have already managed these identified risks. It has also been confirmed that the risk assessment for suppliers in the petrochemical division is equivalent to the results of our own risk assessment because the manufacturing base is located near the company's own site. Therefore, the results of the WRI Aqueduct assessment can be used as they are. Through the above methods, we evaluate and manage "physical risk" for production activities, "regulatory risk" associated with the tightening of water withdrawal regulations and effluent standards, and "reputational and market risk" related to our reputation in society. However, suppliers in the Functional Chemicals Division are scattered around the world by many micro businesses and, therefore, we are considering prioritization of those investigations in the future.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, both in direct operations and the rest of our value chain

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Risks are prioritized using the following criteria:

(1) Assigning a financial impact value to the size of potential economic loss, human impact, and impact on corporate reputation.

(2) Those with potentially significant financial impacts as determined in (1) are assessed for probability of occurrence.

(3) The product (multiplication) of (1) and (2) is considered to be the magnitude of the risk.

Larger risks as calculated through this method are categorized as serious (material) risks and reported to the Management Committee, where they are discussed, and countermeasures are considered. For risks related to water, financial impact of about 3 billion yen, which is about 0.1% of sales, is used as a guideline for this risk assessment. This risk assessment applies to our direct operations sites as well as to our suppliers, confirming that at this time almost all our sites and suppliers are not exposed to serious risks associated with water stress.

W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	5	Less than 1%	Three sites located in the Seto Inland Sea of Japan (Mizushima, Sakaide, and Kakogawa): The three sites are located in different water basins but the area as a whole experiences periodical droughts (once every 10 to 20 years). Additionally, because the inland sea is a closed water body, it is subject to more stringent legislation compared to other areas and the possibility of introduction of stricter regulation is considered higher compared to other locations. This is further influenced by the presence of a national park in the area. Two sites located in Indonesia (Melak (Java), TPA and PET film plants): In Indonesia, the volume of water supplied from seawater was increased. The WRI Aqueduct indicates water stress is Medium to High (2.7) with water not entirely being depleted. These facilities account for approximately 37% of the Group's total water withdrawal, primarily because large volumes of water are needed for cooling purposes.

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

Japan	Other, please specify (Seto Inland sea)

Number of facilities exposed to water risk
3

% company-wide facilities this represents
Less than 1%

Production value for the metals & mining activities associated with these facilities
<Not Applicable>

% company's annual electricity generation that could be affected by these facilities
<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities
Not applicable

% company's total global revenue that could be affected
1-10

Comment
Three sites located in the Seto Inland Sea of Japan (Mizushima, Sakaide, and Kakogawa): These three sites are located in different water basins, but the area as a whole has experiences of periodical droughts (once every 10 to 20 years). Additionally, because the inland sea is a closed water body, it is subject to more stringent legislation compared to other areas and the possibility for introduction of stricter regulation is considered as higher compared to other locations. This is further influenced by the presence of a national park in the area.

Country/Area & River basin

Indonesia	Other, please specify (Cidanau in Java Island)

Number of facilities exposed to water risk
2

% company-wide facilities this represents
Less than 1%

Production value for the metals & mining activities associated with these facilities
<Not Applicable>

% company's annual electricity generation that could be affected by these facilities
<Not Applicable>

% company's global oil & gas production volume that could be affected by these facilities
Not applicable

% company's total global revenue that could be affected
1-10

Comment
In Indonesia, the volume of water supplied from seawater increased due to the fact that seawater is still used for cooling purposes. The WRI Aqueduct indicates water stress is Medium to High (20-40%) with freshwater not being entirely depleted.

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your

response to those risks.

Country/Area & River basin

Japan	Other, please specify (Seto Inland sea)

Type of risk & Primary risk driver

Acute physical	Drought

Primary potential impact
Reduction or disruption in production capacity

Company-specific description
The Seto Inland Sea region experiences periodic droughts every 10 to 20 years, with past droughts lasting from a few weeks to several months. We have three locations in this region: Okayama, Hiroshima, and Kagawa. If a drought were to occur in the Seto Inland Sea region and water shortages were to occur, all three sites would be severely impacted. In the event of a drought, the supply of industrial water would decrease, and production levels would drop dramatically. We consider this to be a major risk, as a 10% decrease in production capacity at these three business sites would result in a decrease in sales of approximately 52,608 million yen.

Timeframe
More than 6 years

Magnitude of potential impact
Medium

Likelihood
Likely

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
52607500000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
The Seto Inland Sea region experiences periodic droughts every 10 to 20 years, with past droughts lasting from a few weeks to several months. We have three locations in this region: Okayama, Hiroshima, and Kagawa. If a drought were to occur in the Seto Inland Sea region and water shortages were to occur, all three sites would be severely impacted. In the event of a drought, the supply of industrial water would decrease and production levels would drop dramatically. A 10% decrease in production capacity at these three sites would result in an estimated 52,508 million yen in lost sales.
526,075,000,000 (total FY2022 sales of the three business sites) x 0.1% (production % of damage) = 52,607,500,000 yen

Primary response to risk
Develop drought emergency plans

Description of response
To minimize the impact of drought, measures are in place to ensure that drought risk facilities have multiple water sources (back-up water), including other rivers (Sakaide City) and groundwater (Kakogawa City). In addition, manuals have been developed at each site to deal with drought, including rules for cooperation with local authorities, priorities for water use and water recycling. Specifically, each site has developed a program to systematically reduce water use in the event of a drought.

