

# Welcome to your CDP Water Security Questionnaire 2022

## W0. Introduction

### W0.1

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

Chubu Electric Power Company (Chuden) is an electric power company established in 1951 with the aim of providing electricity to the Chubu District. The main businesses of Chuden group are its electricity business and its subsidiary businesses, the gas business, distributed energy business, overseas consulting and investment business, real estate management business and IT business. Chuden group holds 9,171MW of power generation capacity (nuclear power generation: 3,617MW; hydro power generation: 5,466MW; renewable energy: 88MW; thermal power generation as emergency power generation facility: 0.4MW), about 12,000km of power transmission lines, and about 136,000km of power distribution lines. The electric energy sold in FY2021 by the Chuden group was about 109 billion kWh\*, making it represent the second biggest electric power company in Japan. Focusing on the energy business, all of the 130 companies constituting Chubu Electric Power Company Group are developing businesses such as the expansion of facilities relating to the electricity business, construction of facilities for maintenance, manufacturing of equipment and material supply. In Japan, full liberalization of electricity retail began in 2016 and gas retail began in 2017, and thus Chuden has been actively addressing the expansion of business areas and improvement of service contents. In these circumstances, in April 2019 Chuden integrated the existing thermal power generation business, etc. into JERA Co., Inc. and has completed a thorough value chain ranging from procurement of fuel upstream, which has been in place for some time, to power generation and wholesale sales of electric power and gas, in order to create an autonomous business structure to be able to respond promptly and flexibly. Subsequently, in April 2020, Chuden demerged its power network business as Chubu Electric Power Grid Co., Inc. and its customer service & sales business as Chubu Electric Power Miraiz Co., Inc. respectively. (Hereinafter, these two companies will be collectively referred to as operating companies in this reply). The operating companies are consolidated subsidiary companies of Chuden, however, JERA Co., Inc. is not.

\*: Total of Chuden and operating companies

\*\*“Gross electricity generation” in the response in W-EU0.1b means the total amount of electric power produced at generators; however, since it is information on the capacity factor and confidential information of management of Chuden, it was not disclosed, and the net generation was entered instead.

## W-EU0.1a

**(W-EU0.1a) Which activities in the electric utilities sector does your organization engage in?**

- Electricity generation
- Transmission
- Distribution

## W-EU0.1b

**(W-EU0.1b) For your electricity generation activities, provide details of your nameplate capacity and the generation for each technology.**

	Nameplate capacity (MW)	% of total nameplate capacity	Gross electricity generation (GWh)
Coal – hard	0	0	0
Lignite	0	0	0
Oil	0.4	0	0
Gas	0	0	0
Biomass	49	0.5	315
Waste (non-biomass)	0	0	0
Nuclear	3,617	39.5	0
Fossil-fuel plants fitted with carbon capture and storage	0	0	0
Geothermal	0	0	0
Hydropower	5,466	59.6	8,303
Wind	22	0.2	38
Solar	16.5	0.2	25
Marine	0	0	0
Other renewable	0	0	0
Other non-renewable	0	0	0
Total	9,170.9	100	8,681

## W0.2

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

	Start date	End date
Reporting year	April 1, 2021	March 31, 2022

## W0.3

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

Japan

## W0.4

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

JPY

## W0.5

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

Companies, entities or groups over which financial control is exercised

## W0.6

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

No

## W0.7

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

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, an ISIN code	JP3526600006

## W1. Current state

### W1.1

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

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	<p>&lt;Direct operations – Main usage&gt;</p> <p>Chubu Electric Power Company (Chuden) uses fresh water in nuclear power generation, biomass power generation, and hydro power generation. Of our fresh water consumption, the amount of fresh water used for hydro power generation amounts to almost 100%. Most of the fresh water used in nuclear power generation is underground water pumped from the Niino River on</p>

		<p>the western side of the power station. In biomass power generation, fresh water handled by third parties is received through pipelines. Fresh water received for nuclear power generation and biomass power generation is used mainly in power generation processes. Water used in power generation processes forms high temperature and high pressure steam in reactors and boilers which drives turbines and eventually generates power. Therefore, it is important to ensure the purity of water in order to prevent corrosion and maintain thermal efficiency of the power station. In this regard, Chuden first implements removal of impurities in water through filtration and ion-exchange and uses water purified to pure level water or ultrapure level water in the station. Chuden considers that it is essential to use a sufficient volume of the good quality fresh water it needs for power generation processes, and the importance of the direct use of fresh water is vital to operations, leading to a reduction in maintenance costs of water processing equipment, etc.</p> <p>Hydro power generation is conducted by utilizing fresh water from dams built by Chuden across rivers in five prefectures in the Chubu District, or dams owned by local governments, and stored water is drawn to water mills through conduits, etc. to drive turbines. Chuden has installed equipment on conduit water withdrawals to prevent the ingress of leaves and tree material and other waste present in stored water, which would damage equipment such as conduits and water mills, and also to exclude muddy water from downstream drainage.</p> <p>&lt;Direct operations – Reason for importance assessment&gt;</p> <p>In our nuclear power generation and biomass power generation, fresh water is used in the processes described above, and Chuden considers that it is essential to use a sufficient volume of high-quality fresh water for power generation processes. The direct use of fresh water is vital to operations, leading to a reduction in maintenance costs of water treatment facilities equipment, etc. It is also essential in the hydro power generation process for an adequate volume of high-quality fresh water from the sources described to be maintained. Since no substantial changes in our current power generation process and generation facilities are planned to take place for as long as our power</p>
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			<p>generation business continues, Chuden considers that the importance rating for the use of sufficient amount of quality fresh water in direct operation will not change.</p> <p>&lt;Indirect operations – Main usage&gt;                  In regard to indirect use, fresh water is also used in the power generation processes of the power generation companies that are the suppliers of electric power we sell, as described above. Water used in power generation processes forms high temperature and high pressure steam in boilers which drives turbines and eventually generates power. Therefore, it is important to ensure the purity of water in order to prevent corrosion and maintain thermal efficiency of the power station. In this regard, suppliers first implement removal of impurities in water through filtration and ion-exchange, etc. and uses water purified to pure level water or ultrapure level water in the station.</p> <p>&lt;Indirect operations – Reason for importance assessment&gt;                  As described above, it is important to secure the use of fresh water of a quality sufficient for the power generation processes which are provided by the power generation companies that supply the electric power we sell. In regard to the use of a sufficient amount of quality fresh water from our suppliers, Chuden considers its indirect utilization is “important” because diversifying our suppliers can reduce our direct risks.                  In regard to indirect utilization, Chuden considers that the importance as currently assessed is unlikely to change in the future since there will be no change in our relationship with our suppliers and customers if the current generation process does not change.</p>
<p>Sufficient amounts of recycled, brackish and/or produced water available for use</p>	<p>Important</p>	<p>Important</p>	<p>&lt;Direct operations – Main usage&gt;                  Chuden does not use brackish water in its business operation. In addition, we do not generate or use any produced water in our business.                  Recycled water is used in nuclear power generation and biomass power generation in Chuden’s power generation business. Of the recycled water used by Chuden, approx. 40% is used for nuclear power generation, and approx. 60% for biomass power generation.                  In the power generation processes, Chuden first implements removal of impurities in water through</p>

		<p>filtration and ion-exchange by treating fresh water, and then purifies to pure and ultrapure level water to use it in the station.</p> <p>Power is generated by continuously forming high temperature and pressure steam in reactors and boilers to drive turbines. Steam that drives turbines is cooled by heat exchangers to become liquid water. Since this water does not contain impurities, it contributes to the reduction of fresh water usage through its cyclical use as most of the steam for driving turbines.</p> <p>&lt;Direct operations – Reason for importance assessment&gt;</p> <p>Chuden considers that it is essential to use a sufficient volume of recycled water in the processes described above, and the direct use of recycled water is essential and contributes to a reduction of the costs of obtaining water.</p> <p>Since no substantial changes in our current power generation process and generation facilities are planned to take place for as long as our power generation business continues, Chuden does not plan to make any major changes to the use of sufficient amount of recycled water in direct operations and this is unlikely to change. Brackish water and produced water do not form a part of Chuden’s water use, and there is no possibility they will be used in the future.</p> <p>&lt;Indirect operations – Main usage&gt;</p> <p>In regard to indirect utilization, suppliers that supply electric power to Chuden use recycled water in the power generation processes in the stations. In the power generation processes, fresh water is used in the station after it is treated to remove impurities in it. Steam that drives the turbines in the boilers is cooled by heat exchangers to become liquid water. Since this water does not contain impurities, it contributes to the reduction of fresh water usage through its cyclical use, most of it as steam for driving turbines.</p> <p>&lt;Indirect operations – Reason for importance assessment&gt;</p> <p>In regard to indirect use, Chuden considers the importance as vital since it is important to be able to use a sufficient amount of recycled water in the power generation processes of the power generation companies that supply the electric power we sell, and</p>
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		<p>there will be no significant change in our relationship with suppliers.</p> <p>In regard to indirect utilization, Chuden considers that the importance as currently assessed is unlikely to change in the future since there will be no change in our relationship with our suppliers and customers if the current generation process does not change.</p>
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## W1.2

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

	% of sites/facilities/ operations	Please explain
Water withdrawals – total volumes	100%	<p>In Chuden’s business establishments, three main types of water are drawn:</p> <ul style="list-style-type: none"> <li>① Seawater</li> <li>② Fresh water (water purchased from third parties; industrial water / tap water)</li> <li>③ Fresh water (other than above: river water)</li> </ul> <p>① is utilized to cool steam used to generate power at the nuclear power station and biomass power station. The volume of water withdrawals is managed by the operating hours of the pumps.</p> <p>② is utilized for power generation at the biomass power station, and the volume purchased from third parties is managed. It is also utilized as drinking water at Chuden’s business establishments. The volume of water withdrawals of industrial water and tap water is obtained monthly through bills charged from municipalities and others.</p> <p>③ is used for power generation at hydro power stations and regularly measured / monitored by calculating the water levels of dams and inlet channels, as well as measuring generator output. River water is also used for power generation at the nuclear power station and the volume of water withdrawals is measured / monitored.</p> <p>Data measured as above daily or monthly at each establishment are collected at the Headquarters once a year for summary and monitoring.</p>
Water withdrawals – volumes by source	100%	<p>In Chuden’s business establishments, three main types of water are drawn:</p>

		<p>① Seawater                  ② Fresh water (water purchased from third parties; industrial water / tap water)                  ③ Fresh water (other than above: river water)</p> <p>① is utilized to cool steam used to generate power at the nuclear power station and the biomass power station. The volume of water withdrawals is measured / monitored by the operating hours of the pumps.                  ② is utilized for power generation at the biomass power station, and the volume purchased from third parties is measured and monitored. It is also utilized as drinking water at Chuden’s business establishments. The volume of water withdrawals of industrial water and tap water is obtained monthly through bills charged from municipalities and others.                  ③ is used for power generation at hydro power stations and regularly measured / monitored by calculating the water levels of dams and inlet channels, as well as measuring generator output. River water is also used for power generation at the nuclear power station and the volume of water withdrawals is measured / monitored. Data measured as above daily or monthly at each establishment are collected at the Headquarters once a year for summary and monitoring.</p>
Water withdrawals quality	100%	<p>At hydro power stations, Chuden regularly measures the turbidity of water drawn, by using turbidimeters as necessary, according to agreements with the local governments. Furthermore, the nuclear power station and the biomass power station located in a coastal area monitors seawater temperature when drawing seawater. At the nuclear power station, the difference between the seawater temperature when drawn and the water when discharged is set by the design value according to the environmental impact assessment, so while generating power, Chuden is constantly monitoring to keep the seawater temperature difference within the limit.</p>
Water discharges – total volumes	100%	<p>At every Chuden power station and business establishment, water discharge is measured and monitored. Discharge of fresh water from the nuclear power station is monitored by flowmeters and the water levels of drainage tanks. Discharge of fresh water from the biomass power station is assumed to be the same volume as the withdrawals measured by flowmeters. Seawater drawn at the nuclear power station and the</p>



