

C0. Introduction

C0.1

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

Mitsubishi Chemical Holdings Corporation (MCHC) was established in October 2005. Its four core operating companies are Mitsubishi Chemical Corporation, (which is merged with two other operating companies of MCHC, 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 MCHC in November 2014. MCHC's five principal business segments are electronics applications, designed materials, health care, chemicals, and polymers. At the end of March 2021 the MCHC Group comprised of 666 consolidated companies employing a total of 69,607 people around the world. MCHC started KAITEKI Vision 30(KV30), which is the framework of MCHC's next medium-term consolidated management plan for 2030. KV30 is MCHC Group vision for 2030. This new initiative draws on its predecessor's three decision criteria of Sustainability, Health, and Comfort in a drive to become a leading global company.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	April 1 2020	March 31 2021	No	<Not Applicable>

C0.3

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

Japan

C0.4

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

JPY

C0.5

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

Financial control

C-CH0.7

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

Row 1

Bulk organic chemicals

- Lower olefins (cracking)
- Aromatics
- Ethylene oxide & Ethylene glycol
- Ethanol
- Polymers

Bulk inorganic chemicals

- Carbon black
- Hydrogen
- Oxygen
- Other industrial gasses

Other chemicals

- Specialty chemicals
- Specialty organic chemicals

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain
Chemicals

Other divisions

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Management and improvement of environmental indicators including climate change are important elements in environmental management. The CEO, who is a Member of the Board, is responsible for reporting to the Board of Directors on these matters and regularly reports to the Board of Directors on the status of strategy planning, the setting of improvement goals, and the progress of improvement activities. The CEO launched the activities of KAITEKI Vision 30(KV30), which is the framework of MCHC's next medium-term consolidated management plan for 2030. KV30 is MCHC Group vision for 2030, it will be the framework of the next medium-term management plan and contains a lot of environment related activities.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues 	<Not Applicable>	<p>We have shifted to a company with nominating committees from FY2015 to enhance management transparency and fairness and to strengthen management supervision functions. We position the role of the board of directors as the formulation of basic management policies and supervision of management in general, and separate the execution by the executive officers in charge of decision-making and execution of business from the board. To strengthen the board's oversight function, the majority of directors do not concurrently serve as executive officers, and the CEO, who is both the chief executive officer and a member of the board of directors, is the chief executive officer responsible for overseeing the execution of issues closely related to climate change. The Board of Directors is the body that deliberates and makes decisions on medium- and long-term business plans, in which all ESG-related KPIs and target settings, including measures against climate change, are also decided.</p>

C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Sustainability Officer (CSO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

C1.2a

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

The Mitsubishi Chemical Holdings (MCHC) Group believes that in order to fulfill our corporate social responsibility, it is important to promote businesses that contribute to the sustainability of people, society, and the earth. To that end, MCHC has established the "Mitsubishi Chemical Holdings Group Corporate Behavior Charter," which is the basis of all corporate activities, and strives to act with high ethical standards and social spheres. Under the concept of 'KAITEKI' --the sustainable well-being of people, society and our planet Earth, we are actively promoting businesses that solve various environmental and social issues.

In order to realize this KAITEKI, MCHC set up the KAITEKI Promotion Committee to supervise the improvement of corporate value from a non-financial perspective, and maximize the improvement of corporate value. In 2011, we appointed the CSO (Chief SUSTAINABILITY Officer) as a responsible person to promote the realization of KAITEKI.

The CSO is responsible for the final execution of climate change-related issues and confirms and approves the contents of the report to the Board of Directors. The executive officer in charge of management strategy has also been appointed as CSO at the same time, and which makes it possible to make decisions covering not only the environmental aspects but also a wide range of corporate activities such as business strategy and operations, supply chain and R&D. The issues to be monitored and reported include the achievement of the greenhouse gas reduction target, the progress of reduction activities, and selection of products contributing to avoided emission, at least once a year.

C1.3

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

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

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Board/Executive board	Monetary reward	Emissions reduction target	A reduction target of GHG emissions has become a part of each company's mission (one of the Key Performance Indicators in the Management of Sustainability (MOS)), and its performance and progress is evaluated once a year. The outcome of the performance affects the salary level of the individuals concerned.
Executive officer	Monetary reward	Emissions reduction target	Energy saving activities for GHG reduction is one of the missions of production departments, and its performance and progress is evaluated once a year for the executive officer. The outcome affects the salary level for the individual concerned as they are the project manager of energy saving activities.
All employees	Monetary reward	Energy reduction project	Energy saving activities for GHG reduction is one of the missions of production departments, and its performance and progress is evaluated once a year. Activities to reduce energy conservation are described in the employee's job description, and the salary level is determined according to the degree of achievement.
All employees	Non-monetary reward	Efficiency project	Each operating company of MCHC has a production technology award given to those who have achieved significant improvements in productivity or safety. Since energy saving and GHG reduction are important factors in contributing to productivity, they are awarded at least once a year as part of the award process.

C2. Risks and opportunities

C2.1

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

Yes

C2.1a

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

	From (years)	To (years)	Comment
Short-term	0	2	Time frame of urgent tasks in need of immediate countermeasures.
Medium-term	2	10	Time frame of issues that are incorporated into our medium-term management plan. Our medium-term management plan (updated every five years) falls into this perspective.
Long-term	10	30	Time frame of issues that need to be addressed in a longer span than in the medium-term plan. From the medium-term management plan formulated in fiscal 2019, We adopted the approach of backcasting and formulating the plan by assuming the ideal society and MCHC in 2050. For this reason, the year 2050 is our important base year for our long-term strategy.

C2.1b

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

MCHC uses the process method described in C2.2 for risk management. As mentioned there, a significant financial impact is defined as 5% of operating profit (about 10 billion yen). In addition, important items that are difficult to convert into money (for example, involvement in long-term business strategy and damaging reputation) are defined as significant strategic impacts.