Cost of response
40000000

Explanation of cost of response
Examples of cost impacts associated with a response to a drought event include energy costs from running ground extraction pumps and installation of temporary water pipes. This is the cost for securing the operational rate during the occurrence of drought. Specifically, we calculated the cost of newly purchased equipment (tens of millions of yen) and the cost of installing it (millions of yen) to be 40 million yen. These are not one-time costs but are incurred every time implementation is necessary. Construction costs of backup water sources (e.g., digging groundwater wells) which were established at the time plants are constructed are not included.

Country/Area & River basin

Indonesia	Other, please specify (Cidanau in Java Island)

Type of risk & Primary risk driver

Regulatory	Regulation of discharge quality/volumes

Primary potential impact
Increased operating costs

Company-specific description
Factories in Indonesia manufacture Purified terephthalic acid, PET resins. The total overseas water discharge from this plant is 178,830,133 tons, which represents approximately 99.9% of our total overseas water discharge. Current wastewater treatment processes in place are based on an activated sludge process with additional costs incurred for maintenance and monitoring. Should stricter legislation be introduced, investment costs of several hundred million yen may be required. In the case of non-compliance resulting in a shutdown of operations lasting several weeks, production related losses may amount to 30 to 40 million yen. Furthermore, if the wastewater treatment facility is upgraded, an education period will be required for employees to learn how to use the upgraded facility. In such a case, we may dispatch an employee to the manufacturer of the equipment and receive training to operate the equipment. This cost varies depending on the type of equipment in question, but it cannot be ruled out

that the cost may reach 5 million yen.

Timeframe
4-6 years

Magnitude of potential impact
Medium

Likelihood
More likely than not

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
40000000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
In the case of non-compliance resulting in a shut-down of operations for several weeks, production related losses may reach 30 to 40 million yen. There are concerns that contamination of the area where we discharge used water will continue and that the related financial impact will materialize within 5 years.

Primary response to risk
Increase investment in new technology

Description of response
If water quality regulations are tightened, it is anticipated that new capital investment will be required to ensure business continuity. Therefore, it is essential to take measures such as updating equipment. The measures referred to here include not only the visible aspects such as the introduction of new equipment, but also the invisible aspects such as the labor costs incurred in operating the equipment. In fact, the Hiroshima Plant plans to start operating a pilot facility to verify various new wastewater treatment technologies in FY2025. If the water-saving and wastewater volume reduction activities implemented at the Hiroshima Works prove successful, they will be rolled out to the sites in Indonesia that are most at risk from water, as well as to other sites owned in Japan.

Cost of response
1000000000

Explanation of cost of response
We estimated the initial investment cost for the establishment and enhancement of regulatory compliance facilities. Specifically, we estimated that the total cost of technology development (several hundred million yen) and capital investment for installation (several hundred million yen) would be up to 1 billion yen.

W4.2a

(W4.2a) Provide details of risks identified within your value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Japan	Other, please specify (All rivers)

Stage of value chain
Other, please specify (End-of -Life treatment phase)

Type of risk & Primary risk driver

Technology	Substitution of existing products with lower water impact options

Primary potential impact
Increased operating costs

Company-specific description
There is growing concern over micro-plastics across the world, because they accumulate in the body of aquatic organisms and damage marine ecosystems. Some countries in the EU and Japan have already set regulations on the use of disposable plastics and promote companies to recycle and reuse plastics. This trend is expected to continue in the near future. Of the total sales of MCG, around 40% is related to chemical products and plastic products. If other countries begin to introduce regulations on plastic products and promote shift to substitutes of plastics, the impact on the Group's business will be extremely large. For example, there may be an impact on technology strategies, such as taking action to promote research and development aimed at reducing the cost of manufacturing biodegradable plastic products that will replace conventional plastic products. In fact, we have already launched a number of biodegradable plastic products (BioPBS ™). Thus, in the case of biodegradable plastic products, there is a possibility that the procurement channels for non-conventional raw materials may be changed. In addition, it is possible that the quantity of new raw materials will not meet our required volumes. Therefore, it is necessary to simultaneously satisfy the following three criteria: securing the acquisition channels, securing of the necessary amounts, and that the purchase costs are reasonable. There is a risk of increased costs to confirm these conditions.

Timeframe
More than 6 years

Magnitude of potential impact
High

Likelihood
Very likely

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
3000000000

Potential financial impact figure - minimum (currency)
<Not Applicable>

Potential financial impact figure - maximum (currency)
<Not Applicable>

Explanation of financial impact
If regulations on the use of plastics are introduced worldwide and substitutions to other materials is promoted on a significant scale, our sales of raw materials and products related to food packaging, which are closely related to this issue, will decline by approximately 3 billion yen, which accounts for half of our sales of raw materials and products in FY 2019. Depending on global regulatory trends, we believe we have to consider this financial impact at the latest within 10 years.

