

Chubu Electric Power Co., Inc. - Water Security 2021

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 holds 9,168MW of power generation capacity (nuclear power generation: 3,617MW; hydro power generation: 5,463MW; new energy: 88MW; thermal power generation as emergency power generation facility: 0.4MW), about 12,000km of power transmission lines, and about 135,000km of power distribution lines. The electrical energy sold in FY2020 by the Chuden group was nearly 117.2 billion kWh, making it represent the second biggest electric power company in Japan. Focusing on the energy business, all of the 93 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. *"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) For your electricity generation activities, provide details of your nameplate capacity and the generation for each technology.

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	336
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	5,462.8	59.6	8,253
Wind	22	0.2	42
Solar	16.5	0.2	25
Marine	0	0	0
Other renewable	0	0	0
Other non-renewable	0	0	0
Total	9,167.7	100	8,656

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 2020	March 31 2021

W0.3

(W0.3) Select the countries/areas for which you will be supplying data.

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.

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

W0.6

(W0.6) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

No

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	Not very important	<p>Chubu Electric Power Company (Chuden) uses fresh water in nuclear power generation, biomass power generation, and hydro power generation respectively.</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. 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</p>

			<p>filtration and ion-exchange and uses water purified to pure level water or ultrapure level water in the station.</p> <p>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. It is also essential for the hydro power generation process that the volume of good quality fresh water from the sources described is maintained as sufficient.</p> <p>Based on these factors, Chuden considers that the current and future importance of the direct use of a sufficient volume of good quality fresh water in nuclear power generation, biomass power generation, and hydro power generation processes is vital to operations.</p> <p>In regard to indirect utilization, Chuden considers this as having minor importance, since there are no specific requirements on suppliers relating to the volume and quality of fresh water, as well as no requirements from customers regarding the volume and quality of fresh water in our continued operation.</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 considers that the importance rating for the use of sufficient amount of quality fresh water in direct operation will not change.</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>
Sufficient amounts of recycled, brackish	Important	Not very important	<p>Chuden does not generate water as part of its business operation, and therefore does not use generated water. Moreover, Chuden does not supply high salt concentration water such as brackish water, and thus does not utilize it since there is nowhere it would be used.</p>

<p>and/or produced water available for use</p>		<p>Recycled water is used in nuclear power generation and biomass power generation in Chuden’s power generation business. In the power generation processes, Chuden first implements removal of impurities in water through filtration and ion-exchange by treating fresh water, and then purifies to pure and ultrapure level water to use it in the station. 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>Chuden considers that it is essential to use a sufficient volume of recycled water in this process, and the importance of the direct use of recycled water is <i>vital</i>, leading to reduction in water costs on receipt.</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, most of the steam is used cyclically for driving turbines.</p> <p>In regard to indirect utilization, Chuden considers this as having <i>minor importance</i>, since there are no specific requirements on suppliers relating to the volume and quality of recycled water, etc. as well as no requirements from customers regarding the volume and quality of recycled water, etc. in our continued operation.</p> <p>Since no substantial changes in our current power generation process or generation facilities are planned to take place for as long as our power generation business continues, Chuden considers that the importance rating for the use of sufficient amounts of recycled, brackish and accompanying water in direct operation will not change.</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"> ① Seawater ② Fresh water (water purchased from third parties; industrial water / tap water) ③ Fresh water (other than above: river water) <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> <ul style="list-style-type: none"> ① Seawater ② Fresh water (water purchased from third parties; industrial water / tap water) ③ Fresh water (other than above: river water) <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</p>

		<p>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 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.</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 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 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 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>
<p>Water discharge quality – by standard effluent parameters</p>	<p>100%</p>	<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%	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.
Water consumption – total volume	100%	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.
Water recycled/reused	100%	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. Fresh water recycled and discharged out of power generation processes is treated before being discharged from the power station. Recycled water is measured using flowmeters. For the volume purchased from third parties, it is assumed to be 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	% of sites/facilities/operations measured and monitored
Fulfilment of downstream	100%	At hydro power stations, based on the guidelines provided by the government, Chuden discharges