		<p>biomass power station is not consumed, but used in heat exchangers to cool steam utilized in power generation. Therefore, seawater discharged is assumed to be the same volume as seawater withdrawals.</p> <p>In hydro power stations, all the freshwater drawn from rivers is used for power generation and discharged, and thus the water discharged is assumed to be the same volume as freshwater withdrawals.</p> <p>Data measured as above daily at each business establishment are collected at the Headquarters once a year to be summarized and monitored.</p>
<p>Water discharges – volumes by destination</p>	<p>100%</p>	<p>At every Chuden power station and business establishment, water discharge is measured and monitored by destination of discharge.</p> <p>In regard to discharge to the sea, the nuclear power station measures discharge of fresh water using flowmeters and the water levels of the drainage tanks, and measurement is conducted on a daily basis. At the biomass power station, discharge of fresh water is assumed to be the same volume as the withdrawals measured by flowmeters, and measurement is conducted on a daily basis. Since seawater drawn is not consumed, but is used in heat exchangers to cool steam utilized in power generation, discharge of seawater is assumed to be at the same volume as the seawater withdrawals.</p> <p>In regard to discharge to rivers, since water taken from rivers is used to rotate water mills for power generation only and is not consumed at hydro power stations, its discharge is assumed to be the same volume as the intake.</p> <p>Data measured as above daily at each business establishment are collected at the Headquarters once a year to be summarized and monitored.</p>
<p>Water discharges – volumes by treatment method</p>	<p>100%</p>	<p>At Chuden’s nuclear power station and biomass power station, wastewater associated with facility operation is treated in neutralization installations, filtration installations or concentration and desalination installations; and domestic wastewater generated by employees (gray water) is treated in microorganism treatment installations. The wastewater described above is assumed to be the same volume as the withdrawals measured by monitoring by flowmeters and the water levels of the drainage tanks or by using flowmeters. Wastewater containing oil is subject to adsorptive treatment. Wastewater other than the above is not</p>

		<p>treated; however, its discharge is measured and monitored.</p> <p>Data measured as above daily at each business establishment are collected at the Headquarters once a year to be summarized and monitored.</p>
Water discharge quality – by standard effluent parameters	100%	<p>Water quality, measurement frequency, and measurement methods of wastewater are provided for in the Water Pollution Prevention Act and agreements with the local governments. All Chuden’s power stations perform measurement and monitoring based on these provisions. As regards water quality monitoring, pH, COD, SS, etc. are measured at the nuclear power station. The measurement methods are pH meters, chemical analysis, and electronic scales respectively. Measurement is conducted on a monthly basis.</p>
Water discharge quality – temperature	100%	<p>Seawater is used at the nuclear power station and the biomass power station to cool steam utilized in power generation and the temperature of seawater at discharge to the sea is measured and monitored constantly or daily using a thermometer. At the nuclear power station, the difference between the seawater temperature when drawn and the water when discharged is set by the design value according to the environmental impact assessment, so while generating power, Chuden is constantly monitoring to keep the seawater temperature difference within the limit.</p>
Water consumption – total volume	100%	<p>At every Chuden power station and business establishment, water consumption is measured and monitored. Consumption is the water volume consumed at power stations by hosing, etc., and Chuden does not keep the exact value. Therefore, water consumption is calculated by the difference between the total intake and the total discharge according to the definition of CDP. Measurement is conducted on a yearly basis.</p>
Water recycled/reused	100%	<p>Fresh water is used in power generation processes at the nuclear power station and the biomass power station, and steam is utilized in power generation; this water is converted to fresh water by using seawater to cool the steam, and it is recycled as reactor water and boiler water for power generation.</p> <p>Fresh water recycled and discharged out of power generation processes is treated before being discharged from the power station.</p> <p>Recycled water is measured using flowmeters. For the volume purchased from third parties, it is assumed to be</p>

		the same volume as the withdrawals confirmed in the bill. Measurement is conducted on a yearly basis.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Chuden monitors on a continuous basis to make sure that all employees at Chuden facilities are supplied with safe drinking water and sanitation. Chuden respects the individuality and personalities of our employees and commits to provide a good working environment for all. Drinking water is provided from the public waterworks bureau, and its residual chloride concentration data is checked daily.

### W-EU1.2a

**(W-EU1.2a) For your hydropower operations, what proportion of the following water aspects are regularly measured and monitored?**

	% of sites/facilities/ operations measured and monitored	Please explain
Fulfilment of downstream environmental flows	100%	At hydro power stations, based on the guidelines provided by the government, Chuden discharges a river maintenance flow as necessary to achieve the required environmental flow downstream.
Sediment loading	100%	The discharge implementation ratio of river maintenance flow is 100% and the required amount is continually discharged. Chuden regularly monitors discharge facilities and conditions with monitoring cameras and also confirms the status at patrol inspections.
Other, please specify	Not relevant	There are no interrelated aspects relating to other.

### W1.2b

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

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	51,257,901	About the same	The total withdrawals are about the same as the previous fiscal year. This is largely because the

			<p>capacity factor of hydro power stations was nearly the same as the previous fiscal year.</p> <p>The values are the total value of the following:</p> <p>① Seawater drawn at the nuclear power station and biomass power station.</p> <p>② Fresh water purchased from third parties at the nuclear power station, biomass power station and business establishments.</p> <p>③ Fresh water (river water) drawn at hydro power stations and the nuclear power station.</p> <p>In the future, we consider that this will increase as the nuclear power station resumes operation.</p>
Total discharges	51,257,802	About the same	<p>The total discharges are about the same as the previous fiscal year. This is largely because the capacity factor of hydro power stations was nearly the same as the previous fiscal year.</p> <p>The values are the total value of the following:</p> <p>① Seawater discharged to the sea at the nuclear power station and biomass power station.</p> <p>② Treated fresh water discharged to the sea at the nuclear power station and biomass power station.</p> <p>③ Fresh water (sewage) discharged from business establishments (other than the nuclear power station and biomass power station).</p> <p>④ Fresh water (river water) discharged at hydro power stations.</p> <p>In the future, we consider that this will increase as the nuclear power station resumes operation.</p>
Total consumption	99	About the same	<p>The total consumption amount is nearly the same as that of the previous fiscal year. This is largely because the extents of reduction of total withdrawals and total discharges were nearly the same. This value was calculated by subtracting the discharges from the withdrawals. (Calculation of the discharges reported in the previous fiscal year was partially omitted. The total consumption amount in FY2019 after correction is 93 megaliters/year).</p> <p>Consumption is the volume of water used at power stations for hosing, etc. Since Chuden does not keep the exact value, consumption is estimated from the difference between intake and discharge, which are both continually monitored.</p>

			In the future, this value is expected to vary when periodic inspections, etc. are conducted at the nuclear power station.
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## W1.2d

**(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.**

	Withdrawals are from areas with water stress	Identification tool	Please explain
Row 1	No	WRI Aqueduct	<p>According to assessment of annual risks using the Water Risk Atlas of Aqueduct from the World Resources Institute (WRI), most of the power stations owned by Chuden are located in regions of low- to medium risk (at most 1 to 2 on a standard 5 point risk scale) and some are located in low-risk areas (0 to 1 on a standard 5 point risk scale).</p> <p>Chuden considers that there are currently no power stations in high water stress regions, and therefore there is no water withdrawals from high water stress regions.</p> <p>Based on the guidelines provided by the state, hydro power stations owned by Chuden discharge a river maintenance flow as necessary, and therefore Chuden has concluded that high water stress is not produced.</p> <p>Chuden's nuclear power station and biomass power station draw seawater to cool the steam used in power generation. Since the nuclear power station is located in a coastal area, Chuden has concluded that high water stress is not produced.</p>

## W1.2h

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	50,513,970	About the same	The volume of fresh water withdrawals are about the same as the previous fiscal year. This is largely because the capacity factor of hydro power stations was nearly the same as the previous fiscal year.

				<p>The nuclear power station and hydro power stations owned by Chuden draw fresh water from rivers for power generation.</p> <p>Most of the fresh water used in nuclear power generation is underground water pumped from the Niino River on the western side of the power station and is used in power generation processes. Therefore, the ability to draw a sufficient volume of river water has a significant connection with the power generation process.</p> <p>Hydro power generation is conducted by utilizing fresh water in dams built by Chuden at rivers in five prefectures in the Chubu District or dams owned by local governments, and drawing stored water to water mills through conduits to drive turbines. Therefore, the ability to draw a sufficient volume of river water has a significant connection with the power generation process.</p> <p>This value is the total of the water withdrawals of hydro power stations reported to the Ministry of Land, Infrastructure, Transport and Tourism and the volume of water drawn from rivers at the nuclear power station.</p>
Brackish surface water/Seawater	Relevant	743,504	Lower	<p>The total seawater withdrawal amount reduced compared to the previous fiscal year.</p> <p>This is because the pump used for sea water intake at the nuclear power station has been replaced one with a lower intake.</p> <p>The nuclear power station and the biomass power station owned by Chuden draw seawater to cool steam utilized for power generation. Therefore, the ability to draw a sufficient volume of seawater has a significant connection with the power generation process.</p> <p>This value is calculated from seawater pump capacity and operation time of the nuclear power station and the biomass power station. Seawater is used in heat</p>

				exchangers to cool steam utilized in power generation, though it is not consumed.
Groundwater – renewable	Not relevant			Chuden does not own any facilities that utilize renewable underground water.
Groundwater – non-renewable	Not relevant			Chuden does not own any facilities that utilize non-renewable underground water.
Produced/Entrained water	Not relevant			Chuden does not own any facilities that utilize produced water or entrained water.
Third party sources	Relevant	427	About the same	The volume of water purchased from third parties is nearly the same as the previous fiscal year. This is largely because water consumption at offices and business establishments was almost unchanged. Water purchased from third parties is used as drinking water at our business establishments. Therefore, Chuden considers that the ability to purchase water has a significant connection with securing business performance and occupational safety and health of our employees at every business establishment.