Primary response to risk

Direct operations	Increase investment in new technology

Description of response
We need to increase investment in biodegradable plastics, which break down into harmless components after ocean dumping, and expand the market for products that can be substituted for existing plastics. In addition, in areas where it is difficult to address functional needs, we need to invest significant funds in product development and treatment/recycling technologies that meet society's needs to prevent ocean dumping, enhance recovery, and solve waste disposal problems. This may have a direct impact on our technology strategy. As an example, we are not only engaged in research and development of biodegradable plastic products, but also in research and development of raw materials for conventional plastic products. Specifically, we are producing a biodegradable plastic called BioPBS™. In addition, from 2020, we are implementing a project to create a recycling-oriented society in the Yatsugatake area, starting with BioPBS™, in which paper cups, straws, cutlery, etc. made of BioPBS™ are composted at the Yatsugatake Central Agricultural College, and the resulting compost is used by cooperating farmers to grow vegetables. The compost is then used by cooperating farmers for vegetable cultivation.

Cost of response
41120000000

Explanation of cost of response
Investments in the above technology development, plant construction, marketing, etc. At present, there are still many uncertainties, and the scale of investment cannot be fully ascertained. However, as a rough guide, we assume that the total investment in chemicals and functional products in 2022 will be about 10% of the total investment in facilities and R&D. Given that the total investment in equipment and R&D is 411,200 million yen, the total investment in chemicals and functional products can be calculated to be 41,120 million yen. We believe that this level of costs is necessary on an annual basis. Furthermore, we see that these costs must be invested not only in a single year, but continuously over a period of five years or more.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?
Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity
Products and services

Primary water-related opportunity
Sales of new products/services

Company-specific description & strategy to realize opportunity
Global water depletion has become an urgent issue in recent years and is expected to become even more serious due to climate change. However, many of our products, such as separation membranes, water coagulants, and ion exchange resins, purify contaminated water into pure water, and we believe that incorporating these products into various solutions for water issues can make a significant contribution to the water depletion problem and increase sales for our business through our products. To realize this opportunity, in 2016 we set a goal for the amount of water made available by our products and began strategically advancing this goal through financial contributions. As of FY2022, we have supplied a cumulative 5.31 billion tons of water. A specific example is our work in Myanmar. In Myanmar, the deterioration of the existing water supply system, the increase in particles and soil, and salinity damage to rivers due to the prolonged rainy and dry seasons, which is considered to be an effect of climate change, are serious issues, and securing safe drinking water is a pressing need. 2017, MW Aqua Solutions Corporation, established with partial investment by Mitsubishi Chemical, Inc. Ltd. is contributing to the stable supply of drinking water in the region as a total solution provider that not only provides water treatment functions but also analyzes and monitors water quality. And from 2017, while accumulating the necessary know-how as a total water solution provider, the company is considering expanding its total water solution technology not only to Southeast Asia but also to the rest of the world.

Estimated timeframe for realization
1 to 3 years

Magnitude of potential financial impact
Low-medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
60000000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact
As a target for FY 2016-2025, our company is going to provide a cumulative total of 10 billion tons of water through our products. In practice, MW Aqua Solutions is selling hollow fiber membranes that can be used in wastewater treatment facilities, mainly overseas, where the value of water is high. In FY 2018, they supplied 230 million tons of water. By achieving this goal, we expect the sales of Environment and Living Solutions Business Unit, which manages these products, to increase by 60 million yen from 110 million yen in FY 2015 to 188 million yen in FY 2025.

W5. Facility-level water accounting

W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number
Facility 1

Facility name (optional)
Mizushima(Petrochemical)

Country/Area & River basin

Japan	Other, please specify (Seto inland sea)

Latitude
34.503213

Longitude
133.762304

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division

Not applicable

Total water withdrawals at this facility (megaliters/year)
192320

Comparison of total withdrawals with previous reporting year
Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
179069

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
13250

Total water discharges at this facility (megaliters/year)
190152

Comparison of total discharges with previous reporting year
Higher

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
190152

Discharges to groundwater
0

Discharges to third party destinations
0

Total water consumption at this facility (megaliters/year)
2168

Comparison of total consumption with previous reporting year
Higher

Please explain
Seawater withdrawals increased (11.5%), resulting in an increase in total withdrawals (10.9%). More than 90% of the water withdrawal is seawater for cooling used by the plant. Water withdrawals increased because the number of plant operating days decreased in FY2021 due to scheduled repairs, while in FY2022 there were no scheduled repairs and the number of operating days increased compared to FY2021.