C2.2

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

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

We have a risk management system headed by our president (a member of the board). The system is managed in accordance with MCHC Group Risk Management Basic Policy. Once a year each operating company and each department identifies and evaluates risks. Identified risks are mapped in a risk matrix and their details and countermeasures are discussed in MCHC risk management meetings. The process for identifying and assessing climate change-related risks and opportunities is as follows: (i) Risk and opportunity assessment at company or asset level (ii) Assessment of the potential size and extent of the identified risks (iii) Determining the relative importance of climate-related risks in comparison to other risks. (iv) Risk classification In order to respond to the TCFD, the risk after 2030 is also included in the evaluation from last year, and the frequency is also increased. Physical opportunity case study As a result of the effects of extreme weather associated with climate change, the world's available water resources are becoming increasingly limited. Therefore, in areas where freshwater is scarce, it becomes more important to reuse and recycle water and make effective use of water resources. According to RCP2.6 and RCP8.5 scenarios of IPCC (Intergovernmental Panel on Climate Change), the frequency of severe declines in food yields due to climate change could increase 1.6-times between 2030-2040 and 2.5-times (RCP2.6) and 3.0-times (RCP4.5) between 2080 and 2100 from current risks respectively. As a solution to adapt to this situation, we plan to actively promote "Food and water supply" as one of our main business domains. Specifically, the goal is to increase sales from the current 150 billion yen to 600 billion yen in 2030 through the development of distributed food and water systems and the development of products that can be stored for a long period of time. As a chemical products manufacturer, MCHC supply a wide range of products and services in water-related solutions, including water treatment membrane components and ion exchange resins for water purification. In the food field as well, we will contribute to the reduction of food loss through food packaging and food additives to maintain freshness. As a KPI for this business, water treatment membrane products have been targeted to provide 1.7 billion metric tons of available water cumulatively over the five years leading up to his 2020 fiscal year. In 2019, a total of 780 million metric tons of water was regenerated by our systems. MCHC has invested approximately 10 billion yen in research and development in the field of water treatment solutions. In April 2015, Mitsubishi Chemical Aqua Solutions (MCAS), which sells, designs and maintains wastewater treatment equipment, was established with an initial investment of 500 million yen, and in April 2016, MCHC's wastewater treatment business was integrated into MCAS. Furthermore, in April 2019, wellthy Co., Ltd., which manufactures and sells equipment that purifies groundwater and supplies it as clean water, was integrated to provide a one-stop water solution business company that can provide water treatment from purified water to wastewater. In the food field as well, we plan to build a solution business system that integrates technologies and services. Transition opportunity case study There are growing public opinion for reductions in the use of plastics against the backdrop of the 2018 Ocean Plastics Charter, etc., and with the charge for plastic shopping bags started last summer, Demand is skyrocketing for environmentally friendly plastics made from recycled or renewable resources Therefore, it becomes important to shift from conventional plastic production (One of our largest business domains currently) to strengthening the development and sales of such environmentally friendly products. Therefore, in formulating the medium-term management plan "KAITEKI Vision 30 (KV30)" up to 2030, we have positioned the circular economy as one of the most important issues. Through the development of materials recycling, chemical recycling technology and business models, and the provision of bioplastics, we strive to achieve the challenges of this circular economy. We have set business goals for each activity. As an example, we are adding new functions to our biodegradable plastic, BioPBS™, which is made from bio-resources and has the characteristic of having a low impact on the natural environment, and is expanding its applications. At the same time, we are working to reduce production costs and increase production capacity by diversifying raw materials for this plastic and improving manufacturing processes. In the KV-30, sales of these priority businesses will be achieved by prioritizing products that reduce GHG emissions throughout the value chain and products that reduce GHG emissions through carbon recycling as future "growth" businesses. We aim to increase the share of high total sales from 25% in 2018 to 70% in 2030.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Our company considers the risk of increased costs due to current emission regulations in major countries using risk assessment. Current regulations are limited to carbon tax in Japan, which accounts for 70% of our GHG emissions, and the regulation level does not affect our business or finances strongly. However, in China, Singapore and the EU, there are concerns about the impact of the emission trading system to our operation. For this reason, our risk assessment process targets the financial impacts of these countries' institutions. Specifically, we quantitatively compare the sales and operating income of each region with the amount of increase in regulatory costs based on energy usage, identify locations where the impact cannot be ignored, and consider measures.
Emerging regulation	Relevant, always included	Our company collect information on regulatory trends in each country (including future forecasts) and evaluate the risk of rising product prices due to carbon prices and emission regulations. The enforcement of the Paris Agreement is predicted to further strengthen global regulation of GHG emissions. For our company (main products are petrochemicals and industrial gases, which have a large carbon load during production), the introduction of carbon prices and emission regulations not only significantly increases production costs, but also the decrease in demand due to rising product prices is expected. Furthermore, the zero GHG emission roadmap for 2050 requires us to have zero GHG emissions throughout the product life cycle, from raw material manufacturing to disposal. We are beginning to tackle this challenge through innovations in the manufacturing process and the products themselves.
Technology	Relevant, always included	We quantitatively evaluate the economic impact of GHG reduction through R & D by life cycle assessment. Chemicals that emit large quantities of GHG for production can be disadvantageous compared to other materials with equivalent functions within the viewpoint of global warming prevention. We believe that there is a significant risk for us when we cannot reduce the Lifecycle GHG emissions of our products through innovation, or when competing non-chemical materials become more competitive through the reduction of lifecycle carbon load. In particular, many of our products are made from petroleum and coal, and carbon burden in the life cycle is inevitably heavy, which is something we have to address. On the other hand, if we can develop products that emit less GHG, we can differentiate ourselves from other companies, and we can have the opportunity to choose more customers. For this reason, in our risk assessment process, the financial impact of the progress of these R and D activities is evaluated. Through life cycle analysis of carbon emissions, we qualitatively evaluate the risk of loss of existing products or the possibility of expanding new products as a key reference for prioritizing investments in technology development and product development. Our company is focusing on the development of new materials such as plastics using non-fossil resources, energy conversion and storage devices that promote the efficient use of renewable energy and the weight reduction of mobility by taking advantage of the properties of functional materials.
Legal	Relevant, sometimes included	Our company considers the potential financial implications of a risk assessment for the inability to reduce massive GHG gas emissions in a risk assessment The inability to reduce large emissions of GHG gasses poses the risk of new litigation as it could be considered a crime to release excessive emissions. This has already been the case in the past for other hazardous materials of environmental concern which can lead to litigation if not handled responsibly. For the petrochemical business we have 3 sites in Japan which emit GHG in units of more than 1 million tons, as such it is appropriate to recognise that such risks exist. For this reason, our risk assessment process includes the potential financial impact of such litigation. Although there is almost no possibility of lawsuits arising out of high GHG emissions in Japan at the moment, investigation of such litigation trends abroad demonstrate that it is a relevant risk. Investigations that involve evaluating the history of litigation caused by pollution problems in the past are conducted as part of the risk assessment as this is also relevant.
Market	Relevant, always included	Our company evaluates the economic impact of the risk of business contraction or suspension of carbon-intensive chemicals. Due to the rise in carbon taxes, the price of our main chemical products with heavy carbon loads such as derivative goods of naphtha crackers, are inevitably raised, the market competitiveness as a product is inferior to that of competing low carbon load materials like paper, natural fiber or wood, and there is concern about the risk of business contraction and suspension . For this reason, we evaluate the financial impact of changes in these markets in our risk assessment process. For the proper evaluation, we apply carbon-Life cycle analysis on most of our products to assess not only production cost but also purchased raw materials' cost or end of use treatment cost in the carbon-pricing viewpoint.
Reputation	Relevant, sometimes included	Our company considers the risk of lack of investment and product boycott in the risk assessment process. Within manufacturing industries, the chemical industry is the industry with the second largest GHG emissions output after steel, and the extent of our company's emissions is also noticeable due to the scale of our business. (The largest amount of emissions within the chemical industry in Japan, and it is one of the big GHG emitting companies worldwide). As the perception of climate change as a serious global environmental problem is rising, companies with large emissions are seen as having a negative impact on the climate, and so product boycotts and reduction of investment in large emissions companies can become more frequent in near future. Also in employment or Employee morale, bad reputation has an adverse effect that cannot be ignored. For this reason, in our risk assessment process, the financial impact of reputational risks for the chemical industry are evaluated. Specifically, we survey and analyze strategies related to global warming countermeasures of other companies in the chemical industry or leading companies in other industries, and gather knowledge on the magnitude of the business impact and the methods that should be learned.
Acute physical	Relevant, always included	Our company considers the risk of adverse economic impacts on facilities and operations due to wind and flood damage in the risk assessment process. Our chemical factories are usually located by the sea or rivers due to intensive water use, and particularly the sites adjacent to Japan's small and medium rivers, which are prone to sudden rises in water level due to torrential rain which means the sites are vulnerable to flood damage. Therefore, if the frequency of wind and flood damage increases due to increased extreme weather from climate change, damage to facilities and operations will exacerbate and the risk of financial adverse effects will increase. For this reason, we evaluate the financial impact of acute physical risk due to abnormal weather in our risk assessment process. With regard to the acute physical risk of this abnormal weather, we have already examined the major sites sufficiently in the past regardless of whether or not climate change is a trigger.
Chronic physical	Relevant, sometimes included	Our company uses a risk assessment process to consider risks such as reduced utilization due to global warming. Due to the increase in average temperature caused by global warming, a chemical plant with a large calorific value due to reaction will be a harsh work environment for workers. Furthermore, the water temperature rise causes the capacity of the cooling water to be insufficient and risks such as the reduction of the operation rate increases. For this reason, in the risk assessment process of the company, the financial impact due to deterioration of the working environment and the increase of operational constraints caused by average temperature rises are evaluated. It is a serious problem for our company which has a large number of manufacturing sites in Japan where summer temperatures are high.

C2.3

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

Yes

C2.3a

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

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Carbon pricing mechanisms
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Primary potential financial impact

Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

In 2012, a carbon tax was introduced in Japan to mitigate global warming. As a result of the 2016 COP21 Agreement, the potential for future tax increases is increasing. If

the burden of carbon tax increases due to the tightening of regulations, it may adversely affect corporate profits because we use huge amount of fossil fuels for production. We have performed risk assessment using the IEA(International Energy Agency) SDS scenario (1.65 deg C rise). According to this scenario, carbon prices are expected to rise approximately twice in 2025 compared to 2019 (our benchmark) and three to four times in 2040 for us. The tax burden related to global warming in 2019 exceeded 1 billion yen for the entire domestic business. Considering that fuel costs will be added to this and that it will increase in the future as predicted, the burden will increase by at least 8 billion yen in 2040, which is at least 17%.of MCHC's operating income in 2020 (47.5 billion yen).

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

10000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Our tax burden related to global warming in 2019 exceeded 1 billion yen for the entire Japanese business. In the future, it may be raised up to a tax rate equivalent to the lowest tax rate in the EU countries. In that case, the rate will be 10 times as the current tax rate in Japan, so we assumed this figure and calculated the potential economic impact.

Cost of response to risk

8800000000

Description of response and explanation of cost calculation

In 2012, a carbon tax was introduced in Japan to mitigate global warming. As a result of the 2016 COP21 Agreement, the potential for future tax increases is increasing. If the burden of carbon tax increases, the cost of fuel and purchased energy will increase, which may adversely affect corporate profits. Over 70% of our energy is consumed in Japanese factories in MCHC Group. The tax burden related to global warming in 2019 has already exceeded 1 billion yen for our entire domestic business. Therefore, the introduction of policies that lead to higher energy costs in Japan could have a significant financial impact on our business. We recognize that reducing GHG emissions in our business is important for risk aversion. Based on this background, we have set medium-term energy conservation and his GHG emission reduction targets for business bases that should be achieved by 2030, and are working to achieve them.We planed to achieve a 26% reduction in GHG emissions in Scope 1 and 2 in fiscal 2030 (compared to fiscal 2013). In the future, we plan to use the same approach to plan reductions for businesses outside Japan. Examples of significant savings include replacing heat intensive reaction system (equivalent to 15,000 tonnes of CO2 emissions per year) and changing operating conditions (equivalent to 25,000 tonnes of CO2 emissions per year in total). In 2020, we implemented several GHG emission reduction projects, resulting in a total reductions of about 56,000 tonnes of our GHG emissions. The tax saving effect associated with this is about 20 million yen. The investment amount required for energy conservation efforts in 2020 is 8.8 billion yen, and the breakdown items of investment targets are the cost of switching to high-efficiency equipment and the cost of renewing equipment.