## W1.2i

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	50,513,847	About the same	Discharge of fresh water to surface (rivers) is about the same as the previous fiscal year. This is largely because the capacity factor of the hydro power stations was nearly the same as the previous fiscal year.  In hydro power stations, water drawn from rivers is used for power generation and drained to rivers as it is. The capability to drain into rivers and surface without restriction has a significant connection with operating hydro power process in an ongoing way. The discharge is calculated

				by assuming it to be the same value as the water withdrawals.
Brackish surface water/seawater	Relevant	743,608	Lower	Discharge of seawater reduced compared to the previous fiscal year. This is largely because the discharge reduced in accordance with the reduction of the seawater withdrawals at the nuclear power station.
Groundwater	Not relevant			Discharge to the sea is the total volume of discharge of seawater and fresh water used at the nuclear power station and the biomass power station.
Third-party destinations	Relevant	347	About the same	<p>Discharge to third parties is nearly the same as in the previous fiscal year. This is because the discharge at offices and business establishments was nearly the same as during the previous fiscal year. Business establishments owned by Chuden other than the nuclear power and the biomass power station, discharge domestic wastewater to sewerage. Since Chuden does not measure the exact volume, discharge is assumed to be the same volume as supply of water purchased from third parties.</p> <p>The capacity to discharge sewage and domestic wastewater appropriately to public sewerage is effective in preventing the spread of infectious disease and decreases the possibility of simultaneous suspension of operation of business establishments other than the nuclear power station.</p> <p>Since the continuous operation of business establishments other than the nuclear power and the biomass power station plays a vital role in Chuden's business, even if it temporarily suspends operations, it may have a significant effect on income and expenditure. Thus, discharging domestic wastewater to public sewerage has a significant connection to continuous operation.</p>



				At the nuclear power station and the biomass power station, treated water is discharged to the sea.
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## W1.2j

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

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Relevant	7	Lower	Less than 1%	<p>At the nuclear power station, wastewater generated in facility operations is treated in concentration and desalination installations to remove radioactive substances to satisfy the prescribed water quality standard before it is released into the environment. Primary and secondary treatment is not conducted for such wastewater. This is because it is not necessary to remove impurities by primary and secondary treatment, as impurities in water are removed through filtration and ion-exchange to purify to ultrapure level water when water for power generation is drawn from rivers and supplied to the station.</p> <p>On the other hand, wastewater used to wash protective clothing has impurities removed using filtration installations such as fiber filters and activated carbon filters to remove suspended solids and COD components, to satisfy the prescribed water quality standard before it is released into the environment. Primary and secondary treatment is not conducted for such wastewater. This is because it is not necessary to remove impurities by primary and secondary</p>

					<p>treatment, as impurities in water are removed through filtration and ion-exchange.</p> <p>In regard to wastewater quality, pH, COD, SS, etc. are measured and monitored based on the standards specified by the Japanese government and local governments.</p> <p>Tertiary treatment waste water decreased by 3 megaliters (approx. 30%) in volume compared with the results of the previous fiscal year (10 megaliters). This is because the amount of work that requires tertiary treatment of wastewater at the nuclear power station decreased.</p> <p>A 20% reduction or more in wastewater discharge compared with the previous reporting year is considered a reduction.</p>
Secondary treatment	Relevant	111	About the same	Less than 1%	<p>Domestic wastewater generated by employees (gray water) in the nuclear power station is treated by microorganism treatment in septic tanks. At Chuden business establishments located in areas without sufficient sewage systems, septic tanks are installed to conduct wastewater treatment. Since water discharged is not measured, it is assumed to be 10% of the water discharged from the business establishments. Standard values for domestic wastewater quality at these business establishments, etc. are specified by the Purification Tank Act, and wastewater is purified to standard values based on this act before it is discharged.</p> <p>Water discharged in secondary treatment was nearly the same as the previous fiscal year's 110 megaliters. This is because the wastewater discharged from offices was almost the same as in the previous fiscal year.</p>
Primary treatment only	Not relevant				<p>At Chuden power stations and business establishments, there is no wastewater that classifies as "primary treatment only" because all wastewater requiring</p>

					treatment undergoes “secondary treatment” or further treatments (pH adjustment, etc.).
Discharge to the natural environment without treatment	Relevant	51,257,352	About the same	100%	<p>Seawater used in the nuclear power station and the biomass power station is used only to cool the steam utilized for power generation, and wastewater is discharged directly into the sea because the water quality has not been changed during the process. The temperature of seawater at discharge to the sea is measured and monitored constantly or daily using a thermometer. At the nuclear power station, the difference between the seawater temperature when drawn and the water when discharged is set by the design value according to the environmental impact assessment, so while generating power, Chuden is constantly monitoring to keep the seawater temperature difference within the limit.</p> <p>River water intake at hydro power stations is used to rotate water turbines and is discharged directly into the river because the water quality has not been changed during the process.</p> <p>The amount of water discharged into the natural environment without treatment increased by approx. 1% from the result of the previous year (50,584,267 megaliters), which is almost the same. This is because the hydro power station capacity was almost the same as in the previous fiscal year.</p>
Discharge to a third party without treatment	Relevant	316	About the same	Less than 1%	<p>The Yokkaichi Biomass Power Plant, the only Chuden biomass power station, is located on the premises of the Yokkaichi Thermal Power Station of JERA Co., Inc. All wastewater generated in operation of the power station is sent to the wastewater treatment facilities of JERA and discharged out of the premises by the wastewater treatment facilities of JERA. Therefore, all wastewater generated in operation of the biomass</p>

					<p>power station is treated at JERA. In regard to wastewater quality, measurement and monitoring are conducted based on treatment standards specified by national and local governments.</p> <p>In addition, domestic wastewater generated at business establishments other than the nuclear power station and the biomass power station is mainly discharged into the sewage system. Since this water discharged is not specifically measured, it is estimated by subtracting the volume of the secondary treatment described above from the amount of the water supply and sewage system volume purchased from third parties. In regard to sewage water quality, wastewater is discharged after necessary procedures based on the current legal standard of the Sewerage Act.</p> <p>The amount of water discharged to a third party without treatment declined by approx. 10% from 365 megaliters in the previous fiscal year, which was considered nearly the same as in the previous fiscal year. This is because the water discharge from offices amounts to approx. 90% of the entire water discharged, and this amount was nearly the same as the previous fiscal year.</p>
Other	Relevant	16	About the same	Less than 1%	<p>The nuclear power station measures radioactivity intensity in seawater, marine organisms, marine soil, etc. to check that radioactivity has no impact on the surrounding environment from the operation of the nuclear power station. Effluent generated at that time, including chemicals, are pH-controlled before being discharged. In regard to wastewater quality, pH, COD, SS, etc. are measured and monitored based on the standards specified by the Japanese government and local governments. The amount of other wastewater was</p>

					nearly the same as the previous year's 18 megaliters. This is because the amount of chemical waste liquid treatment at the nuclear power station was nearly the same.
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### W1.3

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

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1	2,180,931,000,000	51,257,901	42,548.1917412108	<p>The majority of Chuden's total water withdrawals consists of withdrawals for the purpose of hydroelectric power generation. Chuden tries to keep total withdrawals at the same level while increasing energy generated, by keeping under review the optimal power generation facilities to match river flow conditions when updating hydroelectric power generation facilities, raising the dam operational water level, etc., and thereby maximizes the management resource value. In regard to future trends, we expect that the efficiency of total water withdrawals will increase with the increase in energy generated by hydroelectric power stations, which will basically lead to an increase in electric energy sold by Chuden, producing an increase in sales.</p> <p>For sales, we use the electric power business operating revenue in our Consolidated Statements of Operations.</p>

### W-EU1.3

**(W-EU1.3) Do you calculate water intensity for your electricity generation activities?**

Yes

## W-EU1.3a

**(W-EU1.3a) Provide the following intensity information associated with your electricity generation activities.**

Water intensity value (m3)	Numerator: water aspect	Denominator	Comparison with previous reporting year	Please explain
7,193	Total water withdrawals	MWh	About the same	<p>&lt;Reason for the water intensity being unaltered compared with the previous reporting year&gt;</p> <p>The intensity indicator relating to water is nearly the same as the previous fiscal year. This is because the total withdrawals and the generated energy are nearly the same as the previous fiscal year. In comparison with the previous reporting year, if the increase/decrease does not exceed 10%, we classify it as almost the same as in the previous fiscal year.</p> <p>&lt;Utilization status of water intensity in Chuden, strategy for reduction&gt;</p> <p>As for the intensity indicator relating to water measured and controlled by Chuden, we have set the value obtained by dividing total withdrawals by generated energy as intensity. Hydroelectric power generation amounted to approx. 96% of our generated energy in FY2021 and is our major power source. Based on water intensity, Chuden is able to understand the volume of water required per unit of energy generated, which can assist with considerations of effective water use and cost reduction.</p> <p>Chuden tries to keep total withdrawals at the same level while increasing energy generated, by keeping under review the optimal power generation facilities to match river flow conditions when updating hydroelectric power generation facilities, raising the dam operational water level, etc., and thereby maximizes the management resource value. Chuden considers these efforts will contribute to an improvement (decrease) in this intensity</p>

				<p>indicator.</p> <p>In addition, since Chuden is able to contribute to an improvement (decrease) in this intensity indicator, we continue to pursue our preparations for the utilization of the Hamaoka Nuclear Power Plant, as an important power source.</p> <p>Thus, we will steadily implement efforts for a thorough safety enhancement of the Hamaoka Nuclear Power Plant and for a serious response to the reviews conducted by the Nuclear Regulation Authority in order to make the utmost effort to achieve the Authority's confirmation of our compliance with the new regulatory standard. Chuden will also commit to ensuring that communities and people understand the safety improvement measures, etc. we are taking.</p> <p>&lt;Forecast trend in water intensity&gt;</p> <p>We believe the future trend in water intensity will decrease significantly once the nuclear power plant is in operation.</p>
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## W1.4

### (W1.4) Do you engage with your value chain on water-related issues?

No, not currently but we intend to within two years

## W1.4d

### (W1.4d) Why do you not engage with any stages of your value chain on water-related issues and what are your plans?

	Primary reason	Please explain
Row 1	Important but not an immediate business priority	In April 2019 Chuden integrated the existing thermal power generation business, etc. into JERA Co., Inc., and power generation companies including JERA have become important suppliers of the electric power we sell. Water quality, measurement frequency, and measurement methods of wastewater generated by the operation of power plants are specified in the Water Pollution Prevention Act and agreements with local governments, and Chuden implements measurement and monitoring based on these provisions, with consideration given to minimizing impacts on the environment. Securing a sufficient volume of high-quality fresh water is essential for power stations. However, the biggest problem that makes it difficult to secure fresh water is water shortage (drought) resulting from interaction of the reduction in volume of stored water resources in summer,

		<p>with an increase in industrial and consumer water usage. To prepare for industrial water shortages, Chuden's power stations have fresh water tanks with sufficient capacity, and some thermal power stations have installed groundwater pumps or capacity to pump treated water from nearby wastewater purification centers via direct pipelines. Taking this into account, although we consider the water related issues facing our suppliers are important, we currently have facilities and organizational systems in place to mitigate the impact of water related issues.</p>
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## W2. Business impacts

### W2.1

**(W2.1) Has your organization experienced any detrimental water-related impacts?**

No

### W2.2

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

No

## W3. Procedures

### W-EU3.1

**(W-EU3.1) How does your organization identify and classify potential water pollutants associated with your business activities in the electric utilities sector that could have a detrimental impact on water ecosystems or human health?**

In Chubu Electric Power Company (Chuden)'s power generation businesses, fresh water is used in nuclear power generation and biomass power generation process through the production of high-temperature and high-pressure steam in reactors and boilers to drive turbines. Steam that drives turbines is cooled down by heat exchangers which use seawater as a coolant (hereinafter, condenser) to convert it to liquid (water), and it is reused inside the power generation plants. Seawater is drawn from frontal waters into the premises of power generation stations through water supply canals and conduit tubes, is supplied to condensers using pumps, absorbs heat from steam, and becomes warm wastewater. Then, after controlling the temperature of water to be discharged to keep it below the temperature restriction, seawater is discharged to the frontal waters of the power stations. Since the volume of steam required to drive turbines in our nuclear power generation and biomass power station is between 200 and over 7,000 tons per hour, the volume of seawater required for heat exchange reaches several tons to over 100 tons per second, and an enormous volume of seawater is discharged as warm wastewater. Along with capacity enlargement and centralization of the sites of power stations, the effects of warm wastewater on the reproduction of marine organisms and on fisheries has become a concern, and since the mid-1960s, the government



has been officially conducting research studies at thermal power stations on the effects of warm wastewater discharge.