Facility reference number
Facility 2

Facility name (optional)
Sakaide (Coke)

Country/Area & River basin

Japan	Other, please specify (Seto Inland sea)

Latitude
34.349753

Longitude
133.84812

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
Not applicable

Total water withdrawals at this facility (megaliters/year)
67601

Comparison of total withdrawals with previous reporting year
Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
61760

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
5840

Total water discharges at this facility (megaliters/year)
63908

Comparison of total discharges with previous reporting year
About the same

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
63908

Discharges to groundwater
0

Discharges to third party destinations
0

Total water consumption at this facility (megaliters/year)
3693

Comparison of total consumption with previous reporting year
About the same

Please explain
Seawater withdrawals decreased (11.5%), resulting in a decrease in total water withdrawals (8.4%). Although production volume decreased, total water withdrawal was almost the same as in FY2021 due to the use of industrial water for environmental measures, etc., irrespective of production volume, such as road sprinkling on the site, etc.

Facility reference number
Facility 3

Facility name (optional)
Kakogawa (Coke)

Country/Area & River basin

Japan	Other, please specify (Seto Inland sea)

Latitude
34.725167

Longitude
134.833776

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
Not applicable

Total water withdrawals at this facility (megaliters/year)
36201

Comparison of total withdrawals with previous reporting year
Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
34029

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
2172

Total water discharges at this facility (megaliters/year)
35837

Comparison of total discharges with previous reporting year
Higher

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
35837

Discharges to groundwater
0

Discharges to third party destinations
0

Total water consumption at this facility (megaliters/year)
364

Comparison of total consumption with previous reporting year
Higher

Please explain
Seawater withdrawals have increased (6.8%) and total withdrawals have increased (6.5%). The amount of seawater used for cooling related to plant operations has remained almost constant, while production has decreased. This may be due to the fact that the water intake was not properly adjusted for the decrease in production. However, in order to reduce water withdrawal, it is necessary to improve the efficiency of freshwater use. The amount of water used is the amount of water withdrawn minus the amount of water discharged.

Facility reference number
Facility 4

Facility name (optional)
Melak (Java)

Country/Area & River basin

Indonesia	Other, please specify (Cidanau in Java Island)

Latitude
-6.214

Longitude
106.829818

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
Not applicable

Total water withdrawals at this facility (megaliters/year)
168598

Comparison of total withdrawals with previous reporting year
Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
166956

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
1642

Total water discharges at this facility (megaliters/year)
168598

Comparison of total discharges with previous reporting year
Lower

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater
166956

Discharges to groundwater
0

Discharges to third party destinations
1642

Total water consumption at this facility (megaliters/year)
0

Comparison of total consumption with previous reporting year
Lower

Please explain
Freshwater withdrawals decreased (15.1%), seawater withdrawals decreased (1.7%), and total withdrawals decreased freshwater withdrawals decreased (15.1%), seawater withdrawals decreased (1.7%), and total withdrawals decreased (1.8%). The decrease was due to the transfer of the PET resin business to TPA and PET film plants. (1.8%). The decrease was due to the transfer of the PET resin business to TPA and PET film plants.

Facility reference number
Facility 5

Facility name (optional)
TPA and PET film plants

Country/Area & River basin

Indonesia	Other, please specify (Cidanau in Java Island)

Latitude
-6.214

Longitude
106.829952

Located in area with water stress
Yes

Primary power generation source for your electricity generation at this facility
<Not Applicable>

Oil & gas sector business division
Not applicable

Total water withdrawals at this facility (megaliters/year)
11915

Comparison of total withdrawals with previous reporting year
Much higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes
0

Withdrawals from brackish surface water/seawater
11861

Withdrawals from groundwater - renewable
0

Withdrawals from groundwater - non-renewable
0

Withdrawals from produced/entrained water
0

Withdrawals from third party sources
54

Total water discharges at this facility (megaliters/year)
11887

Comparison of total discharges with previous reporting year
Much higher

Discharges to fresh surface water
0

Discharges to brackish surface water/seawater
11874

Discharges to groundwater
0

Discharges to third party destinations
13

Total water consumption at this facility (megaliters/year)
28

Comparison of total consumption with previous reporting year
Higher

Please explain
Freshwater intake increased (6.5%) and seawater intake increased (8.3%), resulting in an increase in total water intake (8.2%). The increase was due to the start of operation of the new system and the transfer of the PET resin business from PT Mitsubishi Chemical Indonesia (Merak).

W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been third party verified?

Water withdrawals – total volumes

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water withdrawals – volume by source

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water withdrawals – quality by standard water quality parameters

% verified
Not verified

Verification standard used
<Not Applicable>

Please explain
We are considering verifying water quality in the future.

Water discharges – total volumes

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water discharges – volume by destination

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water discharges – volume by final treatment level

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water discharges – quality by standard water quality parameters

% verified
76-100

Verification standard used
Based on ISAE 3000, it has been verified together with other environmental indicators such as GHG emissions.

Please explain
<Not Applicable>

Water consumption – total volume

% verified
Not verified

Verification standard used
<Not Applicable>

Please explain
This verification has not yet been done.

