# The Tokyo Electric Power Company Holdings, Inc (TEPCO) - Water Security 2019

## W0. Introduction

### W0.1

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

Tokyo Electric Power Company, Incorporated (TEPCO)is one of the largest electric power companies in Japan was established in 1951 to supply electric power to the Tokyo metropolitan area, and for more than half a century it has continued to support society and public life with high-quality electric power. In fiscal 2017, TEPCO's electricity sales volume accounts for about 30% of domestic electricity consumption, and power generation facilities account for about 25% of the whole country. In April 2016, Tokyo Electric Power Company (TEPCO) transitioned to a holding company system by reorganizing into three independent businesses: fuel & thermal power generation, general power transmission and distribution, and retail electricity. Please note the provided information is public and is available in our website; https://www7.tepco.co.jp/index-e.html

### W-EU0.1a

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

Electricity generation
Transmission
Distribution
Other, please specify (Gas storage, transport and distribution)

### W-EU0.1b

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

| | Nameplate capacity (MW) | % of total nameplate capacity | Gross generation (MWh) |
|---|---|---|---|
| Coal – hard | 3200 | 5.02 | 24100000 |
| Lignite | 0 | 0 | 0 |
| Oil | 8700 | 13.66 | 3900000 |
| Gas | 29250 | 45.93 | 156400000 |
| Biomass | 0 | 0 | 0 |
| Waste (non-biomass) | 0 | 0 | 0 |
| Nuclear | 12610 | 19.8 | 0 |
| Geothermal | 3.3 | 0.01 | 10000 |
| Hydroelectric | 9870 | 15.5 | 12200000 |
| Wind | 18.37 | 0.03 | 40000 |
| Solar | 30 | 0.05 | 30000 |
| Other renewable | 0 | 0 | 0 |
| Other non-renewable | 0 | 0 | 0 |
| Total | 63681.67 | 100 | 196680000 |

### 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 2017 | March 31 2018 |

### W0.3

**(W0.3) Select the countries/regions 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.**

Companies, entities or groups over which financial control is exercised

## W0.6

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

Yes

## W0.6a

**(W0.6a) Please report the exclusions.**

| Exclusion | Please explain |
|---|---|
| Overseas Offices (Washington, London, Beijing) | Small leased office space (about 10 employees) where the amount of water usage is small and water is provided through the lease and is managed by our landlord, water-related risk associated with these 3 offices is negligible. |

# 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 | Important | Important | As for direct use, sufficient amounts of freshwater are important for our direct operations because they are necessary for electricity production. Freshwater is directly used in hydroelectric power plants, which consists 6% of TEPCO's electricity generation. In the future, we promote renewable energy to be a main energy sources, and hydropower plants are expected to increase output, and water consumption will increase. Amount of fresh water used in thermal power and nuclear power plants is small because we use sea water for cooling generation facilities and if we use fresh water we treat and recycle it. As for indirect use, we recognize that some of our suppliers use a sizeable amount of freshwater to extract and wash coal, and in avoiding fire accident in stockyards. Due to diversification of suppliers and diversification of power supply configuration (coal-fired power consists of about 20% of our power generation), impact to our business is quite limited. About water quality, we manage radioactive contaminated water in Fukushima Daiichi Nuclear Power Station decommissioning process. At hydroelectric power plants, maintaining the quality of withdrawals is important not only to maintain the ecosystem and natural environment, but also to avoid collisions with stakeholders such as local river authorities and nearby residents. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations have been transferred to JERA Co., Inc., so that TEPCO will exclude water related to thermal power generations from the boundary. |
| Sufficient amounts of recycled, brackish and/or produced water available for use | Important | Important | We do not use brackish water, nor produced water in our facilities. We use recycled water in thermal power plants so that we could reduce fresh water consumptions. In particular, we collect water used at boilers and recycle it, then we use the water at boilers again. Future prospects of water utilization are thought to be little change by FY2018. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations have been transferred to JERA Co., Inc., so that TEPCO will exclude water related to thermal power generations from the boundary. |