Comment

There are also several projects where re-assessment of operating conditions led to improved efficiency and optimization of energy use and reduction of GHG emissions without incurring costs.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

We perform risk assessments based on the IPCC(Intergovernmental Panel on Climate Change) RCP2.6 scenario (2 deg C increase) and RCP8.5 scenario (4 deg C increase). According to each scenario, flood risk does not change significantly between 2030 and 2040 in Asia, where our main factories are located, but it may increase by 1.5 times and 1.8 times by 2080 to 2100, respectively. Therefore, there is a risk that plant shutdowns will increase due to abnormal weather such as floods caused by climate change. Since most of the transportation of raw materials and products is carried out by sea, all large-scale petrochemical plants, including MCHC's Ibaraki and Okayama factories, are located in coastal areas. These large-scale petrochemical complex manufactures a large number of products by operating continuously 24 hours a day, and the annual shipment value of the factory exceeds several hundred billion yen. Therefore, even if operations are suspended for weeks or months due to a disaster, the loss due to production cuts will be billions to tens of billions of yen. Therefore, there is a risk that the effects of floods caused by large-scale typhoons and the suspension of marine transportation will have a significant impact on our operations and sales.

Time horizon

Short-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

8000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Our large-scale petrochemical complexes such as Okayama and Ibaraki in Japan manufacture a large number of products 24 hours a day, 365 days a year, and the annual shipment value of the plant exceeds 100 billion yen. The amount of financial impact is set at 8 billion yen, which would occur if operations were suspended for one month due to a disaster.

Cost of response to risk

1000000000

Description of response and explanation of cost calculation

As a result of floods caused by climate change, logistics might stop due to submergence of highways, and factories might be shut down due to submersion of large equipment. In addition, the risk of plant shutdown increases due to submersion of raw materials and products and electrical troubles. In the event of a flood near the factory, it is necessary to develop a BCP(Business Continuity Plan) that responds to the abnormal weather conditions at each site according to the local conditions in order to avoid the impact on the business due to the shutdown. Prioritized disaster prevention measures have been done based on the plant risk matrix in line with the natural disaster risk management framework of MCHC and each operating company. For abnormal weather caused by climate change, we are strengthening preventive measures against floods and droughts. Specifically, We are implementing flooding measures such as embankment, dike raising and strengthening drainage facilities in order from high-risk factories., and the total investment is about 1 billion yen. Liquefaction and tsunami countermeasures have been completed in more than 80% of major plants in Japan. We will continue to invest in flood prevention and strive for daily safe and stable supply.

Comment

There are many types of other countermeasures available for consideration, from no-cost measures such as maintenance of situational manuals, to large-scale measures such as the construction of seawalls or the ground relocation of underground facilities.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Emerging regulation	Mandates on and regulation of existing products and services
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

We conducted a risk assessment using the IEA SDS scenario (1.65 deg C increase). According to this scenario, despite a temporary setback in plastics recycling policies in the wake of Covid-19, plastics collection rates are predicted to increase in the SDS from 17% in 2019 to 27% in 2030. Due to this rise in the recycling rate, demand for new plastic manufacturing is expected to decline in the Japanese market, where demand for plastics is stagnant. This will result in the decrease of our sales our basic materials business unit's products, which are used for new plastics, and its sales leads to a 10-20% drop. Since the sales of new resins and their raw materials manufactured by our basic materials business unit are hundreds of billions of yen, it is estimated that sales will drop by tens of billions of yen.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

140000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Since the total sales of new resins and their raw materials, which are expected to be affected, were about 700 billion yen in FY2020, we set the financial impact amount at 140 billion yen, assuming a 20% decrease in sales.

Cost of response to risk

100000000000

Description of response and explanation of cost calculation

According to the IEA's SDS scenario (1.65 deg C rise), despite a temporary setback in plastics recycling policies in the wake of Covid-19, plastics collection rates are

predicted to increase in the SDS from 17% in 2019 to 27% in 2030. Since a large increase in the total demand for plastics cannot be expected in Japan in the future, an improvement in the recycling rate will reduce the demand for our basic materials business unit's products, which are used for new plastics, and its sales leads to a 10-20% drop. Since the sales of new resins and their raw materials manufactured by our basic materials business unit are hundreds of billions of yen, it is estimated that sales will drop by tens of billions of yen. Therefore, even if climate change measures are promoted to reduce GHG emissions during manufacturing, there is a risk of losing the current share of plastics. Therefore, we will secure the market by participating in the resource recycling business (plastic recycling) and other chemical products with low environmental impact, which is expected to grow in the future. Specifically, we have established a recycling system that allows waste to be returned to the state before use so that it can be used repeatedly such as chemical and material recycling, and we will produce plastics that are made from sustainable resources, and other chemical products that have a low environmental impact during disposal. Investment in the resource recycling area is expected to be 100 billion yen / year. The breakdown of investment costs is chemical recycling such as PET, and material recycling such as carbon fiber and High functionality films. We are planning to raise sales in the resource recycling area to reach 500 billion yen in 2030.

Comment

C2.4

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

Yes

C2.4a

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

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

If climate change policies tighten legislation and regulations on GHG emissions, the energy costs of using fossil fuels will increase. As a result, demand for products with low GHG emissions is expected to grow at each stage of energy production, storage, and utilization. We plan to invest based on market forecast of IEA(International Energy Agency)'s SDS scenario (up 1.65 deg C), which states that global industry-wide investment in batteries, power networks and energy efficiency in 2030 will be expected to increase about 1.5 times of those in 2019. The MCHC Group also owns a large number of these products, categorizing them into the category of "GHG reduction", which is our growth business, and we draw growth scenarios and targets up to 2030. Examples of products include lithium battery components for electric and hybrid vehicles, carbon fiber which is essential for reducing the weight of rotor blades We believe that developing an appropriate business model targeting low-carbon products may meet the needs of a carbon-free society and create important business opportunities. Therefore, we aim to increase the sales of these products from 70 billion in 2020 to 350 billion by 2030.

Time horizon

Short-term

Likelihood

Very unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

35000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Sales of new energy products are targeted to increase from 70 billion units in 2020 to 350 billion units in 2030, which is about 5% of the MCHC's overall sales target. We have set this as the amount of financial impact. The breakdown of sales includes lithium battery materials, electronic materials, and organic solar cells.

Cost to realize opportunity

29700000000

Strategy to realize opportunity and explanation of cost calculation

If climate change policies tighten legislation and regulations on GHG emissions, the energy costs of using fossil fuels will increase. As a result, demand for products with low GHG emissions is expected to grow at each stage of energy production, storage, and utilization. We plan to invest based on market forecast of IEA's SDS scenario (up 1.65 deg C), which states that global industry-wide investment in batteries, power networks and energy efficiency will be expected to increase about 1.5 times of those of 2019. The MCHC Group also owns a large number of these products, categorizing them into the category of "GHG reduction", which is our growth business, and we draw growth scenarios and targets up to 2030. We aim to increase the sales of these products from 70 billion in 2020 to 350 billion by 2030 and the investment amount from the current 200 billion yen to 1 trillion yen by 2030. Specific target items are the development of "Lighter Mobility", "Electrification Solutions", "Decentralized Energy

Management" and "Chemical Processes with Low Environmental Impact". "New energy" products were separated from other functional materials and are independently managed since 2017. These products include: Lithium battery materials, Optoelectronic materials, and organic photovoltaics. All these products have been evaluated by carbon-life cycle analysis to know and to improve their contribution to avoided emissions of GHG. Due to the delay in bringing the product to market, the achieved amount of GHG avoided emissions were lower than expected. We will improve this situation by the next medium-term goal of 2030. In order to expand the market, it is essential to continuously improve functions such as high battery density, improvement of charge / discharge cycle characteristics, and reduction of charge rate, and we continue to invest in R & D. The cost of realizing this opportunity is calculated based on the investment in research and development of low carbon products. Of the R & D investment in fiscal 2018, most of the 29.7 billion yen was in the functional products field. The breakdown is 14 billion yen for high-performance film and 16 billion yen for others. [High-performance film investment 14 billion yen + other investment 16 billion yen = R & D investment in the functional product field 29.7 billion yen]

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of climate adaptation, resilience and insurance risk solutions

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

As a result of increasing extreme weather events associated with climate change, the world's available water resources are increasingly limited. In addition, food problems due to increasing population and constraint food production exist as risks. As a chemical manufacturer, MCHC believes that we can provide a variety of products and services in the food and water related solutions field, and positions the "food and water supply" field as a growth business. As an example, we provide hollow fiber membrane for various filtration applications such as wastewater, sewage, and water purification treatment as well as separation, purification, and concentration. Stellapore-7000 series (PE membrane) module realizes energy reduction by reducing the membrane installation area and the amount of aeration because this product enables compact device design compared to other membrane treatment methods. We have delivered more than 5,000 items worldwide. Currently, we anticipate sales expansion in overseas markets centered on Asia and Africa.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

330000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In FY2030, we aim to increase sales in the "Food and Water supply" field, including the water membrane separation business, from 165 billion yen in 2020 to 330 billion yen, which is about 5% of the overall MCHC's sales target in 2030. We have set this as the amount of financial impact. The breakdown of sales is water treatment equipment, hollow fiber membrane products and other solutions for food (e.g. longtime storage).