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?
Yes, we have a documented water policy that is publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

	Scope	Content	Please explain

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water Description of business impact on water Commitment to align with international frameworks, standards, and widely-recognized water initiatives Commitment to prevent, minimize, and control pollution Commitment to reduce or phase-out hazardous substances Commitment to reduce water withdrawal and/or consumption volumes in direct operations Commitment to reduce water withdrawal and/or consumption volumes in supply chain Commitment to safely managed Water, Sanitation and Hygiene (WASH) in the workplace Commitment to safely managed Water, Sanitation and Hygiene (WASH) in local communities Commitment to stakeholder education and capacity building on water security Commitment to water stewardship and/or collective action Commitment to the conservation of freshwater ecosystems Commitments beyond regulatory compliance Reference to company water-related targets Acknowledgement of the human right to water and sanitation Recognition of environmental linkages, for example, due to climate change	In addition to providing products and services with low environmental impact, we also state in our group code of conduct that we shall work to reduce environmental impact of our operations and protect the environment, including ecosystems. As a manufacturer that requires large amounts of water as well as a water environment solutions provider, we consider water resource conservation as one important activity among our environmental preservation efforts. Our Basic Policy on Safety and the Environment states an obligation to conserve and improve the environment, and we have set standards for both operations and procurement. We have also set targets to FY2025 for improvement of the quality of discharged water in direct operations as well as the supplying products and services that contribute to the solution of water resource problems. These were established based on a materiality analysis conducted with reference to international standards, water-related initiatives and the SDGs. In order to solve water issues, we recognize the necessity of initiatives that go beyond legal compliance, innovation to create better products and services, linkage between water issues and other environmental issues, and the need for awareness-raising activities on sanitation and water.

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual or committee	Responsibilities for water-related issues
Chief Executive Officer (CEO)	We shifted to a governance model with board level committees from FY2015 to enhance management transparency and fairness and to strengthen management supervision functions. The role of the Board of Directors is to formulate management policies and oversight of management. In this way the operational management by the executive officers in charge of decision-making and execution of business is separated from the board. To strengthen the board's oversight function, the majority of directors do not concurrently serve as executive officers. The CEO, who is a member of the board of directors, is responsible for reporting on issues closely related to the water to the board. Specifically, the report covers the results of the water risk assessment, initiatives related to water facilities (e.g., our decentralized water treatment system), and progress in water and related projects (e.g., groundwater drinking water conversion project). As an example of recent water-related decision-making, in June 2022, the Minebea Group will propose the "Project to Promote Sustainable Use and Value of Plastic Resources" in response to a publicly solicited project by Hiroshima Prefecture to address marine plastics. The project proposal, if adopted, will be used to promote the horizontal recycling of beverage labels in 2025 and the bottle-to-bottle horizontal recycling that the soft drink industry is currently promoting for 2030, The purpose of this project is to (1) raise awareness and behavior change among consumers (mainly students), and (2) establish and verify sorting technology, which is the key to realize high quality recycling of beverage labels.

W6.2b

(W6.2b) Provide further details on the board's oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	Monitoring implementation and performance Monitoring progress towards corporate targets Overseeing and guiding scenario analysis Overseeing major capital expenditures Overseeing the setting of corporate targets Reviewing and guiding business plans Reviewing and guiding risk management policies Reviewing and guiding strategy Reviewing innovation/R&D priorities	The Company's Board of Directors determines basic management policies such as medium-term management strategies and annual budgets. In principle, business execution based on these policies is delegated to executive officers, except for matters that are required by law to be decided by the Board of Directors. Accordingly, the Board of Directors mainly supervises business execution by executive officers, who are responsible for decision-making and business execution based on the basic management policies established by the Board of Directors. Specifically, decisions are made through deliberations by the Executive Officers Meeting, which is composed of all executive officers. In addition, by clarifying the duties and authority of each executive officer, the Company ensures appropriate and efficient decision-making. One of our basic policies is the Management of Sustainability (MOS) indicator, which was introduced in FY2011 to visualize our contribution to "people," "society," and "global sustainability. One of our basic policies is the MOS (Management of Sustainability) Index, which visualizes our contribution to "people," "society," and "global sustainability. These MOS indicators include two water-related indicators: "reduction of water environmental impact" and "provision of products and services that contribute to solving water resource issues." As a specific goal, we aim to supply 10 billion tons of recycled water by 2025.

W6.2d

(W6.2d) Does your organization have at least one board member with competence on water-related issues?