environmental flows		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		

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	50,584,856	Lower	<p>The total withdrawals reduced compared to the previous fiscal year. This is largely because the capacity factor of hydro power stations declined slightly compared to the previous fiscal year.</p> <p>The values are the total value of the following:</p> <ul style="list-style-type: none"> ① Seawater drawn at the nuclear power station and biomass power station. ② Fresh water purchased from third parties at the nuclear power station, biomass power station and business establishments. ③ Fresh water (river water) drawn at hydro power stations and the nuclear power station. <p>In the future, we consider that this will increase as the nuclear power station resumes operation.</p>
Total discharges	50,584,770	Lower	<p>The total discharges reduced compared to the previous fiscal year. This is largely because the capacity factor of hydro power stations declined slightly compared to the previous fiscal year.</p> <p>The values are the total value of the following:</p> <ul style="list-style-type: none"> ① Seawater discharged to the sea at the nuclear power station and biomass power station. ② Treated fresh water discharged to the sea at the nuclear power station and biomass power station.

			<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	86	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> <p>In the future, this value is expected to vary when periodic inspections, etc. are conducted at the nuclear power station.</p>

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</p>

			<p>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>
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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	49,715,008	Lower	<p>The volume of fresh water withdrawals reduced compared to the previous fiscal year. This is largely because the capacity factor of the hydro power stations slightly declined compared to the previous fiscal year.</p> <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</p>

				Tourism and the volume of water drawn from rivers at the nuclear power station.
Brackish surface water/Seawater	Relevant	869,373	Lower	<p>The total seawater withdrawal amount reduced compared to the previous fiscal year. This is largely because the seawater amount required for operation reduced because of the review of the operation method of the nuclear power station.</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 exchangers to cool steam utilized in power generation, though it is not consumed.</p>
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 accompanying water or impure water.
Third party sources	Relevant	475	About the same	<p>The volume of water purchased from third parties is nearly the same as the previous fiscal year. This is because the water consumption at the Yokkaichi Biomass Power Plant increased by nearly the same volume as the reduction of water consumption at offices due to the impact of COVID-19 when the plant commenced commercial operation. 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.</p>

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	49,714,894	Lower	<p>Discharge of fresh water to surface (rivers) reduced compared to the previous fiscal year. This is largely because the capacity factor of the hydro power stations declined slightly compared to the previous fiscal year.</p> <p>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.</p>
Brackish surface water/seawater	Relevant	869,481	Lower	<p>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.</p> <p>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.</p> <p>Seawater used in the nuclear power station and the biomass power station is used in heat exchangers to cool steam utilized in power generation and is not consumed. Therefore, seawater is discharged as it is and the value of discharge of seawater will be the same value as the seawater withdrawals.</p> <p>Fresh water received from rivers at the nuclear power station and fresh water purchased from third parties at the biomass power station form high temperature and high pressure steam in reactors and boilers, which drives turbines to generate electricity. Fresh water used is appropriately treated as wastewater in order to be discharged to the sea. Discharge of fresh</p>

				<p>water is measured and monitored by flowmeters and the water levels of drainage tanks, or it is controlled as the same value as the withdrawals measured by flowmeters.</p> <p>Therefore, in order to continue efficient operation of the nuclear power and biomass power generation, the capability to discharge seawater and fresh water to the sea has a significant connection.</p>
Groundwater	Not relevant		<Not Applicable>	<p>Chuden does not own any installations that discharge water by penetrating below-ground aquifers.</p>
Third-party destinations	Relevant	395	About the same	<p>Discharge to third parties are nearly the same as the previous fiscal year. This is because the discharge to third parties in the Yokkaichi Biomass Power Plant increased by nearly the same volume as the reduction of discharge at offices due to the impact of COVID-19 when the plant commenced commercial operation.</p> <p>Business establishments owned by Chuden other than the nuclear power and 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 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> <p>At the nuclear power station and the biomass power station, treated water is discharged to the sea.</p>

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	10	This is our first year of measurement	Less than 1%	At the nuclear power station, wastewater generated in facility operation is treated in concentration and desalination installations before being discharged. 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.
Secondary treatment	Relevant	110	This is our first year of measurement	Less than 1%	On the other hand, wastewater used to wash protective clothing is discharged after impurities are removed in filtration installations such as fiber filters and activated carbon filters. Primary and secondary treatment is not conducted for this wastewater, either. 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.
Primary treatment only	Not relevant		<Not Applicable >	<Not Applicable>	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.