Cost to realize opportunity

10500000000

Strategy to realize opportunity and explanation of cost calculation

As a result of the effects of extreme weather associated with climate change, the world's available water resources are becoming increasingly limited. Therefore, in areas where freshwater is scarce, it is becoming more important to reuse water and make effective use of water resources. According to RCP2.6 and RCP8.5 scenarios of IPCC, the frequency of declines in food yields due to climate change could increase 1.6-times between 2030-2040 and 2.5-times (RCP2.6) and 3.0-times (RCP4.5) between 2080 and 2100 from current frequency respectively. To adopt these situations, for one of our growth business fields, we plan to actively promote "food and water supply". Specifically, with the goal of "Decentralized food and water systems" and "Long term storage, alternative food and flavor solutions" the goal is to increase sales from the current 150 billion yen to 600 billion yen by 2030. As a chemical manufacturer, MCHC can offer a wide range of products and services in water-related solutions, including water treatment membrane components and ion exchange resins as a water purification chemical manufacturer (MCC). As a KPI for this business, water treatment membrane products have been targeted to provide 1.7 billion metric tons of available water cumulatively over the five years leading up to his 2020 fiscal year. In 2019, a total of 780 million metric tons of water was regenerated. MCHC has invested approximately 10 billion yen in research and development in the field of water treatment solutions. In April 2015, Mitsubishi Chemical Aqua Solutions (MCAS), which sells, designs and maintains wastewater treatment equipment, was established with an initial investment of 500 million yen, and in April 2016, MCHC's wastewater treatment business was integrated into MCAS. Furthermore, in April 2019, wellthy Co., Ltd., which manufactures and sells equipment that purifies groundwater and supplies it as clean water, was integrated to provide a one-stop water solution business company that can provide water treatment from purified water to wastewater.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

There are growing public opinions for reductions in the use of plastics against the backdrop of the 2018 Ocean Plastics Charter, etc., and with the charge for plastic shopping bags started last summer, Demand is skyrocketing for environmentally friendly plastics made from recycled or renewable resources. Therefore, it becomes important to shift from conventional plastic production (One of our largest business domains currently) to strengthening the development and sales of such environmentally friendly products. As an example, we are adding new functions to our biodegradable plastic, BioPBS™, which is made from bio-resources and has the characteristic of having a low impact on the natural environment, and is expanding its applications. At the same time, we are working to reduce production costs and increase production capacity by diversifying raw materials for this plastic and improving manufacturing processes.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

30000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We are aiming for sales of about 30 billion yen, which is about 6% of the 500 billion yen target for the entire Carbon Recycling field in 2030. The breakdown of sales is BioPBS and other biodegradable plastics. The ratio of the entire growth business field to the sales target of 6 trillion yen in 2030 is as small as 0.5%, but it is one of the important development businesses because it is a field where the market is expected to expand rapidly after 2030.

Cost to realize opportunity

10000000000

Strategy to realize opportunity and explanation of cost calculation

Society expects the chemical industry to make a significant contribution to reducing GHG emissions. Consumer preferences for more environmentally friendly products are expected to grow significantly over the next few years. In particular, the market for recycled plastic products and plastics made from sustainable resources are expanding with the increasing demand for reductions in the use of plastics made from fossil oil. We recognize that it is important to gain an edge over our competitors in this market in order to increase sales. Therefore, we are aiming to expand bio-derived plastics that do not depend on petroleum and biodegradable plastics that have a low environmental impact at the time of disposal. Currently, the scale of sales of biodegradable plastics is not large, but we plan to further expand production and sales through diversification of bio-raw materials and reduction of manufacturing costs. Currently, most of the biomass raw materials are edible parts of agricultural products, and the cost is high and it is difficult to secure a large amount of raw materials because their supply competes with food. We are currently developing this technology because if we can use non-edible parts generated in large quantities from agricultural products during food production as raw materials, we will be able to meet the rapidly increasing demand and significantly reduce costs. Demand for BioPBSTM, a biodegradable plastic, is expected to grow in the future, and we are considering further investment to meet that need. Production is planned to increase from the current 9,000 tons to hundreds of thousands of tons in 2030. We are aiming for sales of about 30 billion yen, which is about 6% of the 500 billion yen target for the entire resource recycling area in 2030. Investment in the entire resource cycle (bio, chemical, etc.) is expected to be 100 billion yen / year. Items include chemical recycling such as PET and material recycling such as carbon fiber and high-performance film. About 10% (10 billion yen) of this will be BioPBS and biodegradable plastics.

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

Yes

C3.1b**(C3.1b) Does your organization intend to publish a low-carbon transition plan in the next two years?**

	Intention to publish a low-carbon transition plan	Intention to include the transition plan as a scheduled resolution item at Annual General Meetings (AGMs)	Comment
Row 1	No, we do not intend to publish a low-carbon transition plan in the next two years	<Not Applicable>	Currently, there is no plan to announce it as a proposal.

C3.2

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

Yes, qualitative and quantitative

C3.2a

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

Climate-related scenarios and models applied	Details
RCP 2.6 RCP 8.5 IEA Sustainable development scenario	<p>We have set up the original concept of "KAITEKI(well-being)" of our group, which proposes not only to solve environmental and social issues but also to work on the sustainable development of society and the earth. With the vision of realizing KAITEKI, we believe that solving human, social, and global issues and aiming for a sustainable future is our raison d'etre, and we position it as our corporate philosophy itself. Considering social and technological trends and backcasting from our social vision and corporate approach for the year 2050, we have clearly defined the vision and the goals of the Group for 2030 to formulate KAITEKI Vision 30 (KV-30). In considering this vision, it was extremely important activity to draw a future image of 2050 based on the scenario in the future analysis of the global environment including climate change. For our company, which has many energy-intensive products, there are many issues to consider regarding migration risk. For this reason, we choose the IEA's Sustainable Development Scenario (SDS) at the time of our study in 2019. Based on this scenario, we evaluated manufacturing costs' increase and demands' decrease of existing products due to decarbonization, and growth potential of our new business areas toward 2030. We have selected all of our current businesses and all regions of the world to which they are related for analysis. We also evaluated the IPCC's physical risk scenarios, as it was assumed that various incidents caused by climate change would affect as major risks and opportunities for our existing and new businesses. To this end, we have evaluated two scenarios, RCP2.6 and RCP8.5, according to TCFD recommendations, allowing for a more multifaceted evaluation. As a result of SDS scenario analysis, if existing products continue to be manufactured until 2040 while emitting a large amount of GHG, the manufacturing cost burden will increase by about 130 billion yen due to the rise in carbon price (estimated to be \$ 140 / tCO2 in SDS). As a result. Based on this, the target of KV-30 is only Japan, which has the largest emission, but we have set a GHG emission reduction target for 2030 (26% reduction compared to 2013). Based on the results of this analysis, we plan to set GHG reduction targets for overseas businesses other than Japan by 2022 too. In order to achieve GHG reductions, it is also important to shift from existing bulk chemicals, whose demand is certain to decline, to functional chemicals and materials, which are promising in the future. Based on the results of scenario analysis of transition risk / opportunity and physical risk / opportunity, we have identified the following growth business areas in KV-30 and also drawn up a strategy for business expansion toward 2030: -GHG reduction (Renewable Energy and Energy saving materials) -Carbon Recycle (Recycling plastics, sustainable resources) -Food and water supply (Products for adapting to environmental problems caused by climate change)</p>

C3.3

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>There are growing public opinions for reductions in the use of plastics against the backdrop of the 2018 Ocean Plastics Charter, etc., and with the charge for plastic shopping bags started last summer, Demand is skyrocketing for environmentally friendly plastics made from recycled or renewable resources. Therefore, it becomes important to shift from conventional plastic production (One of our largest business domains currently) to strengthening the development and sales of such environmentally friendly products. Therefore, we have formulated "KAITEKI Vision 30 (KV30)" and set a goal to contribute to the promotion of the circular economy through the development of material recycling, chemical recycling technology and business models, and the provision of bioplastics as sustainability management efforts. As an example, we are adding new functions to BioPBS™, which is a biodegradable plastic derived from our company and has the characteristic of having a low impact on the natural environment, and we are expanding its applications. We aim to expand this business by gradually launching products that are effective in reducing environmental impact, such as materials using other sustainable resources and recycling of existing plastics, and replacing existing products with heavy environmental impact. By prioritizing products that reduce GHG emissions throughout the value chain and products that reduce GHG emissions through carbon recycling as future "growth" businesses, we will increase the overall sales of these priority businesses. The sales target for the carbon recycling field in 2030 is 500 billion yen, which is about 9% of the MCHC's overall sales target of 6 trillion yen (less than 1% in 2019), but it is expected to grow significantly after 2030. We plan to continue investing.</p>
Supply chain and/or value chain	Yes	<p>If climate change policies tighten legislation and regulations on GHG emissions, the energy costs of using fossil fuels will increase. As a result, demand for products with low GHG emissions is expected to grow at each stage of energy production, storage, and utilization. We plan to invest based on the market forecast of IEA's SDS scenario (up 1.65 ° C), which states that global industry-wide investment in batteries, power networks and energy efficiency will be expected to increase about 1.5 times of 2019. In the GHG reduction business, it is important to reduce GHG emissions throughout the value chain, and the key is to significantly reduce GHG emissions, especially at the stage of use by end customers. In order to better understand customers' needs for GHG reduction, it was necessary to understand their migration risk, and the analysis by the IEA scenario was extremely effective for that purpose. Focusing on LCA (Life Cycle Assessment) as an important communication tool for strengthening relationships with suppliers and customers in order to provide GHG reduction solutions, we are working as a sustainability management initiative in "KAITEKI Vision 30 (KV30)". We have decided to strengthen the promotion system. Through IEA scenario analysis, we hypothesized user issues in key themes (distributed energy and renewable energy) in the GHG reduction business area, narrowed down the business and prioritized it. Organizations and systems for implementing / promoting LCA are currently under construction. Among MCHC's growth business groups toward 2030, GHG reduction has set a sales target of approximately 350 billion yen (approximately 5% of MCHC's total sales target) in FY2030. The infrastructure for achieving this goal has almost been completed, and we plan to reduce GHG by utilizing LCA throughout the value chain.</p>
Investment in R&D	Evaluation in progress	<p>With the transformation of the business portfolio and the shift to a solution business to increase social value, it is necessary to create evaluation indicators that include these perspectives in R&D importance judgment and investment judgment. The importance of this was also recognized through the scenario analysis in order to fully embody the strengths of our opportunity, but we haven't set such index so far. Now R&D strategy towards 2030 is being developed, and this evaluation judgment index will be prepared by the end of FY2021.</p>
Operations	Yes	<p>Regulations such as carbon pricing for a carbon-free society are being tightened worldwide, and it is possible that the carbon tax will be strengthened in Japan as well. According to the SDS scenario, carbon prices are expected to rise approximately twice in 2025 compared to 2019 and three to four times higher in 2040 than in 2019. Existing processes that emit large amounts of GHGs for manufacturing have revealed that scenario analysis poses significant financial risks associated with rising carbon prices. For this reason, in "KAITEKI Vision 30 (KV30)", reduction of GHG emissions is regarded as one of the important issues, and they will be reduced by improving efficiency through innovation of manufacturing process and replacing current products with products that can be manufactured with low environmental load. First, targeting Japan, which accounts for about 70% of GHG emissions, we plan to reduce GHG by optimizing manufacturing operations at each factory using technologies such as DX, and significantly reducing the energy load by introducing innovative energy-saving technologies. This is set up in KV30. By continuing to work on reducing GHG emissions in our business activities, we expect to achieve a 26% reduction in GHG emissions in Scope 1 and 2 in fiscal 2030 (compared to fiscal 2013). In the future, we plan to use the same approach to plan reductions for businesses outside Japan.</p>