	Board member(s) have competence on water-related issues	Criteria used to assess competence of board member(s) on water-related issues	Primary reason for no board-level competence on water-related issues	Explain why your organization does not have at least one board member with competence on water-related issues and any plans to address board-level competence in the future
Row 1	Yes	With the rapid increase in awareness of global environmental initiatives in many countries, we recognize that it is important for us to identify and incorporate into our discussions the risks and opportunities that may arise as climate change progresses, as well as the regulations of each country. Based on this recognition, we evaluate individuals with expertise in areas related to climate change, including water-related issues, (and the ability to incorporate this knowledge into our business risks and opportunities, as well as into our management strategies) as people who are well versed in climate-related issues.	<Not Applicable>	<Not Applicable>

W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)
Chief Executive Officer (CEO)

Water-related responsibilities of this position
Assessing future trends in water demand
Assessing water-related risks and opportunities
Managing water-related risks and opportunities
Conducting water-related scenario analysis
Setting water-related corporate targets
Monitoring progress against water-related corporate targets
Integrating water-related issues into business strategy
Managing major capital and/or operational expenditures related to low water impact products or services (including R&D)

Frequency of reporting to the board on water-related issues
Half-yearly

Please explain
The Mitsubishi Chemical Group's Group Philosophy states as its purpose to lead the realization of KAITEKI, where the comfort of people, society, and the Earth continues. The Sustainability Committee has been established to promote corporate activities in line with the Group's philosophy and sustainability. The Sustainability Committee, chaired by our President and CEO and composed of our executive officers and others, deliberates on the Group's sustainability policy and related matters, including climate change. In addition, in order to reduce the environmental impact related to water, COD is used as a KPI to monitor the progress of reduction activities and to enable the steady promotion of related measures.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	

W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Contribution of incentives to the achievement of your organization's water commitments	Please explain
Monetary reward	Board chair Board/Executive board Director on board Corporate executive team Chief Executive Officer (CEO) Chief Financial Officer (CFO) Chief Sustainability Officer (CSO)	Improvements in water efficiency – direct operations Improvements in wastewater quality – direct operations	Maintaining COD levels in 2019 is part of our independently created Management of Sustainability (MOS) indicator, which is used to evaluate progress toward one of our management cornerstones, "Management Aimed at Improving Sustainability". Performance and progress are evaluated annually. The results of this COD-level management target are reflected as performance-linked compensation among the executive compensation. Performance-linked compensation accounts for 36.9% of the total compensation, which is considered to contribute to the wastewater quality goals and sustainability-related targets.	Management to realize KAITEKI, our vision, is based on the three key elements of Management of Sustainability (MOS), Management of Technology (MOT), and Management of Economics (MOE). The MOS indexes are based on COD emissions, which are specifically evaluated for water.
Non-monetary reward	Other, please specify (Director of the manufacturing plant)	Reduction of water withdrawals – direct operations Improvements in water efficiency – supply chain Improvements in wastewater quality – direct operations	Plant managers and environmental managers at each site who have been able to improve relationships with local communities by complying with wastewater regulations and improving water quality receive awards from the president and the executive officer in charge of technology.	KAITEKI value assessment includes MOS index, MOT index and MOE index; of the MOS index, the specific assessment content for water is COD emissions.

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?
Yes, direct engagement with policy makers

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

We work closely with local governments in the regions where our production sites are located to ensure that there is no divergence between our policies and theirs through the collection of information on public policies regarding water. We also participate in regional industrial water councils and work with government agencies, large water users, and local communities to coordinate and discuss water-related interests on a regular basis. In the unlikely event of a conflict, we coordinate and consult with stakeholders.

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	5-10	Our goal for 2030 is to "lead the way in solving social issues toward a sustainable future. In particular, we recognize "safe and sustainable water supply and use" as one of the social issues and aim to "ensure access to and sustainable management of water and sanitation for all people. The background here is that we are required to use water sustainably in terms of social responsibility in the context of our status as an integrated chemical manufacturer and user of large amounts of water. We have chosen a period of 5-10 years as we are looking to the year 2030.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	5-10	In order to achieve safe and sustainable water supply and use by 2030, we have incorporated the expansion of our business utilizing decentralized water treatment and supply systems into our strategy. A decentralized water treatment and supply system is a system that can secure safe water from various water sources by using the membrane filtration technology that we have accumulated over the years. For example, the system can be used for water sources such as groundwater in Japan and surface water overseas. This system not only provides a safe and stable water supply but can also be used to supply water in times of disaster or to supplement public water systems in developing countries. In light of the above, we believe that business expansion of this system is consistent with our medium-term business objective of "leading solutions to social issues toward a sustainable future. To expand our business, we plan to develop marketing measures to increase the number of customers, as well as continue to provide water security for disasters and support to developing regions. We have also selected a 5–10-year timeframe as the target period for our strategy to reach our 2030 goal.
Financial planning	Yes, water-related issues are integrated	5-10	We believe that our goals for the acquisition and use of safe and stable water resources influence our financial planning. To manage water safely and sustainably, we have incorporated business expansion related to decentralized water treatment and water supply systems into our business strategy through 2030. On this basis, our financial plan reflects projected sales figures that refer to system-related sales to date. In addition, the budget includes capital and human resource costs associated with business expansion, costs associated with water quality management, and research and development expenses. Since this financial plan is related to our goals for 2030, we have selected a 5-10 year timeframe as our coverage period.