Discharge to the natural environment without treatment	Relevant	50,584,267	This is our first year of measurement	100%	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.
Discharge to a third party without treatment	Relevant	365	This is our first year of measurement	Less than 1%	At Chuden power stations and business establishments, the wastewater treatment level does not correspond to “only primary treatment.”
Other	Relevant	18	This is our first year of measurement	Less than 1%	Seawater used in the nuclear power station and the biomass power station is used to cool steam utilized in power generation, and wastewater is discharged as it is into the sea. Wastewater is discharged by controlling the water temperature in the designed value of the environmental impact assessment to have minimal effects on marine organisms.

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
7,044	Total water withdrawals	MWh	About the same	The intensity indicator relating to water is nearly the same as the previous fiscal year. This is because the

			<p>total withdrawals and the generated energy are nearly the same as the previous fiscal year.</p> <p>The intensity indicator relating to water increased substantially compared to the previous fiscal year. This is largely due to the transfer of our thermal power generation facilities to JERA Co., Inc. in April 2019.</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. Chuden makes efforts to increase generated energy with total withdrawals kept at the same level, by considering the optimal power generation facilities that meet the flow condition of rivers at the time of update of hydro power generation facilities, and thereby maximizes the management resource value.</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>In the future, we consider that intensity will substantially decrease as the nuclear power station resumes operation.</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 impact	Management procedures	Please explain
Thermal pollution	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.	Compliance with effluent quality standards Emergency preparedness	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

<p>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 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</p>		<p>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. 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 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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	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.		
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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.

Direct operations

Coverage

Full

Risk assessment procedure

Water risks are assessed as part of an 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
- Databases

Tools and methods used

- WRI Aqueduct
- Environmental Impact Assessment
- Regional government databases

Comment

Assessments of water related risks are performed according to the power generation processes of nuclear power generation, biomass power generation and hydro power generation. This is due to the necessity to take into consideration the fact that the nuclear power station and biomass power station is located in a coastal area and hydro power stations are located in mountainous areas, as well as the natural and social circumstances, etc. in areas surrounding each power station.

In relation to nuclear power generation, Chuden has undertaken equipment design and measures pursuant to national regulation standards, taking into consideration natural disasters such as earthquakes and tsunamis. However, after the Great East Japan Earthquake, a new regulation standard was issued, assuming the maximum height of tsunami to hit nuclear power stations to be 21.1 m above sea level. Therefore, Chuden has implemented measures such as building a breakwater with a height of 22 m above sea level and raising banking around power stations up to 24 m.

In relation to hydro power generation, 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 medium- to low-risk areas at most and some are located in low-risk areas. Based on the guidelines provided by the government, hydro power stations owned by Chuden discharge a river maintenance flow as necessary. Chuden has also designed and built dams with spillway gates to ensure flood adjustment capacity in accordance with local watersheds, to plan to reduce flood flow.

Supply chain

Coverage

None

Comment

Other stages of the value chain

Coverage

None

Comment

W3.3b

(W3.3b) Which of the following contextual issues are considered in your organization's water-related risk assessments?

	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	Securing the volume of water used in hydro power generation is important; thus, it is constantly assessed. Chuden decides on the development area to build a hydro 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. Chuden also participates in the development of multi-

		<p>purpose dams as a result of enforcement of the National Spatial Planning Act, and in addition to power generation, assesses flood control, water destined as tap water, industrial water, agricultural water, etc. In the Chubu District, there are underground tectonic lines known as the Median Tectonic Line and the Fossa Magna (Central Rift Valley); the geological features are crushed and vulnerable and the volume of sediment transported by the rivers in this District is larger than that in rivers in other regions. Sedimentation in dams in this District is progressing at the fastest rate in the country, and Chuden regularly assesses ways to control water using dams, and implements measures as necessary.</p>
<p>Water quality at a basin/catchment level</p>	<p>Relevant, always included</p>	<p>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.</p> <p>After the commencement of operation of hydro power stations, Chuden measures the turbidity of water stored in dams and in discharged water as necessary depending on location, and constantly assesses the risks after discharge.</p>
<p>Stakeholder conflicts concerning water resources at a basin/catchment level</p>	<p>Relevant, always included</p>	<p>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. For example, if muddy water containing floating sediment caused by flooding remains inside reservoirs and is discharged downstream, in the long-term it will have an effect on landscape, recreational activities, fisheries and irrigation, etc. for the relevant river. Thus, Chuden judges the risks of whether conflicts between stakeholders may occur as a result of</p>