<Details of the policy and process established to identify and classify potential water pollutants that may give adverse impacts on waters and water ecosystems>

For construction of thermal and nuclear power stations, the environmental impact assessment system of the government defines warm wastewater as a potential pollutant, and it is set as a predictive assessment target. Efforts have been made to gain understanding from fishermen operating in relevant locations. In the “Interim Report on Warm Wastewater Issues” summarized by the Sub-committee for Warm Wastewater of the Central Council for Environmental Pollution Control in 1975, the effects of warm wastewater on marine organisms is described as follows: “Though there are observed phenomena such as change in biota as well as reduction in number of types of biota within waters in which the temperature is continuously 2 to 3 degrees higher in connection with a drainage canal for warm wastewater and its outflow, outside these waters no significant change of biota was recognized. However, seaweeds, etc., may be affected by a temperature rise of 1 degree.” Fishermen actively operate in the waters surrounding the nuclear power station owned by Chuden, and it is these fishermen that may possibly experience the detrimental effects of warm wastewater. Thus, Chuden pays special attention to discharging warm wastewater from operating the power station. In discharging warm wastewater from operating the power station, Chuden continuously measures seawater temperature before and after heat exchange using condensers and sets the temperature difference between intake and discharge at 7 degrees or less. Thermometers are installed at the intake chamber and the water outlet in the premises of the nuclear power station. In biomass power generation, they are installed at the seawater intake and outlet from condensers.

<Details of the standard to comply with>

The reason for setting the temperature difference between intake and discharge at 7 degrees or less is that because the effects of warm wastewater on marine organisms and fisheries as described above are of concern to Chuden. It has been decided after discussion that the temperature difference between intake and discharge will be set at 7 to 8 degrees bearing in mind economy, power generation efficiency and influence on marine organisms, etc. From the perspective of minimizing the impact on the environment as much as possible, a directive to limit the water temperature rise to around 7 degrees has been issued, and as a result the nuclear power station and biomass power station owned by Chuden have set the limit below 7 degrees. Thus far, Chuden has gained understanding about the limit of below 7 degrees from local residents, including fishermen through environmental assessments conducted at the power station, and our temperature difference limit is one of the criteria for Japan. The thermometers used to measure the temperature difference between intake and discharge at the nuclear power station are high-accuracy quartz thermometers. At the biomass power station, resistance thermometer bulbs are used, and these have high measurement accuracy and are responsive and easy to obtain. To ensure the accuracy of the thermometers, quartz thermometers are returned to factories for calibration according to the regular inspection of the plant, etc.

<Information on whether the policy and the process change in the entire value chain and how they change>

Our policy and identification process regarding the intake water/discharge water temperature difference limit follow the model used in Japan, so we consider that the opinions of our customers and suppliers are in accord.

## W-EU3.1a

**(W-EU3.1a) Describe how your organization minimizes the adverse impacts of potential water pollutants associated with your activities in the electric utilities sector on water ecosystems or human health.**

Potential water pollutant	Description of water pollutant and potential impacts	Management procedures	Please explain
Thermal pollution	<p>Seawater is heat-exchanged in condensers to cool the steam, which is used to drive turbines. After that, the seawater temperature difference between intake and discharge is controlled at below 7 degrees and warm waste water is discharged into frontal waters of the power station. The volume of seawater required for heat exchange is several tons to over 100 tons per second per power station, and an enormous volume of seawater is discharged as warm wastewater. Due to diffusion characteristics of warm wastewater, water temperature near seawater outlets of power stations is equal to or lower than the outlet water temperature of the condensers. However, at greater distance from the water outlets, water temperature reduces by diffusive mixing with seawater. On the effects of water temperature rise on marine organisms, it is reported that there are observed phenomena such as change in biota as well as reduction in number of types of biota within waters in which the temperature is raised continuously by more than 2 to 3 degrees. If the temperature difference between seawater intake and outlet from condensers were to exceed 7 degrees</p>	<p>Compliance with effluent quality standards Emergency preparedness</p>	<p>In order to manage warm wastewater, values to assess environmental impacts, these are set for temperature differences between water intake and outlet, and Chuden has set this value at below 7 degrees. Management of warm wastewater is conducted based on power station operational documents. In these documents, there are checkpoints for plant condition monitoring and measures to take if the limit exceeds 7 degrees, in order to ensure that the temperature difference is correctly maintained.</p> <p>For emergency preparedness, in nuclear power station, Chuden records and collects values every two hours and assesses those values, and if the temperature difference between water intake and outlet exceeds 7 degrees, restoration measures specified in the operational documents are implemented promptly to bring this back to the normal state. If the difference does not return to within the normal limit after these</p>

<p>continuously, the impacts on the ocean would be significant and organisms and abundance in relevant waters may change, and fishery activities, etc. may also be seriously affected. Given this situation, power stations have incorporated minimization of effects on marine organisms into the design of their installations. In environmental impact assessments for equipment design conducted before the construction of nuclear power station, a diffusion prediction assessment for warm wastewater is conducted. Measuring at three points, sea surface, one meter below and two meters below sea surface, Chuden developed predictive envelope curves of the temperature difference taking ambient water temperature as lower by 3 degrees, 2 degrees and 1 degree, and refers to them for forecast assessments of impacts on the ocean environment and marine organisms.</p>	<p>measures are taken, power station operational documents give instructions on how to implement measures to control power generation output. After these measures have caused the temperature difference between water intake and outlet to return to 7 degrees or below and the condition is stable, as confirmed by temperature difference data available in the central control room, Chuden judges that the relevant measures are effective since it can be confirmed that the seawater temperature is low enough to have minimal effects on marine organisms based on the results of the preliminary environmental impact assessment. When output control measures are taken, this will be published on our Website.</p>
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### W3.3

**(W3.3) Does your organization undertake a water-related risk assessment?**

Yes, water-related risks are assessed

### W3.3a

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

**Value chain stage**

Direct operations

**Coverage**

Full

**Risk assessment procedure**

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

**Frequency of assessment**

Annually

**How far into the future are risks considered?**

More than 6 years

**Type of tools and methods used**

Tools on the market  
International methodologies and standards  
Databases

**Tools and methods used**

WRI Aqueduct  
Environmental Impact Assessment  
Regional government databases

**Contextual issues considered**

Water availability at a basin/catchment level  
Water quality at a basin/catchment level  
Stakeholder conflicts concerning water resources at a basin/catchment level  
Implications of water on your key commodities/raw materials  
Water regulatory frameworks  
Status of ecosystems and habitats  
Access to fully-functioning, safely managed WASH services for all employees

**Stakeholders considered**

Customers  
Employees  
Investors  
Local communities  
Regulators  
Suppliers  
Water utilities at a local level

**Comment**

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**Value chain stage**

Supply chain

**Coverage**

Partial

**Risk assessment procedure**

Water risks are assessed as part of other company-wide risk assessment system

**Frequency of assessment**

Annually

**How far into the future are risks considered?**

More than 6 years

**Type of tools and methods used**

Tools on the market  
 International methodologies and standards  
 Databases

**Tools and methods used**

WRI Aqueduct  
 Environmental Impact Assessment  
 Regional government databases

**Contextual issues considered**

Water availability at a basin/catchment level  
 Water quality at a basin/catchment level  
 Stakeholder conflicts concerning water resources at a basin/catchment level  
 Implications of water on your key commodities/raw materials  
 Water regulatory frameworks  
 Status of ecosystems and habitats

**Stakeholders considered**

Customers  
 Employees  
 Investors  
 Local communities  
 Regulators  
 Water utilities at a local level

**Comment**

The Yokkaichi Biomass Power Plant in Yokkaichi city, Mie prefecture is located on the premises of the Yokkaichi Thermal Power Station of JERA Co., Inc., Chuden’s supplier, and all wastewater generated in the operation of the power station is treated at JERA. In regard to wastewater quality, treatment is conducted at JERA based on the standard specified by Japanese national or local government. For this reason the quality of the wastewater discharged from the power station may have an indirect impact on our business, and this is included in the risk evaluation.

**W3.3b**

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

At Chuden and its operating companies, risk owners responsible for each operating company, companies of the Chuden group, offices and departments clarify water related risks within the range of the next 10 years, dividing these risks operationally, evaluate risk frequency, extent and impact (from the viewpoint of cost, impact on human lives and health) and prioritize countermeasures according to risk management rules. Risks relating to water are subject to division of duties among multiple risk owners. Of these, information on risks associated with

shifting trends in water regulations is collected and clarified by risk owners responsible to the Corporate Communication Division.

Risk owners report annually on risks having severe impacts on management, based on criteria indicated by the risk management department (Corporate Planning & Strategy Division). Companywide risk managers, including the President and the Vice Presidents, discuss this at the Risk Management Committee on risk countermeasure policies developed by the risk management department, by grasping and evaluating risks comprehensively based on reports from risk owners; and the President makes decisions. The policies will finally be resolved at the Board of Directors meetings by their reflection onto management plans, etc. Countermeasures are reflected onto management plans after being considered by risk owners based on risk countermeasures. Implementation status of countermeasures and changes in risks are confirmed at the Monitoring Committee held quarterly by the President and the Vice Presidents and reported to the Board of Directors half-yearly. For example, Chubu Electric Power Mirai Company considers the following risks: carbon tax that may be implemented under climate change related laws and regulations in the future, and the increase in operational cost due to the introduction of carbon pricing such as an emissions trading system, and Chubu Electric Power Grid Co., Inc. accounts for the increase in restoration costs that may occur in the event of a major power outage due to any damage to transmission or distribution facilities, in the occurrence of unprecedented large-scale natural disasters such as typhoons.

In regard to construction of nuclear, biomass and hydro power stations, and installation of new facilities, which use water, when selecting locations and designing basic factors of the facility such as structure and scale, Chuden uses the WRI's Aqueduct Water Risk Atlas as well as data collected from hydro power surveys by local governments for hydro power stations, and manages risk for planning facilities in accordance with the above procedures. In cross-sections of equipment design including environmental conservation planning for environmental impact assessment of nuclear power generation and biomass power generation, risks are managed by the above procedures, etc. to reduce as much as possible the impact on the environment and ecosystem.

In regard to water risks in the supply chain, the Yokkaichi Biomass Power Plant in Yokkaichi city, Mie prefecture is located on the premises of the Yokkaichi Thermal Power Station of JERA Co., Inc., Chuden's supplier, and all wastewater generated in the operation of the power station is treated at JERA. In cross-sections of equipment design including environmental conservation planning for environmental impact assessment, risks are managed by the above procedures, etc. In regard to wastewater quality, treatment is conducted at JERA based on the standard specified by Japanese national or local government. For this reason the quality of the wastewater discharged from the power station may have an indirect impact on our business, and this is included in the risk evaluation.