## 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% | Water withdrawals are measured and monitored at all of our power plants and offices every fiscal year as INPUT/OUTPUT material flow in our environmental management system. At some power plants or offices, we submit data of yearly water withdrawals based on the agreement with local governments where they are located. Total volumes of water withdrawals are always monitored by watching water level, flow meters, and operation hours of pumps. |
| Water withdrawals – volumes from water stressed areas | 100% | We use WRI Aqueduct for examining water stress of our business operations more than once / year. According to the evaluation by WRI Aqueduct, the area where hydroelectric power plants area located is evaluated as Medium-High at the maximum risk. However the maintenance flow rate of each sources prescribed by the Ministry of Land, Infrastructure and Transport is able to be secured at all hydropower plants, we judge that there is no power plants located in water stressed area. All of thermal power plants are located in coastal areas and use sea water for indirect cooling facilities. The consumptions of sea water are always monitored by operation hours of pumps. Moreover we update information of water risks for each plants, and we judge whether plants are located in water stressed areas or not by using data of total volumes of water withdrawals and discharges more than once / year. |
| Water withdrawals – volumes by source | 100% | Water withdrawals per each sources are measured and monitored at all of our power plants and offices every fiscal year as INPUT/OUTPUT material flow in our environmental management system. At some power stations or offices, we submit data of yearly water withdrawals per each source based on the agreement with local governments where they are located. Water withdrawals in thermal power plants and nuclear power plants are constantly monitored by flowmeters and operations of pumps working hours. Moreover, we always monitor volumes of water by checking water level meter in hydroelectric power plants. |
| Entrained water associated with your metals & mining sector activities - total volumes [only metals and mining sectors] | <Not Applicable> | <Not Applicable> |
| Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector] | <Not Applicable> | <Not Applicable> |
| Water withdrawals quality | 100% | In hydroelectric power plants, we grasp muddiness of water when we draw water constantly. At thermal power plants located in coastal area, we monitor sea water temperature when we draw which is used for indirect cooling facilities. This data is useful for grasping temperature of the sea water difference between withdrawals and discharges. |
| Water discharges – total volumes | 100% | Water discharges are measured and monitored at all of our power stations and offices every fiscal year as INPUT/OUTPUT material flow in our environmental management system. At some power stations or offices, we submit data of yearly water discharges based on the agreement with local governments where they are located. Water discharges from thermal power plants and nuclear power plants are constantly monitored by flowmeters and operation hours of pumps. Moreover, we always monitor total storage capacity by checking water level meter in hydroelectric power plants and report the daily data to the local river management authorities. |
| Water discharges – volumes by destination | 100% | Water discharges by destination are measured and monitored at all of our power stations and offices every fiscal year in our environmental management system. At some power stations, we submit data of yearly water discharges by destination based on the agreement with local governments where they are located. Water discharges from thermal power plants and nuclear power plants are constantly monitored by flowmeters and operation hours of pumps. Moreover, we always monitor total storage capacity by checking water level meter in hydroelectric power plants. |
| Water discharges – volumes by treatment method | 100% | Water discharges by treatment method are measured and monitored at all of our power stations and offices every fiscal year as INPUT/OUTPUT material flow in our environmental management system. At some power plants or offices, we submit yearly data of water discharges based on the agreement with local governments where they are located. Volume of wastewater from the treatment facility is constantly monitored by flow meters in thermal power plants and nuclear power plants. |
| Water discharge quality – by standard effluent parameters | 100% | The quality of water discharges is measured and monitored on regular basis at all of our power plants and offices based on standards effluent parameters in our environmental management system. The monitoring frequency depends on laws and administrative guidelines set for each item. Regarding monitoring of water quality, pH, COD, oil film etc are constantly monitored, and heavy metals etc. are measured each year as determined by laws and administrative guidelines. |
| Water discharge quality – temperature | 100% | In the thermal power plant, the temperature of discharged water to the sea which is used for the indirect cooling is constantly monitored by the thermistor. |
| Water consumption – total volume | 100% | Water consumption is measured and monitored at all of our power plants and offices every fiscal year in our environmental management system. It is calculated by the difference between withdrawals and discharges which are monitored on regular basis. |
| Water recycled/reused | 100% | The boiler water of the thermal power plants blown for maintaining water quality is treated by the treatment facility, and a part of it is returned to the boiler water system after purification, then recycled. Regarding water quality of boilers, we constantly monitor pH, electrical conductivity and so on. |
| The provision of fully-functioning, safely managed WASH services to all workers | 100% | We continuously monitor if we are providing safe drinking water and sanitation to all of our employees at all of our facilities. We respect our employees' character and individuality and are committed to providing them with a good working environment. Drinking water is provided from the public waterworks bureau, and residual chlorine concentration data etc. are confirmed every day. |

## W-EU1.2a

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

| | % of sites/facilities/operations measured and monitored | Please explain |
|---|---|---|
| Fulfilment of downstream environmental flows | 100% | At the hydroelectric power plants, facilities to detect the oil film are installed, and when it is detected it is collected so as not to affect the downstream area. |
| Sediment loading | 100% | We measure the sediment loading at all hydroelectric power plants on regular basis. We carry out dredging of volume sediment in dam as needed. |
| Other, please specify | Please select | |