C3.4

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues	<p>In formulating our medium- to long-term management plan with KAITEKI Vision 30 (KV30), we use a backcasting approach to identify the current issues from what 2050 should be, and to create a roadmap to 2050. On the way on the final target, we are drafting a management plan for 2030. In order to understand this, it was necessary to conduct a qualitative and quantitative analysis of environmental risks and opportunities using IEA and IPCC scenarios. IEA's SDS scenario mentions future energy forecasts as our own risks, and business opportunities related to energy reduction are evaluated as risks and opportunities related to the entire value chain, IPCC scenarios were used to evaluated business opportunities for adaptation to environmental deterioration. By combining the strengths of our company with the size of business opportunities through risk analysis, we identified the growth areas of the company toward 2030, set sales targets, and started the medium-term management plan in 2021. In the field of environment, the following three areas have been identified as growth business areas: -GHG reduction (Renewable Energy and Energy saving materials) -Carbon Recycle (Recycling plastics, sustainable resources) -Food and water supply (Products for adapting to environmental problems caused by climate change) The total sales target for FY2030 in the growth business areas of KV30 (there is three more areas in addition to the above-mentioned environmental fields: Human interface, Digital society Infrastructure and Medical advances) is 4.2 trillion yen, accounting for 70% of the total sales target of MCHC of 6 trillion yen.</p>

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

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

Target reference number

Abs 1

Year target was set

2020

Target coverage

Country/region

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2013

Covered emissions in base year (metric tons CO2e)

12500000

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

65

Target year

2030

Targeted reduction from base year (%)

26

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

9250000

Covered emissions in reporting year (metric tons CO2e)

10010000

% of target achieved [auto-calculated]

76.6153846153846

Target status in reporting year

Underway

Is this a science-based target?

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

Target ambition

<Not Applicable>

Please explain (including target coverage)

Target is Scope 1 + 2 emissions for all assessable MCHC operations within Japan. Unit: tCO2e/million yen.

C4.2

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

No other climate-related targets

C-OG4.2d

(C-OG4.2d) Indicate which targets reported in C4.1a/b incorporate methane emissions, or if you do not have a methane-specific emissions reduction target for your oil and gas activities, please explain why not and forecast how your methane emissions will change over the next five years.

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	138	
To be implemented*	67	200000
Implementation commenced*	126	17000
Implemented*	92	56000
Not to be implemented	10	

C4.3b

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

Initiative category & Initiative type

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

48000

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

1000000000

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

10000000000

Payback period

11-15 years

Estimated lifetime of the initiative

>30 years

Comment

Renewal of the power equipment such as air separator unit, pumps and blowers to high efficiency type, and reduced power purchased from outside (Scope 2). It is the cumulative total of 33 activities carried out on FY 2020.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

6000

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

150000000

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

1800000000

Payback period

11-15 years

Estimated lifetime of the initiative

16-20 years

Comment

Discover equipment bottlenecks and energy efficiency losses through process analysis and optimize operating conditions. Energy consumption per production volume required and GHG emissions can be minimized.

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery
---	---------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1400

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

40000000

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

300000000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

Improve heat transfer efficiency and strengthen heat recovery by remodeling equipment. Reduction of purchased steam (Scope 2) by that.

Initiative category & Initiative type

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

400

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

35000000

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

250000000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

Update the facilities that transmit and distribute electricity within the site, and substation facilities, and minimize the power conversion loss.

Initiative category & Initiative type

Energy efficiency in buildings	Lighting
--------------------------------	----------

Estimated annual CO2e savings (metric tonnes CO2e)

200

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

15000000

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

70000000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

Update factory lighting to LED lighting.

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

Method	Comment
Dedicated budget for energy efficiency	We considered various energy-saving projects for manufacturing plants, and determined which to invest in from business environment and cost-effectiveness points of view.
Dedicated budget for low-carbon product R&D	We spent about 27.6 billion yen in FY2012 on R and D for Performance Products division including the development of low-GHG emission-related technologies such as LEDs, organic-PV, Li battery for HEV/EV, etc.

C4.5

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

Yes

C4.5a

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

Level of aggregation

Product

Description of product/Group of products

LED substrate and phosphor for solid state lighting. Reducing power consumption by using alternatives to incandescent lamps commonly used in houses and offices, has the potential to reduce Scope2 emissions.

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

Avoided emissions

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

Addressing the Avoided Emissions Challenge- Chemicals sector

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

1

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Level of aggregation

Product

Description of product/Group of products

Carbon Fibre for vehicle weight reduction, which improves fuel efficiency and reduces GHG emissions. It is also used in wind turbines blades for low-carbon electricity generation.

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

Avoided emissions

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

Addressing the Avoided Emissions Challenge- Chemicals sector

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

3

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Level of aggregation

Product

Description of product/Group of products

Core materials for the lithium-ion battery (electrolyte and anode material), which are used in Electric Vehicles or Hybrid Electric Vehicles.

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

Avoided emissions

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

Addressing the Avoided Emissions Challenge- Chemicals sector

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

2

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start

April 1 2010

Base year end

March 31 2011

Base year emissions (metric tons CO2e)

9237000

Comment

Scope 2 (location-based)

Base year start

April 1 2010

Base year end

March 31 2011

Base year emissions (metric tons CO2e)

6969000

Comment

Scope 2 (market-based)

Base year start

April 1 2010

Base year end

March 31 2011

Base year emissions (metric tons CO2e)

6969000

Comment

C5.2

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

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Other, please specify (WBCSD:Guidance for Chemical sector)

C5.2a

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

For the protocols and calculation methods, we follow the guidance of the WBCSD chemical sector conforming to the GHG protocol. For the emission factor only, we use the value presented in Law Concerning the Promotion of the Measures to Cope with Global Warming of Japan.

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

7795880

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

C6.2

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

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

7433843

Scope 2, market-based (if applicable)

7433843

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

This report covers globally. At present, the coverage rate is 97%, which is a limitation, but the effect is considered to be slight because it is largely restricted.

C6.4

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

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Several companies out of Japan.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

The report covers the global, and the coverage ratio is 97% at present. The effect is considered to be little, because it is almost covered.

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.**Purchased goods and services****Evaluation status**

Relevant, calculated

Metric tonnes CO₂e

17582240

Emissions calculation methodology

The methodology used is based on "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" (by GHG Protocol) and "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain" (by WBCSD) (1) PURCHASE DATA: purchase data was collected in detail from MCC, monetary purchase data from MTPC and TNSC. MCC, MTPC and TNSC are our core operating companies. (2) EMISSION FACTORS (EFs): For the quantity purchase data, EFs were chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (<http://www.milca-milca.net/>). For the monetary purchase data, EFs were taken from GLIO (global link input output model) EF database (http://pubs.acs.org/doi/suppl/10.1021/es2043257/suppl_file/es2043257_si_001.pdf) (3) CALCULATION: GHG emissions were calculated by multiplying appropriate EFs to each purchased amounts of good or service (volume or monetary).