■Contextual issues considered

<Water availability at a basin/catchment level>

Securing the volume of water used in hydroelectric power generation is important; thus, it is constantly assessed. Chuden decides on the development area to build a hydroelectric power station by defining development scale and then by evaluating the risks of the power generation business failing due to insufficient water resources. For this purpose, it utilizes hydro power survey data and field surveys (local government databases, etc.) conducted by the Ministry of Land, Infrastructure, Transport and Tourism, etc.

<Water quality at a basin/catchment level>

Though the quality of water is not a direct issue in hydro power generation, quality of water in catchment areas is relevant to risks after discharge and is constantly assessed due to its importance. For example, when designing intake installations, Chuden takes into consideration and assesses with experts the risks of the long-term phenomenon of suspended sediment in water, caused when contamination from organic pollution, eutrophication, or water decomposition associated with watershed development, or suspended sediments washed into reservoirs by floods, are discharged before precipitating to the bottom of the lake, forming muddy water containing contaminants. Assessments are made using fact-finding surveys upstream of dammed rivers, data collection on water quality after construction of dams, hydraulic tests, and (environmental impact assessment), etc.

<Stakeholder conflicts concerning water resources at a basin/catchment level>

Conflicts between stakeholders relating to water resources for hydro power generation are related to water quality risks for users of water downstream after discharge, and Chuden keeps these conflicts under constant assessment due to their importance. Chuden publishes the results of environmental impact assessments during dam construction and in the in-service period and communicates with local residents. In this way, Chuden identifies phenomena that may have an impact on local residents and evaluates the risks of confliction.

<Implications of water on your key commodities/raw materials>

With water used in hydro power generation, securing a sufficient volume of water has a particularly significant effect. Therefore, Chuden assesses the risks of hydro power generation business failure due to insufficient water resources, utilizing data from surveys as well as field survey results conducted by the Ministry of Land, Infrastructure, Transport and Tourism, etc., and taking into account results of field surveys conducted by Chuden, and decides the development scale and development site of a hydro power station by projecting future electric power demand.

Fresh water used in nuclear power generation and biomass power generation forms high-temperature and high-pressure steam in reactors and boilers, which drives turbines and eventually generates power. Therefore, securing high quality water has a particularly significant influence. For biomass power generation, risks in the supply chain are also included in evaluation.

<Water-related regulatory frameworks>

In the processes of nuclear, biomass, and hydro power generation, water is discharged to public waters. Therefore, it is important to comply with water-related regulations, and risks of deviating from water-related regulations are always included in evaluation. For biomass power generation, risks in the supply chain are also included in evaluation.

<Status of ecosystems and habitats>

In the processes of nuclear power generation, the effects of discharging warm wastewater to aquatic ecosystems are critical; thus, Chuden conducts environmental impact assessments for construction and constantly assesses to reduce these effects as much as possible. For biomass power generation, risks in the supply chain are also included in evaluation.



<Access to fully-functioning, safely managed WASH services for all employees>

The availability to all employees of properly functioning and safely managed sanitary facilities is an intrinsic part of the smooth and secure conduct of our business, ensuring a stable supply of electric power, including the operation and maintenance of power generation facilities and the provision of customer services. The volume and quality of water of tap water are continuously evaluated when a business establishment is constructed or an on-site station is set up.

■ Stake holders considered

<Customers>

In regard to nuclear and hydro power generation and biomass power generation, discharging water that does not conform to the law, or environmental conservation agreements, etc. with the local government which are stricter than the law, means not just noncompliance with water-related regulations, etc., but also calling into question the attitude of the company (low respect for the environment, giving priority to profit, lack of awareness of compliance). For that reason, customers' trust in our business activities might be seriously compromised and this may have an effect on competition with competitors, and always be included in evaluation.

<Employees>

It is important for all employees of Chuden to use sanitation that functions properly and is managed safely, to conduct smooth and steady business and maintain a stable supply of electric power, including the operation / maintenance of power generation facilities and servicing consumers, and therefore always be included in evaluation.

<Investors>

Discharging water that deviates from regulations could lose a significant level of trust of the investors in its business activities and could affect Chuden's stock price. In such circumstances, operation of every power station would be affected and this could cause suppressed revenue in the future. Thus, investors also have a crucial relevance in water risks assessment, and Chuden constantly includes this in the evaluation.

<Local communities>

Nuclear power and biomass power stations need to be constructed in coastal areas, so there is an important relationship between the power generation business and the community, including people involved in the fishing industry and local residents. Chuden acknowledges that positive relationships are an important foundation in maintaining the management of power stations and considers that community relationships should be included in the water risk assessment.

<Regulators>

Strengthening drainage regulations tends to cause increased costs for the reinforcement of waste water treatment facilities and the installation of new facilities. This may lead to an increase in power generation costs, which may eventually have an effect on competition with competing companies, and Chuden constantly includes this in the evaluation. For biomass power generation, risks in the supply chain are also included in evaluation.

<Suppliers>

The Yokkaichi Biomass Plant is located on the premises of the Yokkaichi Thermal Power Station of JERA Co., Inc., the supplier of Chuden, and all wastewater generated in the



operation of the power station is treated at JERA. Therefore, suppliers are relevant to our business as important stake holders, and are always included in risk evaluation.

<Water utilities at a local level>

Since the operational status of Chuden's power stations is affected by the stability of regional water utilities' supply of domestic water supply for employees and industrial water, we consider that it has crucial potential risks. Therefore, regional water supply utilities have always been included in risk evaluation. For biomass power generation, risks in the supply chain are also included in evaluation.

<Other water users at a basin/catchment level>

Due to discharge from dams and power stations in hydropower generation, Chuden places notice boards to alert people entering the water on the downstream side of dams, etc. to those who go into the rivers. Furthermore, in cooperation with relevant authorities, Chuden seizes opportunities to promote awareness that leads to accident prevention. If Chuden fails to perform these activities, it may lead to disaster, in which case discontinuation of power generation would be unavoidable. The result could be a negative effect on Chuden's business as a whole. Therefore, Chuden considers that other water users at a basin/catchment level have relevance as important stake holders in its risk evaluation and always includes them in evaluation.

## W4. Risks and opportunities

### W4.1

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

No

### W4.1a

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

Chubu Electric Power Company (Chuden) and operating companies consider that risk management itself should be considered an intrinsic part of operations. Therefore, risk management is conducted as part of the business planning cycle established in the management plan and each division of the entire companies, and among these, items that may have a significant impact on the financial and strategic aspects are specified as major risks. Major risks are evaluated based on ten-year financial impact cost estimates, etc., and those exceeding a certain point on the scale are classified in categories. In water-related risks, "large-scale natural disaster risks," "risks of non-operation of nuclear power station," etc. are recognized as having a potential significant impact on the entire business of Chuden, and are considered in planning. These risks apply to both direct operation and the supply chain. As an example of a serious impact, if interruption of supply or damage to facilities should occur due to a large-scale natural disaster or similar, depending on the extent of damage, Chuden's financial condition, management record, or cash flow could be influenced.

## W4.2b

**(W4.2b) Why does your organization not consider itself exposed to water risks in its direct operations with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	<p>Securing an abundant volume of high-quality fresh water is absolutely essential for Chubu Electric Power Company (Chuden)'s nuclear, biomass and hydro power generation. However, the biggest event that makes it difficult to secure fresh water is water shortage (drought) resulting from interaction of the reduction in volume of stored water resources in summer, with an increase in industrial and consumer water usage.</p> <p>The Hamaoka Nuclear Power Plant is located in Sakura, Omaezaki city, Shizuoka prefecture. Since most of the fresh water to be used is obtained by directly pumping subsoil water from the Niino River on the west side of the power station, output control and power generation stoppage caused by water shortage has never occurred.</p> <p>The Yokkaichi Biomass Plant is located on the premises of the Yokkaichi Thermal Power Station of JERA Co., Inc., in Yokkaichi city, Mie prefecture, and fresh water to be used is supplied by third parties. If the supply of industrial water is insufficient, it leads to output control and power generation stoppage and may have an impact on the profits. The water purchase source has fresh water tanks for this reason.</p> <p>Hydro power generation costs may be affected by the increase/decrease of generated energy due to changes in annual rainfall and snowfall. Therefore, Chuden has established a "reserve system for drought" to enable it to make adjustments within a fixed range in order to mitigate effects on performance.</p> <p>Based on these factors, even though there are existing risks resulting from water shortage, by organizing systems on the equipment and operation side, and allowing for costs possibly increasing slightly to implement the system, no interference with power supply will occur and electricity sales will be constant; Thus, Chuden considers that this risk does not lead to substantial influence on financial and strategic aspects.</p>

## W4.2c

**(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?**

	Primary reason	Please explain
Row 1	Risks exist, but no substantive	In April 2019 Chuden integrated the existing thermal power generation business, etc. into JERA Co., Inc., and power generation companies including JERA have become important suppliers of the electric power we sell. Water quality, measurement frequency, and measurement methods of

<p>impact anticipated</p>	<p>wastewater generated by the operation of power plants of these companies are specified in the Water Pollution Prevention Act and in agreements with local governments, and Chuden implements measurement and monitoring based on these provisions, with consideration given to minimizing impacts on the environment. Securing a sufficient volume of high-quality fresh water is essential for power stations. However, the biggest problem that makes it difficult to secure fresh water is water shortage (drought) resulting from interaction of the reduction in volume of stored water resources in summer, with an increase in industrial and consumer water usage. To prepare for industrial water shortages, Chuden's power stations have fresh water tanks with sufficient capacity, and some thermal power stations have installed groundwater pumps or capacity to pump treated water from nearby wastewater purification centers via direct pipelines. Taking this into account, although there are risks of water shortage, we consider that facilities and systems have been organized to reduce these risks.</p> <p>Suppliers of electric power to Chuden use recycled water in the power generation processes in thermal power stations, etc. In these processes, fresh water treated to remove impurities is used as steam to drive the turbines, and cyclical use contributes to a reduction in the use of fresh water. Recycled water (treated fresh water) has the same risks as fresh water as described above, and Chuden considers that facilities and systems have been organized to reduce the risks</p>
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### W4.3

**(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes, we have identified opportunities, and some/all are being realized

### W4.3a

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

**Type of opportunity**

Products and services

**Primary water-related opportunity**

Sales of new products/services

**Company-specific description & strategy to realize opportunity**

Hydro power generation is a renewable energy power source that does not emit CO2 during generation. Therefore, Chuden recognizes that hydro power generation may become one of our products which is capable of meeting the various needs of those of our consumers who are interested in renewable energy as well as reducing the

environmental burden. Electricity generated by hydro power is one of our main products, and it needs to be deployed strategically. In order to effectively appeal that the electricity generated by our hydro power generation process is conducted in a way that does not emit CO<sub>2</sub>, we have developed an electricity rate plan with a new name and pricing (CO<sub>2</sub> free electricity plan: an electricity plan that offers CO<sub>2</sub>-free values (Zero CO<sub>2</sub> emissions) energy derived from renewable energy power sources such as hydro power generation stations owned by Chuden), From July 2019, Chuden started to provide this option for electricity rate plans to consumers who have electricity contracts. In the “Calculation, Reporting and Announcement Scheme of Greenhouse Gas Emissions” based on the “Act on Promotion of Global Warming Countermeasures,” this plan is credited with being able to calculate CO<sub>2</sub> emissions by setting the CO<sub>2</sub> emissions factor as zero, and monetization of this plan is proceeding.