## 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 | 91565119 | Higher | Compared with the previous year, the amount of electricity generated by hydropower generation increased, so the total water withdrawals and total discharges increased. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that TEPCO will exclude water related to thermal power generations from the boundary. |
| Total discharges | 91559642 | Higher | Compared with the previous year, the amount of electricity generated by hydropower generation increased, so the total water withdrawals and total discharges increased. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that TEPCO will exclude water related to thermal power generations from the boundary. |
| Total consumption | 5477 | About the same | The total volume of consumption was almost the same as that in the previous year. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that TEPCO will exclude water related to thermal power generations from the boundary. |

## W1.2d

**(W1.2d) Provide the proportion of your total withdrawals sourced from water stressed areas.**

| | % withdrawn from stressed areas | Comparison with previous reporting year | Identification tool | Please explain |
|---|---|---|---|---|
| Row 1 | 0 | About the same | WRI Aqueduct | Our hydroelectric power plants are located in Tochigi, Gunma, Kanagawa, Yamanashi, Shizuoka, Fukushima, Niigata and Nagano prefectures, and have confirmed water stress in these areas. For confirming water stress, WRI Aqueduct widely used as a water risk assessment method is adopted. According to the evaluation by Aqueduct, the hydroelectric power generation area is evaluated as Medium-High at the maximum, and because the maintenance flow rate prescribed by the Ministry of Land, Infrastructure and Transport is able to be secured at all hydropower stations, we judge that there is no power plants located in water stressed area and there is no water intake from the drought area. Since last fiscal year this risk situation has not changed. Also, since we are using seawater for indirect cooling of all thermal power plants, we have judged that thermal power plants are not located in water stressed areas. We continually collect information on the fact that power plants are not located in stressed areas. |

## 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 | 55300000 | Higher | The figure is the quantity of water intake at our hydroelectric plants, approved by the Ministry of Land, Infrastructure, Transport and Tourism. The hydroelectric power generation output has been increased compared to the previous year, the total volume of withdrawals has been increased. (FY2016 corrected value: 51,000,000 megaliters/year) Hydroelectric power generation is really important as a role of renewable energy, so TEPCO is going to reinforce the capacity of hydroelectric plants, so the consumption of water will be supposed to increase in the future. In few offices, we use rainwater for flushing toilet, but the volume is quite small. |
| Brackish surface water/Seawater | Relevant | 36253786 | About the same | We use seawater for making it steam and indirectly cooling condensers at thermal electric power plants, then discharge to the sea. There was no significant change in thermal electric power generation output, the total volume of withdraws and discharges of seawater was almost the same as that in the previous year. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that consumption of sea water for thermal power generation will be excluded from the boundary. |
| Groundwater – renewable | Relevant | 172 | Lower | Treatment of contaminated water in the reactor building of the Fukushima Daiichi Nuclear Power Station has progressed, and the amount of groundwater contaminated with radioactive materials has decreased. |
| Groundwater – non-renewable | Not relevant | <Not Applicable> | <Not Applicable> | We do not use any non-renewable groundwater now and in the future because there are no processes and facilities using non-renewable groundwater in our electric power systems. |
| Produced/Entrained water | Not relevant | <Not Applicable> | <Not Applicable> | We do not use any produced water now and in the future because there are no processes and facilities using produced water in our electric power systems. |
| Third party sources | Relevant | 11161 | About the same | Water of third party sources is relevant because it is used for power generation in thermal power plants and for drinking in all offices. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations have been transferred to JERA Co., Inc., so that consumption of water for thermal power generation and domestic use would be excluded from the boundary in 2019. |

## 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 | 55300000 | Higher | The figure is same as the quantity of water intake at our hydroelectric plants, approved by the Ministry of Land, Infrastructure, Transport and Tourism. We assume the volume of water discharge should be the same as the volume of water intake. The hydroelectric power generation output has been increased compared to the previous year, the total volume of withdrawals has been increased. (FY2016 corrected value: 51,000,000 megaliters/year) Hydroelectric power generation is really important as a role of renewable energy, so TEPCO is going to reinforce the capacity of hydroelectric plants, so the consumption of water will be supposed to increase in the future. |
| Brackish surface water/seawater | Relevant | 36258452 | About the same | We use seawater for making it steam and cooling condensers indirectly at thermal electric power plants, then discharge to the sea. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that consumption of water for thermal power generation and domestic use would be excluded from the boundary in 2019. |
| Groundwater | Not relevant | <Not Applicable> | <Not Applicable> | There is no plants and facilities which penetrate and drain water into the ground now. And we do not introduce these systems in the future. |
| Third-party destinations | Relevant | 1190 | About the same | We have continued saving domestic use of water, and the volume of discharge to third-party destinations was almost the same as that in the previous year. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that drained third-party destinations water for thermal power generation would be excluded from the boundary. |