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

0

Please explain**Capital goods****Evaluation status**

Not relevant, calculated

Metric tonnes CO₂e

719901

Emissions calculation methodology

Total capital investment by MCHC Gr in FY 2016 was obtained from in-house financial data. GHG emission was calculated by multiplying the EF for capital investment of chemical industry sector (#06-0000). The EF was chosen from GLIO (global link input output model) EF database (http://pubs.acs.org/doi/suppl/10.1021/es2043257/suppl_file/es2043257_si_001.pdf)

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

0

Please explain**Fuel-and-energy-related activities (not included in Scope 1 or 2)****Evaluation status**

Relevant, calculated

Metric tonnes CO₂e

2372390

Emissions calculation methodology

The methodology used is based on "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" (by GHG Protocol). We calculated emissions resulting from (A) upstream emissions of purchased fuels, (B) upstream emissions of purchased electricity and steam. Transmission and distribution (T&D) losses (C) were not included for energy purchased in Japan, because they have been included in the calculation in Scope 2. The upstream EFs of fuel, electricity and steam were those which built for the CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf), except the electricity purchased at the facilities outside Japan. For the electricity purchased at the other facilities outside Japan, the EFs (Fuel composition and T&D losses) were calculated using the EFs for T&D losses in Technical Paper: Electricity-specific emission factors for grid electricity (Brander A. et al., Ecometrica (2011) emissionfactors.com).

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

0

Please explain**Upstream transportation and distribution****Evaluation status**

Relevant, calculated

Metric tonnes CO₂e

278450

Emissions calculation methodology

Most of our downstream transportation inside Japan were paid by our group companies, therefore we report it in Category 4. The methodology used is based on "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" (by GHG Protocol). We calculated emissions listed below, because their contribution was dominant; 1) import of huge amounts (>50000 ton/ly) such as coal, olefines to Japan. In case EFs of the goods include transportation such as naphtha, we did not counted it. 2) export of coke and the petrochemical products from Japan (products sold) 3) distribution of both the materials purchased and the products sold by MCHC inside Japan. The emission was calculated according to the procedure below; 1) The trade of listed above was grasped in terms of their quantities and where they were imported from or exported to. 2) The data for the transport distances and the emission factors of marine transportation were those that were collected for the CFP program in Japan. (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) 3) The emission caused by the distribution inside Japan was calculated by following 'Act on Promotion of Global Warming Counter measures'.

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

0

Please explain

Waste generated in operations

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

78350

Emissions calculation methodology

The methodology used is based on "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" (by GHG Protocol). We calculated emissions from the whole in-house waste generated from Mitsubishi Chemical Holdings group (MCHCG), the amount of which is monitored in Environmental Performance Database. The upstream EFs for incineration, landfill and recycle of waste were the database built for the CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf).

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

0

Please explain

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

17791

Emissions calculation methodology

Because we did not collect the accurate cost data, we assumed 1% of FY2016 total revenue for this cost. (This is thought to be rather over-estimation) The EF was that for 'rail passenger service' in EF database, Embedded Energy and Emission Intensity Data for Japan Using Input-Output Tables (3EID) (<http://www.cger.nies.go.jp/publications/report/d031/jpn/datafile/embedded/2005/403.htm>)

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

0

Please explain

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

116232

Emissions calculation methodology

The domestic residential areas of the employees working for 17 major facilities (coverage 32% of Japanese workers) were prefectural segmented. Their average transportation means and distance were estimated from the commuting practice survey result in the Japanese national census. For GHG calculation emitted from commuting by public transportations, EFs from the database for CFP program were adopted. For GHG emissions from driving commuters, both gasoline mileage data and drive distance data supplied by Ministry of Land, Infrastructure, Transport and Tourism were multiplied by gasoline EF from the database for CFP program. The working days were 240 days per year. The whole GHG emission from commuting was estimated by extrapolating that result. While foreign areas, we took 100% car commuting, average distance 30km/trip, 440 trips/employee/Y, and EF 230g-CO2e/km according to "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, Category 7: Employee Commuting". The number of domestic / foreign employees were from MCHC's annual report of FY2016. The composition of employee was about 2/3 in Japan and 1/3 outside of Japan.

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

0

Please explain

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

The expense to leased asset is less than 0.1% of our sales and it is not relevant for us. For this reason, we did not evaluate this category.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Most of our downstream transportation inside Japan are performed by our group companies and reported in Category 4. We do not calculate our emissions from downstream transportation from our overseas business but since their share of our overseas sales is around 40% and our upstream transportation emissions (category 4) constitute less than 2% of our total scope 3 emissions, we have assessed this category as not relevant.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

As stated in the guidance for the chemical sector issued by WBCSD (Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain), chemical companies are not required to report scope 3, category 10 emissions, since reliable figures are difficult to obtain due to the diverse application and customer structure.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

19237366

Emissions calculation methodology

In "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain", Chemical sector should report at least two types of emissions in this category; o Combusted fuels o Products those contain or form greenhouse gases that are emitted during use, such as leakage/emissions of refrigeration and fertilizers) We counted fuels sale such as cokes, COG gas, and propane for the first category. Emission factors of those fuels were multiplied. We also estimated the electricity consumption of air separation units(ASU) and dry ice (both TNSC, our core operating company) for the second category. For ASUs, their lifetime was assumed as 15 years and the total electricity consumption was counted for GHG emission.

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

0

Please explain

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

9056453

Emissions calculation methodology

The methodology used is based on "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain" by WBCSD. (1)PRODUCTS: Calculations were based on the total carbon content of petrochemical products sold either domestically or to overseas. (2)SCENARIO: As for end-of-life treatment, we made two scenarios: 1. End-of-life scenario in Japan: Polymers; 22% recycle, 10% landfill, 68% incineration based on the data provided by Plastic waste Management Institute. Other Chemicals; it was estimated that 40% of them was emitted as VOC and 60% was incinerated. 2. End-of-life scenario except Japan: 80% landfill and 20% incinerated according to WBCSD guideline. (3) EF: we assume for landfill, that 50% of the contained carbon is converted into CO₂ (GWP=1) and 50% into methane (GWP=25), unless the sold product is a durable plastic, in which case the default factor is zero. Carbon contents was assumed to 80% when no data available.

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

0

Please explain

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

The attribution of leased asset in total asset of MCHC is less than 0.2% and it is not relevant for us.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

As MCHC has no franchises business, this category is not applicable

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1492184

Emissions calculation methodology

GHG emission data of each company that MCHC gr is investing was collected from the parent company. Total GHG emission from investment was calculated summing up all collected GHG emission data after multiplied by investment rates.

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

98

Please explain

Other (upstream)

Evaluation status

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Other (downstream)

Evaluation status

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

C6.7

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

Yes

C6.7a

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

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	44000	

C6.10

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

Intensity figure

0.0000047

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

15229723

Metric denominator

unit total revenue

Metric denominator: Unit total

3257500000000

Scope 2 figure used

Location-based

% change from previous year

1

Direction of change

Increased

Reason for change

In 2020, total emissions decreased by 8.5% from the previous year due to turnaround shutdown of large-scale manufacturing plants and suspension of petroleum/coal chemical plants, which emit a large amount of GHGs. However, due to the impact of COVID-19, emissions per unit remained almost unchanged.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

C7. Emissions breakdowns

C7.1

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

Yes

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	7693355	IPCC Second Assessment Report (SAR - 100 year)
N2O	77541	IPCC Second Assessment Report (SAR - 100 year)
CH4	18434	IPCC Second Assessment Report (SAR - 100 year)
HFCs	4391	IPCC Second Assessment Report (SAR - 100 year)
SF6	1047	IPCC Second Assessment Report (SAR - 100 year)
PFCs	1112	IPCC Second Assessment Report (SAR - 100 year)

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Japan	5800979
China	173758
North America	1204589
Europe	237744
Asia, Australasia, Middle East and Africa	378810

C7.3

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

By business division

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Chemicals	5721152
Industrial gas	949893
Health care	26622
Coke	1098213

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

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

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	6671045	<Not Applicable>	
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)		<Not Applicable>	
Oil and gas production activities (midstream)		<Not Applicable>	
Oil and gas production activities (downstream)		<Not Applicable>	
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Japan	4210240	4210239	9718416	0
China	242500	242500	485958	0
North America	1325442	1325442	3277959	0
Europe	855174	855174	2823236	0
Other, please specify (Asia, Australasia, Middle East and Afric)	800487	800487	1857747	0

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Chemicals	2683598	2683598
Industrial Gas	4401659	4401659
Health Care	37655	37655
Coke	310931	310931

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

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

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	7085256	7085256	
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)			
Oil and gas production activities (midstream)			
Oil and gas production activities (downstream)			
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C-CH7.8

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

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
High Value Chemicals (Steam cracking)	5.1	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Aromatics extraction	6.7	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Butadiene (C4 sep.)	4.3	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net
Other (please specify) (Acetone)	5.1	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Naphtha	7.2	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Methanol	2.6	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Other (please specify) (Terephthalic Acid)	1.4	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Other (please specify) (Butyl Alcohol)	1	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Other (please specify) (Hydrogen Cyanide)	1.6	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Other (please specify) (Polycarbonate resin)	1.9	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).
Coal	7	Emission Factor is chosen either from Database for CFP program in Japan (http://www.env.go.jp/earth/ondanka/supply_chain/comm_rep/unit201203v2-02.pdf) or IDEA (http://www.milca-milca.net/).