		<p>discharging large amounts of muddy water, through environmental impact assessments during dam construction and in the in-service period, publishes those results, and assesses the risks based on results of communication with local residents.</p> <p>After commencement of operation of hydro power stations, Chuden measures the turbidity of water stored in dams and in discharged water as necessary depending on location, and constantly assesses the risks after discharge.</p>
<p>Implications of water on your key commodities/raw materials</p>	<p>Relevant, always included</p>	<p>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.</p> <p>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. In constructing a plant, Chuden examines the volume of fresh water required to operate a plant, negotiates with the supply and management administration of fresh water quality, and secures the water. Thus, Chuden judges that water as raw material has a crucial relevance to our operation.</p>
<p>Water-related regulatory frameworks</p>	<p>Relevant, always included</p>	<p>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 construction of a new power station, Chuden evaluates and identifies local risks of deviating from water-related regulations based on the results of environmental impact assessments during construction and in the in-service period. Based on the results of environmental impact assessment, etc., for nuclear power generation and biomass power generation, Chuden abides by the regulations of the Water Pollution Prevention Act. Hydro power stations owned by Chuden comply with environmental standards provided for in the Basic Environment Law relating to discharged water.</p>

Status of ecosystems and habitats	Relevant, always included	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. In the processes of hydro power generation, the effects of discharging water on the habitat conditions of flora and fauna downstream are important. The discharge of muddy water, contaminated water or polluted water during construction and after commencement of operation are considered to have effects such as loss of or change in habitat of aquatic organisms, so Chuden implements drainage measures during construction, as well as measures to maintain the flow condition and water quality of rivers after commencement of operation, to aid the assessment of environmental impact on habitat conservation. In this way, Chuden conducts environmental impact assessments for construction and assesses continuously to reduce these effects as much as possible.
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	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. As an example, if new types of germ or virus such as a highly virulent influenza strain became epidemic, many of our employees would simultaneously become unable to work, and eventually this would impede the smooth and steady performance of our business. Therefore, Chuden constantly assesses the securement of water volume and the quality of tap water when constructing business establishments and installing field stations.
Other contextual issues, please specify	Not considered	

W3.3c

(W3.3c) Which of the following stakeholders are considered in your organization’s water-related risk assessments?

	Relevance & inclusion	Please explain
Customers	Relevant, always included	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

		<p>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.</p> <p>Therefore, in hydro power generation, discharge water quality is measured with a continuous measuring device, etc. so that it is discharged below the prescribed value. If Chuden discharges water exceeding the prescribed value, procedures are established in the guidelines, etc. for operation and handling to recover promptly, and these procedures are periodically reviewed. Chuden records whether there are violations of regulations and discloses the results in annual reports, etc.</p> <p>Water generated in the nuclear power generation process by discharge from the treatment tanks is measured by collecting it in specialized tanks, and it is discharged after confirming that water does not exceed the prescribed value, etc.</p> <p>At the Hamaoka Nuclear Power Plant, we conduct various activities including plant visit tours, plant monitoring, visiting discussions, Power plant "caravans", opinion-exchange meetings, educational support to the next generations, community events and events at the Hamaoka Nuclear Power Station Exhibition Center. Through these activities, Chuden shares information on power generation mechanisms, water discharge and the status of the Station with local residents, who are our customers, hears comments and requests from the local people and responds to their requests.</p>
<p>Employees</p>	<p>Relevant, always included</p>	<p>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. As an example, if new types of germ or virus such as a highly virulent influenza strain became epidemic, many of our employees would simultaneously become unable to work, and eventually this would impede the smooth and steady performance of our business.</p> <p>Chuden creates the working environment, taking into consideration the safety and health of our employees, pays attention to the health of employees, and secures the safety of water by supplying clean drinking water and washing water in all of our business establishments. If we fail to secure clean drinking water and washing water, employees' health will suffer. To provide safe drinking water and sanitation to all of our employees, Chuden has established corporate management procedures based on related national legislation, etc. to securely manage them. In particular, Chuden has set up inspection intervals for equipment, etc. and regularly monitors by checking the quality of drinking water, etc.</p>