In April 2020 we started to provide Shinshu Green Electricity, a CO<sub>2</sub>-free electricity plan that utilizes the CO<sub>2</sub>-free values and the local production values derived from the hydroelectric power stations, etc. in Nagano prefecture, operated by the Nagano Prefecture Enterprise Bureau. Later, in FY2021, we started to provide Mie Umashikuni Green Electricity, Shizuoka Green Electricity, Gifu Clear Stream Green Electricity, and Aichi Green Electricity, and expanded them in five prefectures in the Chubu District. Chuden is delivering 100% renewable energy and zero CO<sub>2</sub> emissions electricity to customers by effectively utilizing local production of renewable energy generated in each prefecture, and is working on the expansion of renewable energy by promoting development of renewable energy power sources using part of the income from customers.

#### **Estimated timeframe for realization**

Current - up to 1 year

#### **Magnitude of potential financial impact**

High

#### **Are you able to provide a potential financial impact figure?**

Yes, an estimated range

#### **Potential financial impact figure (currency)**

#### **Potential financial impact figure – minimum (currency)**

80,000,000,000

#### **Potential financial impact figure – maximum (currency)**

90,000,000,000

#### **Explanation of financial impact**

In Management Vision 2.0 announced in November 2021, Chuden group set a goal of consolidated ordinary income of more than 250 billion yen in FY2030, and aims to secure approx. 80 – 90 billion yen of the profit in sales and power generation business, including CO<sub>2</sub>-free electricity plans.

The amount entered for potential financial impact is the total of sales and power generation business, including CO2-free electricity plans, out of the consolidated ordinary income targeted for FY2030.

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**Type of opportunity**

Products and services

**Primary water-related opportunity**

Sales of new products/services

**Company-specific description & strategy to realize opportunity**

Based on our extensive consulting experience, Chuden works with customers aiming at decarbonization and a sustainable society. Through technological development, we solve issues such as 3R (Reduce, Reuse, Recycle), energy conservation, CO2 reduction, and equipment maintenance, that our customers cannot completely resolve with their existing technological efforts. Chuden recognizes a new opportunity in this development of solutions that are one step ahead in meeting customer needs, and we are developing service strategically.

Chuden has developed a high-efficiency fine bubble liquid purifier that can efficiently remove impurities and purify cleaning solutions which are used in automobile factories, etc. using fine bubbles (very small bubbles with a diameter of 0.1 - 0.01 mm) and we are proposing this technology mainly to automobile factory customers.

The use of fine bubbles has made it possible to efficiently remove impurities such as oil and sludge which is generated by the continuous use of cleaning solution (cleaning liquids used in cleaning process in automobile factories, etc. and coolant liquids used in machining processes), and the rate of separation of impurities from liquid has been improved by 70% compared with previous performance.

In the past, it was necessary to discard the cleaning solution after cleaning and replace it on a regular basis; however, using this device extends the life of the cleaning solution, reducing re-purchase and replacement, and significantly reducing the amount of waste solution. This has an impact on water consumption, reducing water use by our customers.

“Development of high-efficiency fine-bubble liquid purification equipment to help realize a recycling society” implemented by Chuden with Kansai Automation Equipment Co., Ltd. received the 2021 METI Industrial Technology Environmental Agency Director’s Award, Resource Recycling Technology and System Awards (organized by Japan Environmental Management Association for Industry, supported by METI). Resource Recycling Technology and System Award is a system which recognizes excellent business practices and efforts that contribute to reduction of waste, reuse of goods and materials, and effective use of recycling resources and those which have features of advanced technology or progressive system in the age of SDGs. This new equipment was highly rated because it contributes to the realization of a sustainable recycling society.

**Estimated timeframe for realization**

Current - up to 1 year

**Magnitude of potential financial impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)****Potential financial impact figure – minimum (currency)**

80,000,000,000

**Potential financial impact figure – maximum (currency)**

90,000,000,000

**Explanation of financial impact**

In Management Vision 2.0 announced in November 2021, Chuden group set a goal of consolidated ordinary income of more than 250 billion yen in FY2030, and aims to secure approx. 80 – 90 billion yen of the profit in sales and power generation business, including solutions services.

The amount entered for potential financial impact is the total of sales and power generation business including solutions services, out of the consolidated ordinary income targeted for FY2030.

**Type of opportunity**

Products and services

**Primary water-related opportunity**

Sales of new products/services

**Company-specific description & strategy to realize opportunity**

Chuden provides an automated water supply meter reading service that utilizes our smart electricity meter communication infrastructure. The smart electricity meter that Chuden has been installing since 2015 has a communication function that permits remote meter readings and on/off power switching.

The automated water supply meter reading service uses the same system, thereby solving issues experienced by local gas and water suppliers, by enabling remote water supply meter readings and monitoring through two-way communication using the smart electricity meter communication infrastructure. Additional functions are improving water conservation awareness and supporting early water-leak detection in the community by visualizing water consumption, contributing to effective use of water resources. Chuden recognizes this is a water-related opportunity in a new growth area where our technology can help resolve social and community issues, and we plan to strategically expand this service.

In this automated meter reading service, a communication terminal is hard-wired to the customer's water meter and the communication terminal is linked wirelessly to the smart electricity meter through the existing network. We can then monitor usage and leaks in

real time, a process which formerly involved staff making physical meter readings on site.

**Estimated timeframe for realization**

Current - up to 1 year

**Magnitude of potential financial impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

20,000,000,000

**Potential financial impact figure – maximum (currency)**

30,000,000,000

**Explanation of financial impact**

In Management Vision 2.0 announced in November 2021, Chuden group set a goal of consolidated ordinary income of more than 250 billion yen for FY2030. It aims to secure approx. 20 – 30 billion yen of the profit in new growth areas, including automated smart water meter reading.

The amount entered for potential financial impact is the total of new growth areas including automated smart water meter reading, as part of the consolidated ordinary income targeted for FY2030.

## W6. Governance

### W6.1

**(W6.1) Does your organization have a water policy?**

Yes, we have a documented water policy that is publicly available

### W6.1a

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

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water	In Chubu Electric Power Company (Chuden)'s business activities, it is essential to secure sufficient volumes of water such as seawater and fresh water required for operation of the nuclear power station, biomass power station, and hydro power stations. In regard to wastewater, an enormous volume of warm wastewater used to cool



		<p>Description of business impact on water</p> <p>Company water targets and goals</p> <p>Commitments beyond regulatory compliance</p> <p>Commitment to stakeholder awareness and education</p> <p>Recognition of environmental linkages, for example, due to climate change</p>	<p>steam generated in power generation at the nuclear power station and the biomass power station is discharged. Therefore, for operating the power stations, Chuden measures and monitors withdrawals of seawater and fresh water and measures the temperature difference between withdrawals and discharges of warm wastewater, and monitors to keep the temperature difference within the limit, to minimize the effects on marine organisms.</p> <p>In order to clarify the importance of water in such business activities as our policy, Chuden revised the <b>Chubu Electric Power Group Basic Environmental Policy</b>, a basic policy concerning environmental conservation based on the Chubu Electric Power Group CSR Declaration in March 2021, and specified that to “protect our rich natural environment, we will take into account ecosystem biodiversity and water resource sustainability as we conduct our business activities.” This policy specifies that Chuden should contribute toward realization of a society harmonious with nature by considering the sustainability of water resources and should deepen communication concerning the environment and energy with communities and cultivate human resources that can take environmentally friendly actions voluntarily to improve environmental awareness including water resources.</p> <p>The Chubu Electric Power Group CSR Declaration specifies that the Chuden group should “contribute to the development of a sustainable society by giving top priority to safety and striving both to provide a stable supply of energy and to protect the global environment. We aim to accomplish these goals through business activities that allow the individuality of group companies to be fully expressed while achieving group synergy in enterprises within our core competence in energy.” Therefore, the scope of the Basic Environmental Policy is also specified for the entire group based on this declaration.</p> <p>Based on “consideration of sustainability of water resources” specified by this policy, all of Chuden’s power stations measure and monitor wastewater quality based on the Water Pollution Prevention Act and agreements with local governments, and business establishments aim to commit zero violations of laws or agreements. The target benchmark is to match the previous fiscal year’s figures for</p>
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			<p>water usage per office employee when averaged on a company-wide basis.</p> <p>In order to “enhance environmental awareness” in this policy, including for water resources, Chuden implements activities that include Chuden group employees and their families cooperating with an environmental NPO in coastal protection activities, and Chuden group ECO social contribution activities, including education about the conservation of aquatic organisms such as loggerhead turtles. Chuden also cultivates Chuden Foresters, volunteers who are involved in forest preservation activities such as tree thinning, which are important for watershed protection and landslide prevention, etc. in planted forests of Japanese cedars and hinoki cypress. Chuden actively works on educational activities for communities and employees, educating all our employees on environmental law related to our business activities, regular dissemination of information to all employees designed to increase their environmental awareness, and via the in-house website, encouraging water conservation among employees. In addition, as an initiative targeting the sustainability of water resources, Chuden focuses on watershed protection, the ability of forests to nurture water as a water recharge function. We also work on visualization of the watershed protection ability of our company-owned forest, Uchigatani Forest, in joint research with Nagoya University. We also conduct research on water neutrality, a concept in which our business’s water consumption volume equates to its water production.</p> <p>Chuden also supports the Ministry of the Environment’s Plastic Smart Campaign, an initiative which aims to accelerate the existing movement towards solving the issue of marine plastic waste, which affects the marine environment.</p>
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## W6.2

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

Yes

### W6.2a

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

Position of individual	Please explain
President	<p>The Board of Directors of Chubu Electric Power Company (Chuden) is composed of 9 directors, including Outside Directors, and the President unifies the operation of the company according to resolutions made at the Board of Directors' meetings. The Board of Directors discusses and decides on substantive matters of management, such as climate change, and Directors report on situations concerning execution of operations. Chuden recognizes addressing climate change and water related issues as a critical issues that requires management decisions in its business activities. Responsibility for solving water-related issues includes reduction of water withdrawals when constructing power stations that use large volumes of water, securing water quality, and preserving the marine ecosystem, etc.</p> <p>In the Chubu Electric Power Group Management Vision 2.0 announced in November 2021, the Chuden group announced that it would provide a base to support transformation to a decarbonized, safe and secure, and self-distributed and circular society to take on the challenge of decarbonization with customers and society. Working towards 2030, we have decided to promote decarbonization of power systems with the expansion of renewable energy including hydro and biomass power generation and maximum utilization of nuclear power generation, etc., as well as decarbonization on the demand side with promotion of electrification. At the same time, looking ahead to 2050, we will continue to promote initiatives such as hydrogen and ammonia demonstrations. As part of this, we have set a new goal of expansion of renewable energy by around 2030, taking our previous goal one step further and aiming for at least 3.2 million kW (8 billion kWh). In the <b>Zero Emissions Challenge 2050</b>, aiming to achieve <b>decarbonization</b> and <b>safety, stability, and efficiency</b> together by promoting electrification and decarbonization of energy use together with customers, we aim to reduce CO2 emissions generated from sales to customers in 2030 by at least 50%. These issues relating to climate change and efforts for the realization of a carbon-free society including hydro and biomass power generation are being discussed at various committee meeting structures such as the Board of Directors meetings, and the President unifies operation of the company based on these discussions.</p> <p>*In accordance with the articles of incorporation, Chuden has appointed a Chairman through the resolution of the Board of Directors. Therefore, currently the Chairman is acting as chairman of the Board of Directors and is presiding over the operation of the company. In addition, the President is unifying the execution of the operation of the company.</p>