C-CH7.8a

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	447000	
Methane (CH4)	0	
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	0	

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	There was no significant increase or decrease in the use of renewable energy compared to the previous year.
Other emissions reduction activities	56000	Decreased	1	GHG emissions reductions through our emissions reduction activities totalled 56,000t (details are shown in CC4.3a & b). Scope 1 and 2 emissions in FY2019 totalled 16.63 million tonnes. Reduction ratio is calculated as 56,000/16,629,000 =0.34%. The main reductions activities includes; -Discovering equipment bottlenecks and energy efficiency losses through process analysis and optimize operating conditions. - Replacing power equipment such as air separator unit, pumps and blowers to high efficiency type, and reducing purchased electricity.
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output	1344000	Decreased	8	"In FY2020, we perform regular repairs of large-scale petrochemical plants in Japan (Ibaraki, etc.), so GHG emissions (Scope 1 + Scope 2) decreased by 350,000 tons compared to FY2019. (FY2019: 2.0 million tons, FY2020: 1.65 million tons) In addition, we stopped another plant with high GHG(Scope1+2) emissions. The total amount is 1,344,000tons. Therefore, it is possible to explain all changes other than the emission reduction of 56 thousand tons due to reduction activities. Emissions from Scope 1 and 2 in fiscal 2019 were 16.63 million tons. The reduction rate was 1,344,000/16629000 = 8.1%."
Change in methodology		<Not Applicable >		
Change in boundary		<Not Applicable >		
Change in physical operating conditions		<Not Applicable >		
Unidentified		<Not Applicable >		
Other		<Not Applicable >		

C7.9b

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

Market-based

C8. Energy

C8.1

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

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

C8.2

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

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

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	280000	29064900	29344000
Consumption of purchased or acquired electricity	<Not Applicable>	0	13600000	13600000
Consumption of purchased or acquired heat	<Not Applicable>	0	2200	2200
Consumption of purchased or acquired steam	<Not Applicable>	0	4533000	4533000
Consumption of purchased or acquired cooling	<Not Applicable>	0	35000	35000
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	142000	<Not Applicable>	142000
Total energy consumption	<Not Applicable>	422000	47234200	47656200

C-CH8.2a

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

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	23379000
Consumption of purchased or acquired electricity	<Not Applicable>	13013000
Consumption of purchased or acquired heat	<Not Applicable>	2000
Consumption of purchased or acquired steam	<Not Applicable>	3943000
Consumption of purchased or acquired cooling	<Not Applicable>	35000
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	142000
Total energy consumption	<Not Applicable>	40514000

C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Coal

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3359000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

3359000

Emission factor

2.33

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

44000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

44000

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.00258

Unit

metric tons CO2 per liter

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

606000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

269000

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

337000

Emission factor

0.00271

Unit

metric tons CO2 per liter

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 4

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

2079000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

464000

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

1615000

Emission factor

0.003

Unit

metric tons CO2 per liter

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Kerosene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

39000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

500

MWh fuel consumed for self-generation of steam

38500

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.00249

Unit

metric tons CO2 per liter

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

5387200

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

1077400

MWh fuel consumed for self-generation of steam

4309800

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

2.7

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

78000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

78000

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

3

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

18800

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

18800

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.00232

Unit

metric tons CO2 per liter

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Petroleum Coke

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

250000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

250000

Emission factor

2.78

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Asphalt

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

1393000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

1393000

Emission factor

3.12

Unit

metric tons CO2 per metric ton

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Other, please specify (By-products from Chemical Plants(Gas))

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

15345000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

13713000

MWh fuel consumed for self-generation of steam

846000

MWh fuel consumed for self-generation of cooling

157000

MWh fuel consumed for self-cogeneration or self-trigeneration

629000

Emission factor

0.0594

Unit

metric tons CO2 per GJ

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

Fuels (excluding feedstocks)

Other, please specify (By-products from Chemical Plants(Liquid))

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

465000

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

318000

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

147000

Emission factor

0.0643

Unit

metric tons CO2 per GJ

Emissions factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

C8.2d

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	2074000	1520000	142000	142000
Heat	14945000	14945000	0	0
Steam	10106000	8681000	138000	138000
Cooling	120000	120000	0	0

C-CH8.2d

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

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	2074000	1520000
Heat	8967000	8967000
Steam	10005000	8579000
Cooling	120000	120000

C8.2e

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

Sourcing method

None (no purchases of low-carbon electricity, heat, steam or cooling)

Low-carbon technology type

<Not Applicable>

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

<Not Applicable>

MWh consumed accounted for at a zero emission factor

<Not Applicable>

Comment

not applicable

C-CH8.3

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

Yes

C-CH8.3a

(C-CH8.3a) Disclose details on your organization's consumption of fuels as feedstocks for chemical production activities.

Fuels used as feedstocks

Coal

Total consumption

6174

Total consumption unit

thousand metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

2330

Heating value of feedstock, MWh per consumption unit

7139

Heating value

HHV

Comment

not applicable

Fuels used as feedstocks

Naphtha

Total consumption

3676

Total consumption unit

million liters

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

2240

Heating value of feedstock, MWh per consumption unit

9333

Heating value

HHV

Comment

not applicable

Fuels used as feedstocks

Natural gas

Total consumption

68

Total consumption unit

thousand metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

2700

Heating value of feedstock, MWh per consumption unit

15167

Heating value

HHV

Comment

not applicable

C-CH8.3b

(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	37.1
Natural Gas	0.7
Coal	62.2
Biomass	0
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

2015000

Metric numerator

Energy consumption (crude oil equivalent)

Metric denominator (intensity metric only)

Production volume index corrected for energy load

% change from previous year

2.9

Direction of change

Decreased

Please explain

The boundary of this target is manufacturing sites of chemical and functional chemical segments in Japan, and this covers about 65% of our total energy consumption. We aim to improve energy efficiency by 1% annually. In fiscal 2020, the amount of energy used decreased due to the shutdown of some plants that emit large amounts of GHG and regular repairs, which exceeded the plan.

C-CH9.3a

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

C-OG9.3e

(C-OG9.3e) Please disclose your chemicals production in the reporting year in thousand metric tons.

Product	Production, Thousand metric tons	Capacity, Thousand metric tons
---------	----------------------------------	--------------------------------

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

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

	Investment in low-carbon R&D	Comment
Row 1	Yes	We are studying the technology of making chemicals from water and carbon dioxide by utilizing artificially created photosynthesis (artificial photosynthesis), and we plan to commercialize it around 2030. We are researching and developing technologies that can produce plastics and rubber without relying on fossil resources and reduce carbon dioxide.

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Waste heat recovery	Large scale commercial deployment	≤20%	280000000	Energy-saving investment mainly for waste heat recovery is recognized as low-carbon in our company, and is managed separately from other capital investments. However, the payback period and return on capital are not too different from other capital investments. As for R&D investment, at this point there is no clear category for developing products and processes to promote low carbon, but by 2020 we are considering setting up an R&D framework for low carbon promotion.

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
-----------------	--	---	--	---------

C10. Verification

C10.1

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

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

C10.1a

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

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/ section reference

page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/ section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1c

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

Scope 3 category

Scope 3: Purchased goods and services

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

Please select

Proportion of reported emissions verified (%)

Scope 3 category

Scope 3: Capital goods

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

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

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Upstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Waste generated in operations

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Use of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

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

Verification or assurance cycle in place

Annual process

Status in the current reporting year

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

Type of verification or assurance

Limited assurance

Attach the statement

data2019.pdf

Page/section reference

File name : data2019 page.6-7 Independent Assurance Report page.1 Environmental Data

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

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

Yes

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	ISAE3000/ISAE3410	File name : data2019 page.1 Environmental Data
C5. Emissions performance	Year on year change in emissions (Scope 3)	ISAE3000/ISAE3410	File name : data2019 page.1 Environmental Data

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

Yes

C11.1a

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

Japan carbon tax

C11.1c

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

Japan carbon tax

Period start date

April 1 2020

Period end date

March 31 2021

% of total Scope 1 emissions covered by tax

40

Total cost of tax paid

10000000

Comment

C11.1d

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

<Situation>

In 2012, a carbon tax was introduced in Japan to mitigate global warming. As a result of the 2016 COP21 Agreement, the potential for future tax increases is increasing. If the burden of carbon tax increases, the cost of fuel and purchased energy will increase, which may adversely affect corporate profits.

<Task>

Over 70% of our energy is consumed in Japanese factories in MCHC Group. The tax burden related to global warming in 2019 has already exceeded 1 billion yen for our entire domestic business. Therefore, the introduction of policies that lead to higher energy costs in Japan could have a significant financial impact on our business. We recognize that reducing GHG emissions in our business is important for risk aversion.

<Action>

Based on this background, we have set medium-term energy conservation and his GHG emission reduction targets for business bases that should be achieved by 2030, and are working to achieve them. We planed to achieve a 26% reduction in GHG emissions in Scope 1 and 2 in fiscal 2030 (compared to fiscal 2013). In the future, we plan to use the same approach to plan reductions for businesses outside Japan.

Examples of significant savings include replacing heat intensive reaction system (equivalent to 15,000 tonnes of CO2 emissions per year) and changing operating conditions (equivalent to 25,000 tonnes of CO2 emissions per year in total).

<Result>

In 2020, we implemented several GHG emission reduction projects, resulting in a total reductions of about 35,000 tonnes of our GHG emissions. The tax saving effect associated with this is about 12 million yen. The investment amount required for energy conservation efforts in 2020 is 8.8 billion yen, and the breakdown items of investment targets are the cost of switching to high-efficiency equipment and the cost of renewing equipment.

C11.2

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

No

C11.3

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

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our customers

Yes, other partners in the value chain

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

1

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

8

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

The mobility industry such as automobiles and aircrafts are an important customer, accounting for approximately 10% of MCHC's overall sales, centering on lightweight materials for the body. Reducing GHG emissions through weight reduction is an important task in this industry and more effective collaboration was expected with the improvement of the lightweight materials we offer. Therefore, we are undertaking this engagement with some customers.