<p>Investors</p>	<p>Relevant, always included</p>	<p>Discharging water that deviates from regulations 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). If administrative orders were issued for a legal violation and measures applied to one power station were also a requirement for all power stations, operation of every power station would be affected and this could cause suppressed revenue in the future. In such circumstances Chuden could lose a significant level of trust of the investors in its business activities and in the investors' decision-making; they may avoid holding company stocks, which could affect Chuden's stock price. Thus, investors also have a crucial relevance in water risks assessment, and Chuden constantly includes this in the evaluation.</p> <p>To mitigate against these risks, hydro power stations owned by Chuden continually measure water turbidity using turbidimeters at water withdrawals, as required based on agreements made with local municipalities. Chuden records any regulation violations and discloses the results in annual reports, etc.</p> <p>Chuden also regularly interacts with investors including overseas investors, hears their opinions and requests concerning water risks, Chuden's responsibility system and information disclosure, etc., and responds to their requests.</p>
<p>Local communities</p>	<p>Relevant, always included</p>	<p>In order to stay in business, it is vital to build relationships with local communities. In nuclear power generation and biomass power generation processes, a large volume of seawater is required and thus these power stations must be constructed in coastal areas. In coastal areas, societies utilizing the rich natural environment and making a living through fishing, etc., were formed long before power stations were built. Also, in hydro power generation, it is necessary to have effective storage for large volumes of river water, and dams need to be built in mountainous areas, where societies utilizing this rich natural environment and making a living through agriculture and forestry, etc., were also formed long before power stations were built. Thus, local communities have a crucial relevance to the power generation business, and must be included in water risk assessment. On water related issues, Chuden exchanges opinions with local communities in which its facilities are located, and communicates interactively to ensure transparency. The outcome of these communications is reflected in the company's risk analysis. Chuden acknowledges that positive relationships with local residents and people involved in the fisheries industry, etc. form an important foundation in maintaining the management of power stations.</p>

<p>NGOs</p>	<p>Not relevant, explanation provided</p>	<p>By responding reliably to customers, employees, investors, local communities, regulation bodies, management authorities for river / water basins and other water users, etc., Chuden considers that business activities can be conducted in communities local to the site locations. Therefore, Chuden does not particularly take specific account of NGOs, and considers that they have no critical relevance in the future as well, since there are no significant changes to our business locations.</p> <p>Chuden pursues transparency by reporting any violations of environmental laws and regulations concerning water in annual reports, etc. Chuden is committed to promptly providing accurate information to inquiries from the general public as well as NGOs.</p>
<p>Other water users at a basin/catchment level</p>	<p>Relevant, always included</p>	<p>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, gives advance notice of discharge to relevant bodies, issues warnings using sirens, and patrols to prevent accidents, etc. to those who go into the rivers to fish. Furthermore, in cooperation with relevant authorities, Chuden seizes opportunities such as discharge liaison committees 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.</p> <p>Hydro power stations owned by Chuden commit to exchange information and share measures with relevant administrations and water users in cases of water shortage, and when necessary, explain the status of water sources and rainfall, participate in the water usage adjustment council, and work on power generation operational adjustment to implement measures (conserving water).The outcome of these communications is reflected in our risk analysis.</p>
<p>Regulators</p>	<p>Relevant, always included</p>	<p>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. Regarding water issues, Chuden obtains information from regulatory authorities, particularly the Ministry of the Environment, the Ministry of Land, Infrastructure, Transport and Tourism, etc., through industry groups, etc., and is working to ensure proper regulation. The outcome of these communications is reflected in our risk analysis. Each hydro power station also periodically reports on compliance with relevant legislation and environment conservation agreements, etc.</p>