W7.2

(W7.2) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Row 1

Water-related CAPEX (+/- % change)

2

Anticipated forward trend for CAPEX (+/- % change)

1

Water-related OPEX (+/- % change)

2

Anticipated forward trend for OPEX (+/- % change)

1

Please explain

The majority of capital expenditures were related to wastewater treatment facilities to improve wastewater quality. Total capital expenditures increased approximately 10.8% over the previous year. The company is focusing on product areas with long-term growth potential and investing in streamlining and labor savings. This increase is primarily due to the company's new medium-term financial plan, which emphasizes a balance between shareholder returns, improving financial strength, and investing in business growth. As a result, overall capital expenditures increased by approximately 27.6 billion yen; OPEX is expected to decrease as the company continues its efforts to improve water efficiency. An example of an efficiency improvement is an increase in the circulation rate of the freshwater cooling system.

W7.3

(W7.3) Does your organization use scenario analysis to inform its business strategy?

	Use of scenario analysis	Comment
Row 1	Yes	Water stress at our production sites was assessed in 2017 using the Global Water Tool provided by the World Business Council for Sustainable Development (WBCSD). Every year since then, the WRI Aqueduct has been used to assess current and projected future water stress. More than 98% of production sites are in locations with an overall score of 4 or less on a five-point scale combining quantity of physical risk, quality of physical risk and regulatory and reputational risk. Furthermore, more than 84% of all production sites' water abstraction takes place in low-risk locations with a score of 3 or less. Based on a two-axis matrix of tool output and water use, 22 production sites with high water risk were selected and detailed risk interviews were conducted at each site.

W7.3a

(W7.3a) Provide details of the scenario analysis, what water-related outcomes were identified, and how they have influenced your organization's business strategy.

	Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy
Row 1	Water-related	Water stress (risk of water supply disruption) at our production sites was assessed in 2017 using the Global Water Tool provided by the World Business Council for Sustainable Development (WBCSD). Each year since then, the WRI Aqueduct has been used to assess current and projected water stress. The WRI Aqueduct is used to assess water risk at national and international production and research sites. Each item is scored on a 5-point scale from 0 to 5 (low to very high), and the information is presented as a world map, providing detailed information for each region. More than 98% of the production sites are located in locations where the overall score on the five-point scale, which combines the quantity of physical risk, quality of physical risk, and regulatory and reputational risk, is 4 or less. In addition, more than 84% of all production sites' water withdrawals take place in low-risk locations with a score of 3 or less. Based on a two-axis matrix of tool output and water use, 22 production sites with high water risk were selected, and detailed risk interviews were conducted at each sitWater stress (risk of water supply disruption) at our production sites was assessed in 2017 using the Global Water Tool provided by the World Business Council for Sustainable Development (WBCSD). Every year since then, the WRI Aqueduct has been used to assess current and projected future water stress. The WRI Aqueduct is used to assess water risks at national and international production and research sites. Each item is scored on a five-point scale from 0 to 5 (low to very high) and the information is presented as a world map, providing detailed information for each region. More than 98% of production sites are in locations with an overall score of 4 or less on a five-point scale combining quantity of physical risk, quality of physical risk and regulatory and reputational risk. Furthermore, more than 84% of all production sites' water abstraction takes place in low-risk locations with a score of 3 or less. Based on a two-axis matrix of tool output and water use, 22 production sites with high water risk were selected and detailed risk interviews were conducted at each site.	The results of the water risk assessment confirmed that the risk of constant water depletion is very small for all plants. It also confirmed that there are no plans to build plants in areas with the potential to exacerbate water stress by 2040. On the other hand, to assess future risks, a scenario analysis based on the IPCC's RCP8.5 scenario (4°C rise) showed that in Asia, the main area of operation, the risk of flooding due to typhoons and storm surges could increase 1.8 times over the period 2080-2100 due to sea level rise. The losses to large petrochemical complexes, including MCG's Ibaraki and Okayama sites, could be enormous if typhoon and storm surge disasters cause shutdowns of several weeks or months. Assuming a one-month shutdown due to a disaster, the loss would be several billion yen. Therefore, flooding caused by a major typhoon, or the suspension of maritime transport could have a significant impact on our business and sales.	Although water stress levels will remain high at plant sites in catchments with high water stress levels, a lot of initiatives are being taken to reduce risk, such as supplying water from other catchments and desalinating seawater. To minimize the impact of drought, measures are being taken to ensure that drought risk facilities have multiple sources of water (back-up water), including from other rivers (Sakaide) and groundwater (Kakogawa River). In addition, manuals have been developed at each site to deal with drought, including rules for cooperation with local authorities, priorities for water use and water recycling. Specifically, each plant has developed a program to systematically reduce water use in the event of a drought. Efforts are being made to minimize the impact by adapting to plant conditions.

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

No, but we are currently exploring water valuation practices

Please explain

Uniform pricing is extremely difficult to implement because the operating areas of plants are scattered around the world, and the sources and the ways in which water is used are extremely diverse. For example, it is determined that the value of 1 t of water in Japan is not equal to the value of 1 t of water in Indonesia. First, a method of monitoring the amount of risk according to the source and use of water needs to be established, and then, if water pricing is assessed as an effective method of reducing the risk, we intend to introduce it. We expect that it will take more than two years to conclude on this.