## W6.2b

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

Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain

Row 1	Scheduled - some meetings	<p>Monitoring implementation and performance</p> <p>Overseeing major capital expenditures</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding strategy</p> <p>Reviewing and guiding corporate responsibility strategy</p> <p>Setting performance objectives</p>	<p>Chuden holds the Board of Directors meetings once a month in principle. At the Board of Directors meetings, critical issues relating to nuclear power generation including issues related to water, biomass power generation, and hydro power generation are discussed and decided and execution of duties is monitored through reports from Directors. In order to reinforce the supervisory function, Chuden has also introduced External Directors and currently, of the 9 members of the Board of Directors, three members are External Directors.</p> <p>Twice-yearly reports from the Directors are comprehensive reports on the entire plan. They include details of progress of development and operation of renewable energy related to critical issues, including water-related issues.</p>
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## W6.2d

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

	Board member(s) have competence on water-related issues	Primary reason for no board-level competence on water-related issues	Explain why your organization does not have at least one board member with competence on water-related issues and any plans to address board-level competence in the future
Row 1	No, and we do not plan to address this within the next two years	<p>Other, please specify</p> <p>To respond to water-related issues, the President, who is a member of the Board of Directors and the chief executive officer, makes executive</p>	<p>Chuden recognizes that water-related issues are critical issue that require management decisions in our business activities. Therefore, the President, who is a member of the Board of Directors and the chief executive officer, executes operations based on resolutions of the Board of Directors and conducts monitoring on risks related to water and the progress of efforts related to evaluation and management of opportunities.</p> <p>Specifically, as a subordinate meeting committee structure of the Board of Directors, Chuden established the Senior Executive Committee comprised of the President, Executive Vice Presidents, Executive Officers, and the President of</p>

		<p>decisions based on resolutions of the Board of Directors, and monitors progress of related initiatives. Chuden has a system of supervision by all the members of the Board of Directors.</p>	<p>Chubu Electric Power Miraiz Company. The Committee is held once a week in principle to discuss in advance the agenda of the Board of Directors, such as annual management plans. Other substantive matters concerning the execution of operations that are not subject to the above are decided by the President through consultation with the Senior Executive Committee. Responsibilities for solving water-related issues include reduction of water intake when constructing power stations, which use large volumes of water, securing water quality, and preserving marine ecosystems, etc.</p> <p>In this regard, in response to water-related issues including hydro power generation, biomass power generation, and nuclear power generation, Chuden has frameworks of supervision at Board of Directors level, monitoring of the progress of related efforts, and management of risks that may have a significant impact on the entire business, and reflects them in planning.</p> <p>Chuden recognizes water-related issues linked to climate-related issues as a priority, and also responds to water-related issues as climate-related issues. The Chuden group aims to achieve decarbonization and safety, stability, and efficiency together, through innovation in energy infrastructure. This is an intrinsic factor in our management and it relates to all the items in directors' and auditors' expertise and experience, so we do not set individual agenda items for decarbonization, environment, and water in the skill matrix. Therefore, Chuden does not at present specify a "board member with competence on water-related issues" for water-related issues.</p>
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### W6.3

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

**Name of the position(s) and/or committee(s)**

President

**Responsibility**

Assessing water-related risks and opportunities  
 Managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**

Half-yearly

**Please explain**

Chuden recognizes that water-related issues are critical issue that require management decisions in our business activities. Therefore, the President, who is a member of the Board of Directors and the chief executive officer, executes operations based on resolutions of the Board of Directors and conducts monitoring on the progress of efforts related to evaluation and management of water-related risks and opportunities.

Specifically, as a subordinate meeting committee structure of the Board of Directors, Chuden established the Senior Executive Committee comprised of the President, Executive Vice Presidents, Executive Officers, and the President of Chubu Electric Power Miraiz Company.

The Committee is held once a week in principle and has previously discussed agenda items referred to the Board of Directors such as an annual management plan. Other substantive matters concerning the execution of operations that are not subject to the above are decided by the President through consultation with the Senior Executive Committee. Responsibilities for solving water-related issues include reduction of water intake when constructing power stations that use large volumes of water, securing water quality, and preserving marine ecosystem, etc.

**W6.4**

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

	Provide incentives for management of water-related issues	Comment
Row 1	No, and we do not plan to introduce them in the next two years	

**W6.5**

**(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?**

- Yes, trade associations
- Yes, funding research organizations

**W6.5a**

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

Policies associated with water related issues, matters relating to the government and industrial areas, and development that may have influence on the business activities of electric utility companies, are collected and summarized at the Federation of Electric Power Companies (FEPC), and the content is reported and shared with the monthly Senior Executive Committee in order for Chuden to respond in a timely way and for this to be reflected on the company's Management Plan. This also facilitates communication with FEPC, not only at management levels but also at practical levels, to form a structure to respond in a timely manner. When activities intended to influence public policies and company policies do not match, and in

particular if situations occur in which policies of FEPC and the company disagree, Chuden will promote its business activities by encouraging discussion of continuing activities in FEPC.

## W6.6

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

No, but we plan to do so in the next two years

## W7. Business strategy

### W7.1

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

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	21-30	<p>To implement business plans for the realization of a carbon-free society, Chuden is committed to constructing power stations utilizing renewable energy such as hydro and biomass power generation that use large volumes of water. In March 2021, Chuden group announced <b>Zero Emissions Challenge 2050</b>, aiming to achieve <b>decarbonization</b> and <b>safety, stability, and efficiency</b> together, through innovation of the energy infrastructure, in conjunction with society and customers.</p> <p>In this effort, Chuden aims at CO2 net zero emissions by 2050 throughout the entire business of our group, to contribute to the realization of a carbon-free society. Specifically, Chuden will work on <b>electrification and optimization of energy use</b> with customers, as well as <b>decarbonization of electricity to be delivered</b>, by maximum utilization of non-fossil energy with introduction of more renewable energy, including hydro and biomass power generation.</p> <p>Renewable energy will become the main power source, as stated in the current Strategic Energy Plan. We recognize that Chuden group's asset building corresponds to these mid- to long-term energy policies.</p>

<p>Strategy for achieving long-term objectives</p>	<p>Yes, water-related issues are integrated</p>	<p>11-15</p>	<p>As a strategy to achieve our long-term business targets, renewable energy development goals, including hydro and biomass power generation, which use large volumes of water, have been integrated into our long-term business plans such as Management Vision 2.0, and announced publicly. As a specific plan, within our service area, Chuden will continue to develop the construction of the Seinaiji Hydroelectric Power Station, Abekawa Hydroelectric Power Station, Aichi Gamagori Biomass Power Plant, Omaezaki Port Biomass Power Plant, Godo Biomass Power Plant, and Minokamo Biomass Power Plant. Chuden is also moving forward with the Tahara Biomass Power Plant, which has been authorized for development. Since it is also important to find development sites out of our service areas, Chuden continues to develop wood biomass single fuel combustion power stations in Kamisu City, Ibaraki prefecture; Yatsushiro City, Kumamoto prefecture, and Fukuyama city, Hiroshima prefecture.</p> <p>With expansion of ESG investment, the number of customers who support efforts such as RE100 is increasing. Chuden recognizes it as an important opportunity related to water to respond to diversifying needs of customers and develop products strategically.</p>
<p>Financial planning</p>	<p>Yes, water-related issues are integrated</p>	<p>11-15</p>	<p>To implement business plans for the realization of a carbon-free society, Chuden is committed to constructing power stations that use large volumes of water. Due to the considerable costs in constructing power stations, Chuden includes the costs in financial plans. Specifically, this refers to costs of implementing the development and deployment of hydroelectric power stations in Abekawa, Seinaiji and Uchigatani, etc.</p> <p>To promote such efforts, Chuden will diversify our financing by utilizing products such as green bonds, which are bonds limited to environment improvement projects such as development of renewable energy.</p> <p>The Chuden group Renewable Energy Company has introduced the Toyota Production System (TPS) and is making efforts to improve productivity. Chuden has set a goal to “triple productivity through new ideas outside the box” and is carrying out cumulative total of 136 projects as of March 2022. Chuden has also changed its organizational structure to a system that manages the renewable energy business in an integrated way. When torrential rain occurred in 2019, the Hydro Administration Center demonstrated its mobility in swift</p>



			restoration activity and minimized financial loss caused by unexpected water risks.
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## W7.2

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

### Row 1

#### Water-related CAPEX (+/- % change)

2,285

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

3,000

#### Water-related OPEX (+/- % change)

27,589

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

27,600

#### Please explain

The monetary unit for capital investments and operating costs related to water is 100 million yen.

For these costs, the company entered its capital investments and operating expenses, and their total volume. There are no resources to calculate the specific percentage of capital investments related to water within the total investment, or the percentage of operating costs related to water within total operating costs, and also the scope of the answers to this questionnaire covers nuclear power and renewable energy (biomass and hydro power), which account for almost all of the company's facilities. The costs above include capital investments and operation costs involved in creating water-related business opportunities such as "provision of CO2-free electricity plans derived from renewable energy sources such as hydro power generation," "solutions services incorporating high-efficiency fine bubble liquid cleaning equipment" and "automated water meter reading services." Though there are also no resources to specifically calculate capital investments and operating costs related to water in the next reporting year, our business plan is expected not to change drastically and therefore we consider this valid.

Capital investment costs slightly decreased compared to those of the previous fiscal year. This is largely because Chuden worked on investment in non-fossil power sources such as hydro power generation facilities and nuclear power generation facilities and tried to maximize operating efficiency by streamlining facilities, etc., with the whole group simultaneously striving to secure the stable supply of electric power and public safety.