River basin management authorities	Relevant, always included	Strengthening regulations concerning rivers 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.
Statutory special interest groups at a local level	Relevant, always included	In hydro power generation, Chuden maintains close communications with regional river management authorities of the Ministry of Land, Infrastructure, Transport and Tourism regarding water issues, and commits to exchanging information on environmental impact of flow adjustment, sand discharge and deposited sand and other information in information liaison meetings and information exchange meetings. The outcome of these communications is reflected in the company's risk analysis.
Suppliers	Relevant, always included	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. In regard to wastewater quality, treatment is conducted at JERA based on the standard specified by Japanese national or local government. Therefore, suppliers are relevant to our business as important stake holders, and are always included in risk evaluation.
Water utilities at a local level	Relevant, always included	Stability of water supply and water charges are important elements in our water risk assessment. The stability of water supply by the regional water supply utilities and the transition of water charges they present is an important element for Chuden to continue the business. 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 relevant to Chuden's business as important stake holders and have always been included in risk evaluation. Since water charges differ according to the regional water supply utility, each Chuden business establishment constantly keeps under consideration the supply stability and water charges based on agreements, and maintains close communications with water supply utilities.
Other stakeholder, please specify	Not considered	

W3.3d

(W3.3d) 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 Chubu Electric Power Company (Chuden), risk owners responsible for operating companies, Company, offices and departments clarify risks within the range of approximately 10 years into the future, dividing these risks operationally, evaluate risk frequency and impact (from the perspective of the cost of impact on income and expenditure such as sales and operating costs, as well as physical effect) and prioritize countermeasures according to risk management rules. Risks relating to water relate to division of duties by multiple risk owners. Among these, information on risks associated with shifting trends in water related regulations are collected and clarified by risk owners responsible for the Environmental Affairs & Regional Relations. For example, as transition risks, risk owners present increases in operational costs due to potential future imposition of carbon pricing, such as the carbon tax and emissions trading system, resulting from any future laws and regulations concerning global warming. Physical risks, on the other hand, include an increase in recovery costs from a large-scale power failure caused by power transmission and distribution facilities being damaged in a disaster such as a typhoon of an unprecedented magnitude. 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. In regard to construction and installation of new facilities of nuclear, biomass and hydro power stations using water, Chuden selects locations and designs basic factors of the facility such as structure and scale by utilizing WRI data as well as data of hydro power surveys collected by local governments and manages risk for planning facilities in accordance with the above procedures. Furthermore, in cross-sections of equipment design including environmental conservation planning for environmental impact assessment, risks are managed by the above procedures, etc.

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) considers 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 company, 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 impact anticipated	Though certain risks may occur, Chuden considers that the company is not exposed to major risks since there are no specific requirements on suppliers relating to volume and quality of water, nor requirements from suppliers regarding the volume and quality of water related to Chuden's operations.

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 CO₂, we have developed an electricity rate plan with a new name and pricing (CO₂ free electricity plan: an electricity plan that offers CO₂-free values (Zero CO₂ 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 CO₂ emissions by setting the CO₂ emissions factor as zero, and

monetization of this plan is proceeding.

From April 2020 onwards, Chuden has been providing “Shinshu Green Electricity,” a CO2-free electricity plan that utilizes the CO2-free values (Zero CO2 emissions) and the locally-produced values derived from the hydro power station, etc. in Nagano prefecture, operated by the Nagano Prefecture Enterprise Bureau. We promote it as a measure to contribute to the region by allowing customers to use CO2-free electricity made using water in Shinshu (Nagano prefecture) which leads towards a solution of regional issues, such as the promotion of renewable energy and local production for local consumption of electricity in Nagano prefecture.

Estimated timeframe for realization

Current - up to 1 year

Magnitude of potential financial impact

Low-medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact

The effects are not financially quantified.