W7.5

(W7.5) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Definition used to classify low water impact	Primary reason for not classifying any of your current products and/or services as low water impact	Please explain
Row 1	Yes	We define products that have a low environmental impact under our Environmental Materiality. Within our Environmental Materiality standards, our water-related materialities include reducing our environmental impact while improving the quality of water we supply worldwide. When these standards are applied to our products, for example, we classify low-water impact products as products that reduce the amount of wastewater discharged into the environment or improve the quality of wastewater.	<Not Applicable>	Our Membrane Bio Reactor (MBR) submerged water treatment system is a product with minimal water impact because it allows treated water to be reused directly as recovered water. It is widely used in the treatment of domestic and industrial wastewater, water reuse facilities, and tertiary treatment using metal recovery membranes. The membrane filtration method saves space, adds more value, and produces clearer treated water. The discharge of suspended solids from the treated water is also greatly reduced, making operations easier. As the treated water can be directly reused as recovered water due to the improved quality of the treated water, the system is very useful. By installing RO membrane units in the back-end treatment facilities, the treated water can be recovered as processed water. This reduces incoming water and sewage treatment volumes at plants, reducing overall maintenance costs. The system has already been used in more than 5,000 projects in Japan and overseas.

W8. Targets

W8.1

(W8.1) Do you have any water-related targets?

Yes

W8.1a

(W8.1a) Indicate whether you have targets relating to water pollution, water withdrawals, WASH, or other water-related categories.

	Target set in this category	Please explain
Water pollution	Yes	<Not Applicable>
Water withdrawals	No, but we plan to within the next two years	The management of water resources is an important materiality in the Group's environmental policy. The current environmental-related activities include the preservation of water quality, and the Group has set a water-related goal of maintaining COD. However, since the Group's water use is mainly at the production stage, and reclaimed water and treatment methods are continuously used, no target has been set for water withdrawal. In the future, we will consider various water withdrawal and effluent targets as a means of fulfilling our commitments regarding water resources.
Water, Sanitation, and Hygiene (WASH) services	No, but we plan to within the next two years	Management of water resources is a key issue in the Group's environmental policy. Current environmental activities include the preservation of water quality, and the Group has set a water-related goal of maintaining COD. However, because of the demand for clean and accessible WASH services in Japan, specific targets for WASH services have not been set. However, since there is a possibility that WASH service may not be 100% in some of the factories owned globally, we are considering surveying the status of WASH service in overseas factories and setting a target for this service in the future.
Other	Please select	<Not Applicable>

W8.1b

(W8.1b) Provide details of your water-related targets and the progress made.

Target reference number
Target 1

Category of target
Water pollution

Target coverage
Company-wide (direct operations only)

Quantitative metric
Other, please specify (CODの数値)

Year target was set
2021

Base year
2019

Base year figure
1600

Target year
2025

Target year figure
1600

Reporting year figure
1531

% of target achieved relative to base year
<Calculated field>

Target status in reporting year
Underway

Please explain
We have set a goal to measure the reduction of water burden as a way to help solve water resource problems and create a recycling-oriented society. We have set a goal of maintaining or reducing COD levels by 2025 compared to 2019. we believe we are on track to meet our goal, since domestic COD was 1,531 t in FY2022.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?
Yes

W9.1a

(W9.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W1 Current state	Withdrawal and Discharge of Freshwater, total volume	ISAE 3000	Our disclosures differ from the data reported to CDP as we only disclose freshwater withdrawal and discharge volumes excluding seawater. Verification of FY 2022 data is in progress, so we have attached the previous year's datasheet together with the independent assurance report. https://www.mcgc.com/sustainability/data21.pdf

W10. Plastics

W10.1

(W10.1) Have you mapped where in your value chain plastics are used and/or produced?

	Plastics mapping	Value chain stage	Please explain
Row 1	Please select	<Not Applicable>	

W10.2

(W10.2) Across your value chain, have you assessed the potential environmental and human health impacts of your use and/or production of plastics?

	Impact assessment	Value chain stage	Please explain
Row 1	Please select	<Not Applicable>	

W10.3

(W10.3) Across your value chain, are you exposed to plastics-related risks with the potential to have a substantive financial or strategic impact on your business? If so, provide details.

	Risk exposure	Value chain stage	Type of risk	Please explain
Row 1	Please select	<Not Applicable>	<Not Applicable>	

W10.4

(W10.4) Do you have plastics-related targets, and if so what type?

	Targets in place	Target type	Target metric	Please explain
Row 1	Please select	<Not Applicable>	<Not Applicable>	

W10.5

(W10.5) Indicate whether your organization engages in the following activities.

	Activity applies	Comment
Production of plastic polymers	Please select	
Production of durable plastic components	Please select	
Production / commercialization of durable plastic goods (including mixed materials)	Please select	
Production / commercialization of plastic packaging	Please select	
Production of goods packaged in plastics	Please select	
Provision / commercialization of services or goods that use plastic packaging (e.g., retail and food services)	Please select	

W11. Sign off

W-FI

(W-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.

W11.1

(W11.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	Vice President, Chief Strategy Officer	Other C-Suite Officer