### W7.3

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

	Use of scenario analysis	Comment
Row 1	Yes	<p>Chuden established the Electric Power Council for a Low Carbon Society (ELCS) with other electric business utilities with the aim to achieve the emissions reduction target (0.37kg- CO2/kWh in FY2030) consistent with Japanese government NDC, and is committed to achieve the target. Related to these voluntary frameworks set by the electric utility industry, the government introduced standards for newly-built coal-fired power stations, etc., and introduced benchmarks related to the power generation efficiency of thermal power generation at operation, and these relate to all the power generation companies subject to the Act on the Rational Use of Energy, and are intended to secure effectiveness and transparency. For retail companies, the target for non-fossil fuel ratio consistent with the energy mix (44% in 2030) has been set in the Act on Sophisticated Methods of Energy Supply Structures (Sophisticated Methods Act). Based on the NDCs, the current Basic Energy Plan and the forecast on long-term energy supply and demand, the Corporate Planning &amp; Strategy Division in particular has analyzed its business environment up to 2050 on the assumption of abiding by the requirements of environmental regulation provided in the Sophisticated Methods Act, etc. The results of analyses are being incorporated into the annual business plan and reflected in the Chubu Electric Power Group Management Vision 2.0. Through these analyses, Chuden recognizes the need to make further efforts to improve the non-fossil fuel ratio. As a response to this need, Chuden plans to maximize the utilization of the Hamaoka Nuclear Power Station. On renewable energy power sources, Chuden furthers efforts by setting a target to contribute to expansion of more than 3.2 million kW by around 2030, towards the realization of a carbon-free society. Chuden has also selected the 2 Degree Scenario (refers to IEA sustainable development scenario) and the 4 Degree Scenario (refers to IPCC RCP8.5 Scenario), and based on these Scenarios, Chuden conducted its business impact assessment attributable to transition risks, opportunities, and physical risks, with a focus on the middle of this century, and disclosed the results in the Group Report 2021 in August 2021.</p>

### W7.3a

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

Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy

<p>Row 1</p>	<p>Water-related Climate-related</p>	<p>Chuden and its operating companies have selected for its scenario analysis the 1.5 Degree Scenario (refers to IEA, Net Zero by 2050, the national policy target) and 4 Degree Scenario (refers to IPCC, RCP8.5 Scenario). Based on these scenarios, Chuden conducted a business impact assessment for transition risks and opportunities, and physical risks, with a focus on the middle of this century, and disclosed the results in the Group Report 2021 in August 2021.</p> <p>In conducting scenario analysis, Chuden and the operating companies considered that it was appropriate to visualize the transition risks based on the data available from the International Energy Agency (IEA), an international organization conducting research on energy. Having compatibility with our business in mind, we decided to refer to the Net Zero by 2050 Scenario which predicts 1.5 degrees of average global warming, from IEA. To conduct scenario analysis for physical risks, Chuden and the operating companies decided to refer to RCP8.5, the 4 °C Scenario of IPCC 2014, the Fifth Assessment Report issued by the Intergovernmental Panel on Climate Change (IPCC), in which vast knowledge concerning climate change is accumulated.</p>	<p>Through our scenario analysis, Chuden recognized that the power source ratio of hydro power generation, which is the main source of non-fossil power, accounts for 9% of our power supply at present, and further efforts to increase the non-fossil fuel ratio including hydro power generation are required to realize a carbon-free society.</p> <p>Chuden considers the growing customer demand for carbon-free energy use due to increased awareness of renewable energy and environmental concerns, recognized in the 1.5 Degree Scenario, has a great impact on the business of Chuden, whose</p>	<p>Based on the NDCs, the current Strategic Energy Plan and the forecast on long-term energy supply and demand, the Corporate Planning &amp; Strategy Division in particular has analyzed its business environment up to 2050 on the assumption of complying with the requirements of environmental regulations set out in the Sophisticated Methods Act, etc. The results of analyses are incorporated into the annual business plan and reflected in the Chubu Electric Power Group Management Vision 2.0. As part of this vision, Chuden plans to maximize the utilization of the Hamaoka Nuclear Power Station. On renewable energy power sources, Chuden has set a target to contribute to the expansion of over 3.2 million kW by around 2030, to contribute to the realization of a carbon-free society.</p> <p>As a specific example, we are planning to invest around 400 billion yen in the decade from FY2021 to FY2030, mainly in renewable energy businesses including hydro power generation, as a strategic investment in growth areas, in light of the acceleration of decarbonization policies. Renewable energy will become the main power source according to the current Strategic Energy Plan's direction of policy aimed at 2030. We recognize that Chuden group's asset building corresponds to these mid- to long-term energy policies. With the expansion of ESG</p>
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		<p>Chuden established the Electric Power Council for a Low Carbon Society (ELCS) with other electric business utilities with the aim of achieving the emissions reduction target (0.37kg-CO2/kWh in FY2030) consistent with Japanese government NDC, and is committed to achieve the target. With a view to securing effectiveness and transparency, related to the voluntary framework of the electric business industry, the Japanese government has set a non-fossil power source ratio target (44% in 2030) in line with the energy mix in the Act on Sophisticated Methods of Energy Supply Structures (Sophisticated Methods Act) relating to retail companies.</p>	<p>main product is electric power generated from renewable energy sources including hydro power generation. We see this as an important water-related opportunity to respond to the diversifying needs of our customers and develop products strategically.</p>	<p>investment as a background, the number of customers that agree with projects such as RE100 is increasing. Based on this movement, we are planning to further advance the development of renewable energy, including the group companies, and to increase earnings by meeting the needs of customers interested in reducing the environmental burden by providing CO2-free electricity plans that also utilize our non-fossil power sources with annual power generation of about 8.7 billion kWh (result in 2021).</p>
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## W7.4

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

Row 1

#### Does your company use an internal price on water?

No, and we do not anticipate doing so within the next two years

#### Please explain

We do not plan to implement an internal price for water.

## W7.5

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

Products and/or services classified as	Definition used to classify low water impact	Please explain

	low water impact		
Row 1	Yes	<p>Chuden uses the following definitions to categorize the impact on water as low: (1) Introduction of our additional services results in lower customer water consumption compared to consumption without our service, and (2) The water quality is improved compared to without our service. These standards are applied at the time the service is introduced to customers in our value chain, and are applied to customer water consumption, waste water volume, and quality of water in liquids such as cleaning solutions.</p>	<p>Chuden has developed a “high-efficiency fine bubble liquid purifier” that can efficiently remove impurities and purify cleaning solutions which are used in automobile factories, etc. using fine bubbles (very small bubbles with a diameter of 0.1 - 0.01 mm) and we are proposing this technology mainly to automobile factory customers.</p> <p>The use of fine bubbles has made it possible to efficiently remove impurities such as oil and sludge which is generated by the continuous use of cleaning solution (cleaning liquids used in cleaning process and coolant liquids used in machining processes in automobile factories, etc.), and the rate of separation of impurities from liquid has been improved by 70% compared with previous performance.</p> <p>In the past, it was necessary to discard the cleaning solution after cleaning and replace it on a regular basis; however, using this device extends the life of the cleaning solution, reducing re-purchase and replacement, and significantly reducing the amount of waste solution. This has an impact on water consumption, reducing water use by our customers.</p> <p>The effect of introduction of the service varies depending on the status of previous water use in the relevant plant; however, significant water consumption reductions are achieved. As an example of the effects that can be achieved, in one plant, by regenerating and reusing cleaning solutions (which was previously impossible) the waste liquid volume of an entire plant was halved and the 1.2 tons of steam formerly necessary to concentrate 1 ton of waste liquid were reduced to zero.</p> <p>We set out integrated development solutions to make deep inroads into customer on-site diversifying issues to improve energy saving and productivity. As part of this initiative, the “development of high-efficiency fine-bubble liquid purification equipment to help realize a recycling society”, implemented by Chuden with Kansai Automation Equipment Co., Ltd., received the 2021 METI Industrial Technology Environmental Agency Director’s Award, Resource Recycling Technology and System Awards (organized by Japan Environmental Management Association for Industry, supported by METI). The Resource Recycling Technology and System Award is a system which recognizes excellent business practices and efforts that contribute to reduction of waste, reuse of goods and materials, and effective use of</p>

			<p>recycling resources and those which have features of advanced technology or progressive systems in the age of SDGs. This new equipment was highly rated because it contributes to the realization of a sustainable recycling society.</p> <p>Based on our extensive consulting results, we work with customers to address issues such as 3R (Reduce, Reuse, Recycle), energy saving, CO2 saving, and facilities maintenance, aiming at decarbonization and a sustainable society. We offer varied solutions services to meet customer needs.</p>
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## W8. Targets

### W8.1

**(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.**

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	<p>Company-wide targets and goals</p> <p>Business level specific targets and/or goals</p> <p>Site/facility specific targets and/or goals</p>	<p>Targets are monitored at the corporate level</p> <p>Goals are monitored at the corporate level</p>	<p>Water quality, measurement frequency, and measurement methods for wastewater are provided for in the Water Pollution Prevention Act and agreements with local governments.</p> <p>All Chubu Electric Power Company (Chuden) power stations perform measurement and monitoring based on these provisions. In regard to wastewater quality monitoring, water temperature is monitored at the nuclear power station and pH, COD, SS, etc. are measured monthly.</p> <p>Business establishments aim to commit zero violations of laws or agreements.</p> <p>Chuden Headquarters aims for zero violations of laws or agreements for each business establishment.</p> <p>In case environmental problems occur due to a violation of the law, etc., Chuden has institutionalized a mechanism to report to our Headquarters and related administration, and Headquarters conducts monitoring on whether violations of laws or agreements in business establishments have taken place.</p> <p>Additionally, water conservation activities are monitored at the offices of the Headquarters.</p>

## W8.1a

**(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.**

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**Target reference number**

Target 1

**Category of target**

Water pollution reduction

**Level**

Site/facility

**Primary motivation**

Reduced environmental impact

**Description of target**

Water quality, measurement frequency, and measurement methods of wastewater from thermal and nuclear power generations are provided for in the Water Pollution Prevention Act and agreements with the local governments. All Chuden's power stations undertake measurement and monitoring of the quality of wastewater based on these provisions. Business establishments aim to ensure that there are no violations of laws or agreements and Chuden Headquarters aims to ensure that there are no violations of laws or agreements in each business establishment.

**Quantitative metric**

% proportion of wastewater that is safely treated

**Baseline year**

2020

**Start year**

2020

**Target year**

2021

**% of target achieved**

100

**Please explain**

In FY2020, there were no violations of laws, etc. relating to waste water at business establishments.

## W8.1b

**(W8.1b) Provide details of your water goal(s) that are monitored at the corporate level and the progress made.**

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### Goal

Providing access to safely managed Water, Sanitation and Hygiene (WASH) in workplace

### Level

Company-wide

### Motivation

Reduced environmental impact

### Description of goal

As a company using large amount of water, Chuden considers that it is important for each and every employee to take an interest in water resources. For this purpose, Chuden implements water conservation in offices as an activity in which every employee can participate, and aims to improve the water conservation awareness of every employee. In company offices, water conservation measures are implemented by proactively installing water-saving sanitary equipment (toilet systems, faucets with sensor, etc.) to reduce water usage. We monitor the volume of water used in the office, and aggregate it on a company-wide basis, disclose and visualize the amount of water used per employee, and post results to our website to raise employee awareness of water conservation and reduce consumption. The target benchmark is to match the previous fiscal year's figures for water usage per office employee when accumulated on a company-wide basis.

### Baseline year

2020

### Start year

2020

### End year

2021

### Progress

The FY2021 figures for water usage per office employee were nearly the same as in the previous fiscal year. The target benchmark is to match the previous fiscal year's figures for water usage per office employee when accumulated on a company-wide basis. Therefore, Chuden judges that the targets of implementing water conservation at offices and raising employee water conservation awareness have been achieved.

## W9. Verification

### W9.1

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

No, we are waiting for more mature verification standards and/or processes

## W10. Sign off

### W-FI

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

### W10.1

**(W10.1) Provide details for the person that has signed off (approved) your CDP water response.**

	Job title	Corresponding job category
Row 1	General Manager, Corporate Planning & Strategy Division	Other C-Suite Officer

### W10.2

**(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate's Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].**

## Submit your response

**In which language are you submitting your response?**

Japanese

**Please confirm how your response should be handled by CDP**

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public





**Please confirm below**

I have read and accept the applicable Terms