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

		<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>wastewater used to cool 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 “Chubu Electric Power Group Basic Environmental Policy”, 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 water usage per office employee when averaged on a company-wide basis.</p> <p>For the “improvement of environmental awareness” in this policy, including for water resources, Chuden actively works on enlightening and education activities for communities and employees. These activities include conducting coastal protection activities in cooperation with an environmental NPO</p>
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			<p>consisting of Chuden group employees and their families, and “Chuden group ECO social contribution activities ” to educate about conservation of aquatic organisms such as green turtles. Tools are also provided to encourage water conservation among employees.</p> <p>Among other efforts focused on the sustainability of water resources, Chuden conducts forest conservation activities for watershed protection forests such as Uchigatani Forest, and supports the “Plastics Smart Campaign” of the Ministry of the Environment, an effort to accelerate the movement to solve 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, global warming and water related issues, and Directors report on situations concerning execution of operations. Chuden recognizes addressing global warming and water related issues as a critical challenge 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. Furthermore, in the Chubu Electric Power Group Management Vision targeting the late 2020s and Zero Emissions Challenge 2050, Chuden has positioned “contributing to the realization of a carbon-free society” as one of the pillars of its medium- to long-term efforts. In this target, the ideal energy mix will be pursued from a perspective of “S + 3E” (Safety, Environment, Energy security, Economic efficiency). This consists of aiming for the simultaneous achievement of a stable supply of energy, economic efficiency, and environmental compliance, while ensuring safety as the major consideration. Specifically, Chuden plans to promote utilization of non-fossil fuel power sources by expanding introduction of renewable energy including hydro and biomass power generation. It will also enhance efforts such as conversion to the next-generation power grid and diversification of CO2-free electricity plans, which are electricity plans with CO2-free values derived from renewable energy such</p>

	<p>as hydro power stations owned by Chuden. These issues relating to global warming and efforts towards the realization of a carbon-free society are being discussed at various levels of committee meeting 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 a Chairman may be appointed by resolution of the Board of Directors, and in FY2020, Chuden duly appointed a Chairman. The Chairman currently acts as chairman of the Board of Directors and also directs the operation of the company. The President of the company unifies executions of company operations.</p>
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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 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 meetings of the Board of Directors once a month in principle. The Board of Directors meetings discuss and decide on critical issues relating to management, such as nuclear, biomass and hydro power generation in connection with water related issues. They also supervise execution of duties through reports submitted by Directors on matters related to the execution of duties. 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>Contents of reports from the Directors include details of global warming measures and efforts to realize a carbon-free society, such as progress on the renewable energy development plan. A comprehensive report on the entire plan is made by the Corporate Planning & Strategy Division twice a year.</p> <p>From FY2021, the Zero Emissions Committee will be established with the President as the chairperson responsible for monitoring and overseeing progress against goals and targets for addressing climate-related issues, in order to discuss the goals, action plans, and efforts to</p>

			strive for net zero of CO2 emissions in 2050 for the entire business of the Chuden group.
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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)

Other C-Suite Officer, please specify
Senior Executive Committee

Responsibility

Both assessing and managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

Half-yearly

Please explain

As a subordinate meeting committee structure of the Board of Directors, Chuden has established the Senior Executive Committee comprised of the President, operating company presidents, Company president, General Managers and Executive Officers. 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. Chuden adopts a corporate executive officer system to accelerate the separation of decision-making, supervision and execution of management, and execution of operations. The President has largely transferred his authorities to the operating company presidents, Company president, General Managers, Directors in Office acting as Executive Officers: business execution of particular areas is being completed by Company president, General Managers, Executive Officers and their subordinates. On the other hand, execution of duties is appropriately supervised by reporting to the Senior Executive Committee and the Board of Directors.

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	11-15	To implement business plans for the realization of a carbon-free society, Chubu Electric Power Company (Chuden) is committed to constructing power stations that use large volumes of water. As a specific target, Chuden has included in the long-term business target the newly development of

			renewable energy of more than 2 million kW by around 2030, working toward the realization of a low-carbon society. In the current Basic Energy Plan developed by the Japanese government and also in the long-term strategy in the Paris Agreement, renewable energy is determined as becoming one of the main power sources in the measures working toward 2050. We recognize that the asset formation of Chuden aligns with these mid- to long-term energy policies. We have included the development target of renewable energy in long-term business plans such as Zero Emissions Challenge 2050 and have made this public.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	11-15	As a strategy to achieve long-term business targets, Chuden is committed to constructing power stations that use large volumes of water. Specifically, within the service area, Chuden will continue to promote the construction of the Abekawa Hydroelectric Power Station, Seinaiji Hydroelectric Power Station, Aichi Gamagori Biomass Power Plant, and Omaezakikou Biomass Power Plant. Chuden is also moving forward with the Uchigatani Hydroelectric Power Station, Godo Biomass Power Plant, and Minokamo Biomass Power Plant, which have been authorized for development. Since it is also important to find development sites out of our service areas, Chuden will continue to develop wood-fired biomass power plants in Kamisu city, Ibaraki prefecture, and Yonago city, Tottori prefecture. Chuden has also decided on development of a wood-fired biomass power plant in Yatsushiro city, Kumamoto prefecture.
Financial planning	Yes, water-related issues are integrated	11-15	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. 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 80 projects as of April 2021. 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 restoration activity and minimized financial loss caused by unexpected water risks.