Impact of engagement, including measures of success

Carbon fiber reinforced plastic (CFRP) that combines weight reduction and high strength, is used in automobile components to improve fuel efficiency and reduce carbon dioxide emissions. This activity is a collaborative initiative with car manufacturers. Its use has been limited to luxury cars so far due to the difficulty of molding and high manufacturing costs. Therefore, we have been adopting a strategy aiming at expanding the use to popular cars with emphasis on manufacturing cost reduction rather than improving product functionality, which results in be penetration rate's improvement. Lighter mobility including this CFRP application is one of the most important activities in 'GHG reduction' business domain. We plan to increase sales of this domain from the current 200 billion yen (FY2018) to 1 trillion yen by 2030. Regarding CFRP, we are aiming to grow into a business that contributes to sales expansion of 100 billion yen, which is about 10% of this 1 trillion yen sales. We believe that is a measure of the success of this engagement.

C12.1d

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

<Situation>

The Ibaraki Plant, which is Mitsubishi Chemical's main petrochemical factory, is supplied with raw materials such as naphtha from the Kashima Refinery of ENEOS Holdings, which is an adjacent oil refinery. Due to the structural decline in domestic demand for petroleum products and the start-up of state-of-the-art petrochemical plants in Asia, we are both facing major challenges in the business environment.

<Task>

The two companies have been trying to rationalize and streamline the raw materials and manufacturing process of a series of processes from petroleum refining to petrochemical products, beyond the boundaries of suppliers and users, but further strengthen cooperation. As the momentum for pursuing the realization of a sustainable environment and society is increasing, we decided to carry out engagement that positions contribution to the formation of a recycling-oriented society as a new issue.

<Action>

In November 2019, the two companies established a limited liability partnership (LLP) to strengthen cooperation. In addition to further improving the efficiency of raw materials and product processes through life cycle evaluation, it was agreed to work on a technical study of chemical recycling that recycles waste plastics as raw materials for petroleum refining and petrochemicals as a new theme.

<Result>

As a measure to promote the environmental theme of LLP, it was decided in July 2021 to construct and operate a chemical recycling facility for waste plastic with an annual processing capacity of 20,000 tons (the largest in Japan for commercial use) in 2023. Through this operation, we will accumulate various technical and business knowledge for expanding chemical recycling.

C12.3

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

Trade associations

C12.3b

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

Yes

C12.3c

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

Trade association

Japan Chemical Industry Association(JCIA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The association promotes various climate change mitigation activities for its member companies. The following two activities are the association's primary initiatives: (1) Voluntary Action Plan on the Environment - Member companies are trying to improve energy consumption intensity in order to reduce CO2 emissions. (2) Promotion of carbon-Life Cycle Analysis (cLCA) - a standard for calculation of avoided emissions developed by JCIA.

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

JCIA's activities are managed by some workingin teams in the Technical Affairs Committee, composed of participants from major member companies. Representatives from MCHC participate in the majority of these working teams and we strongly support JCIA's activities, including making proposals to the Japanese government such as the introduction of emissions trading systems and projects for the global development to promote avoided emission products (Global Value Chain).

C12.3f

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

The CSO (Chief Sustainability Officer) is responsible for all activities related to climate change, including supervision of planning and execution of climate change related activities. Sustainability Promotion Council meetings are held two or three times a year led by the CSO with all relevant activities reported to the meetings. Consistency with company strategy and alignment with industry association policies are also confirmed at these meetings.

C12.4

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

Publication

In mainstream reports, in line with the CDSB framework (as amended to incorporate the TCFD recommendations)

Status

Underway – previous year attached

Attach the document

KAITEKI Report 2020.pdf

Page/Section reference

p.11-12 Value Creation Story p.29-30 Opportunities p.37-42 Emissions Target p.49-54 Governance p.63-64 Risks p.71-72 Emissions figure (Trend Graph) p.189-190 Emissions figure (Assured)

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures

Comment

C15. Signoff

C-FI

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

C15.1

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

	Job title	Corresponding job category
Row 1	Senior Managing Corporate Executive Officer	Board/Executive board

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

None

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	3257535000000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	JP	3897700005

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

ARKEMA

Scope of emissions

Please select

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

Uncertainty (±%)

Major sources of emissions

Verified

No

Allocation method

Please select

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

it was difficult to disclose the GHG emissions of the supplied MMA because almost all of the transactions with you are MMA monomers, your GHG intensity and our competitiveness can be easily comparable.

Requesting member

HP Inc

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

2200

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of Utility usage (steam & electricity which is generated within our site)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Rod Lens Arrays, OPC (organic photoconductor) drums and Sheets, Toner

Requesting member

HP Inc

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

6600

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased Utility usage (steam & electricity)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

HP Inc

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

3000

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased raw material and downstream transportation from Japan to US, Europe and China.

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

KAO Corporation

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

30900

Uncertainty (±%)

10

Major sources of emissions

以下に記述の製品を製造の際に使用した燃料燃焼に伴うGHG排出（自家発電・自家発蒸によるユーティリティ消費に起因する発蒸はこちらに参入している）・エチレンオキサイド（三菱ケミカル）・エチレングリコール（三菱ケミカル）・エタノール（三菱ケミカル）・透湿性フィルム（三菱ケミカル・大洋製膜）・パッケージ（ジェイフィルム（カネボウ様向け））・シュガーエステル・その他乳化剤類（三菱ケミカル）・高密度・低密度ポリエチレン（日本ポリエチレン）

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

2019年度の販売実績より売り上げ規模の大きかったところに2020年度販売実績を調査 排出量規模が大きいと判断されるところはすべて算定に参入されていると判断しているが、GHG排出が数 t 程度の少量販売品目については算定に拾い切れていない。

Requesting member

KAO Corporation

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

11800

Uncertainty (±%)

10

Major sources of emissions

Scope1に記載した製品製造における、製造サイト外から購入した電力・蒸気等のユーティリティに起因するGHG排出

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

KAO Corporation

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

29900

Uncertainty (±%)

10

Major sources of emissions

Scope1に記載した製品製造における、外部よりの購入原料に起因するGHG排出・製品輸送に伴うGHG排出

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

一部の特殊な原料で、公開された二次データベースにGHG排出係数の記述のないものは近似推算している

Requesting member

Keurig Dr Pepper

Scope of emissions

Please select

Allocation level

Please select

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e**Uncertainty (±%)****Major sources of emissions****Verified**

Please select

Allocation method

Please select

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Since the transaction with you is done with a subsidiary of Nippon Sanso Holdings, the CDP-SC of Nippon Sanso will answer them.

Requesting member

L'Oréal

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

60

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of Utility usage (steam & electricity which is generated within our site) for the production of Sugar Ester (Mitsubishi-Chemical) Gemicide (API Corporation)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

L'Oréal

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

21

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased Utility usage (steam & electricity)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

L'Oréal

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

39

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased raw material and downstream transportation from Japan to US or Europe.

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

SEKISUI CHEMICAL CO.,LTD.

Scope of emissions

Scope 1

Allocation level

Business unit (subsidiary company)

Allocation level detail

Deals are limited within JPE and JPP.

Emissions in metric tonnes of CO2e

0

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of Utility usage (steam & electricity which is generated within our site)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

SEKISUI CHEMICAL CO.,LTD.

Scope of emissions

Scope 2

Allocation level

Business unit (subsidiary company)

Allocation level detail

Deals are limited within JPE and JPP.

Emissions in metric tonnes of CO2e

6500

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased Utility usage (steam & electricity)

Verified

No

Allocation method

Allocation based on the volume of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

御社向け出荷量（商社経由含む）LD-PE 4488ton HD-PE 4831ton PP 5556ton

Requesting member

SEKISUI CHEMICAL CO.,LTD.

Scope of emissions

Scope 3

Allocation level

Business unit (subsidiary company)

Allocation level detail

Deals are limited within JPE and JPP.

Emissions in metric tonnes of CO2e

20800

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased raw material

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

Zimmer Biomet Holdings, Inc.

Scope of emissions

Scope 1

Allocation level

Business unit (subsidiary company)

Allocation level detail

Products of Mitsubishi Chemical Advanced Materials

Emissions in metric tonnes of CO2e

55

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of Utility usage (steam & electricity which is generated within our site)

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

Please select

Scope of emissions

Scope 2

Allocation level

Business unit (subsidiary company)

Allocation level detail

Products of Mitsubishi Chemical Advanced Materials

Emissions in metric tonnes of CO2e

56

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased Utility usage (steam & electricity)

Verified

No

Allocation method

Allocation based on the volume of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Requesting member

Zimmer Biomet Holdings, Inc.

Scope of emissions

Scope 3

Allocation level

Business unit (subsidiary company)

Allocation level detail

Emissions in metric tonnes of CO2e

35

Uncertainty (±%)

10

Major sources of emissions

GHG Emission of purchased raw material and downstream transportation

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

For Scope3 GHG emissions calculation as purchased raw materials or products transportation, LCA tools (Milca Gabi) and their attached DB, and other database like IDEA and CFP Program was used.

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
We face no challenges	

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

For the prompt and accurate reply, we will improve the linkage of Purchasing database, Sales database and production management database with the LCA tools.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain questions?
I am submitting my response	Investors Customers	Public	Yes, I will submit the Supply Chain questions now

Please confirm below

I have read and accept the applicable Terms