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)

2,559

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

2,700

Water-related OPEX (+/- % change)

27,897

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

27,900

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. Chuden therefore aims to clarify as well as possible the financial situation related to water, by disclosing the total volume of capital investments and operating costs. 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 increased compared to 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.

W7.3

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

Use of climate-related scenario analysis の利用	Comment

<p>Row 1</p>	<p>Yes</p>	<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 & Strategy Division in particular has analyzed its business environment up to 2030 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. Through these analyses, Chuden recognizes the need to take further efforts to improve the non-fossil fuel ratio, and as a response to this need, Chuden plans to resume the operation of the Hamaoka Nuclear Power Plant. On renewable energy power sources, Chuden is additionally furthering efforts by setting a challenging target. Compared with the end of FY2017 Chuden aims to almost double its installed capacity in the next decade by developing over 2 million kW by around 2030.</p> <p>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 2020 in August 2020.</p>
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W7.3a

(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?

Yes

W7.3b

(W7.3b) What water-related outcomes were identified from the use of climate-related scenario analysis, and what was your organization’s response?

Climate-related	Description of possible water-related outcomes	Company response to possible water-related outcomes
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	scenarios and models applied		
Row 1	Nationally determined contributions (NDCs)	<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. The analyses show that the ratio of hydro power generation which is the center of our non-fossil power sources is currently 9%, and Chuden recognizes that non-achievement of the target of 44% non-fossil power sources in FY2030 remains an issue, and confirms the need for further efforts to improve the non-fossil ratio, including the use of hydro power generation.</p>	<p>Based on the NDCs, the current Basic Energy Plan and the forecast on long-term energy supply and demand, the Management Strategy Division in particular has analyzed its business environment up to 2030 on the assumption of abiding by the requirements of environmental regulation provided in the Act on Sophisticated Methods of Energy Supply Structures, etc. The results of analyses are being incorporated into the annual business plan and reflected in the Chubu Electric Power Group Management Vision. According to this vision, Chuden will resume the operation of the Hamaoka Nuclear Power Plant. On renewable energy power sources, Chuden is additionally furthering efforts by setting a challenging target. Compared with the end of FY2017 Chuden aims to almost double its installed capacity in the next decade by developing over 2 million kW by around 2030.</p> <p>Regarding specific efforts, as a strategic investment to areas of growth based on increasing demand, etc. for CO₂-free electricity plans, Chuden is planning to invest over 100 billion yen toward the development of renewable energy during the cumulative five years from FY2019 to FY2023. In the current Basic Energy Plan developed by the Japanese government, and also in the long-term strategy in the Paris Agreement, renewable energy is determined as becoming one of the main power sources in the measures working toward 2050. We recognize that the asset formation of Chuden aligns with these mid- to long-term energy policies. With the expansion of ESG 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 2020).</p>

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.

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	Company-wide targets and goals	Targets are monitored at the corporate level	Water quality, measurement frequency, and measurement methods for wastewater are provided for in the Water Pollution Prevention Act and agreements with local governments.
	Business level specific targets and/or goals	Goals are monitored at the corporate level	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.
	Site/facility specific targets and/or goals		Business establishments aim to commit zero violations of laws or agreements. Chuden Headquarters aims for zero violations of laws or agreements for each business establishment. 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. Additionally, water conservation activities are monitored at the offices of the Headquarters.

W8.1a

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

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

2019

Start year

2019

Target year

2020

% 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.

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. The volume of water used at offices is monitored and accumulated on a company-wide basis, the amount of water used per employee is announced, and tools are provided to encourage water conservation and raise awareness among employees. 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

2019

Start year

2019

End year

2020

Progress

The FY2020 figures for water usage per office employee showed a decrease of at least 10% compared with the previous fiscal year. The main reason for decrease in water usage is possibly the impact of decrease in attendance at the offices due to COVID-19. 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	Executive Officer, 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 am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

Please confirm below