## W1.2j

### (W1.2j) What proportion of your total water use do you recycle or reuse?

| | % recycled and reused | Comparison with previous reporting year | Please explain |
|---|---|---|---|
| Row 1 | 11-25 | About the same | We use the ratio of recycled water in the boiler water of the thermal power plant. Boiler water has been used efficiently than before, and there has been no major change since the previous year. As a result, we have been able to reduce the withdrawals from the third party and contribute to the lowering of reliance on freshwater. In April of 2019, the business of TEPCO Fuel and Power, Inc. such as fuel receiving, storage, and gas transmission, and thermal power generations has been transferred to JERA Co., Inc., so that water discharges for thermal power generation would be excluded from the boundary. We will continue on efforts to make effective use of water. |

## 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: unit of production | Comparison with previous reporting year | Please explain |
|---|---|---|---|---|
| 102.3 | Other, please specify (Hydropower generation capacity for fiscal 2017) | Other, please specify (Average hydropower capacity over the past 30 years) | Higher | Our general hydroelectric power plants, the rates of system operations are really high. Thanks to no water shortages and no droughts, hydroelectric power plants could operate better level as FY2016, 94.2. If the water discharge rate is 100%, it can be said that the actual amount of power generation is equal to the average amount of power generation over the past 30 years. In other words, the actual water discharge rate is an index to determine whether the water is flood or drought, and is affected by the weather conditions of that year. In the case of flood water, the operation rate is increased by the increase in the operating time of the hydropower plants, and the operation rate is lowered in the case of drought, but the hydropower plants are dispersed in various regions. The risk of generation decline is also dispersed, controlling the amount of power generation across the energy mix. In the future, we will analyse the secular change of the water discharge rate, analyse the factors and risks if the year of drought continues, and use it for the equipment renewal and equipment operation of the hydroelectric power plants. Information on this flow rate value is released to institutional investors. |

## W1.4

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

Yes, our suppliers

## W1.4a

**(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?**

**Row 1**

**% of suppliers by number**
76-100%

**% of total procurement spend**
76-100

**Rationale for this coverage**
We request suppliers to considerate efficient use of water and resources by procurement basic policy and green procurement guidelines. We purchase products and services considering various environmental burdens over the full product life cycle from resource extraction to disposal. We present green procurement guidelines to all suppliers and explain it by CEO. We request all corporations affiliated equity-method to submit actual results of water consumptions, because we judge if they are consistent in financial reports and how they influence our business. In near future, we plan to release the actual results of supply chains, and we think this would be an incentive for us known as an environmentally-friendly company to the society.

**Impact of the engagement and measures of success**
For increasing cooperate value of both TEPCO and corporations affiliated equity-method, we work on environmental consideration measures at supply chains. For example, an affiliated company, TEPCO Town Planning Co. Ltd, have managed and renovated the printing method of electric pole advertisement of their suppliers so that they reduce water consumption from 4,600 litters per a year to 0. In addition, the printing process renovation work not only to reduce the amount of water used, but also to eliminate to use chemicals (organic solvents) and the need to use protective masks. It contribute the surrounding environment protected and employees making it easier to work. Moreover, it has been improved productivity due to process changes also improved earnings. In this way, we feedback the total volume of water consumptions of corporations affiliated equity-method, and share the importance of considering water resources. Good practice is shared by TEPCO group company e-mail magazine.

**Comment**

## W1.4b

**(W1.4b) Provide details of any other water-related supplier engagement activity.**

**Type of engagement**
Incentivizing for improved water management and stewardship

**Details of engagement**
Offer financial incentives to suppliers improving water management and stewardship across their own operations and supply chain

**% of suppliers by number**
76-100

**% of total procurement spend**
76-100

**Rationale for the coverage of your engagement**
We present procurement basic policy and green procurement guidelines to all suppliers, we request all corporations affiliated equity-method to submit actual results of water consumptions.

**Impact of the engagement and measures of success**
For increasing cooperate value of both TEPCO and corporations affiliated equity-method, we work on environmental consideration measures at supply chains. We feedback the total volume of water consumptions of corporations affiliated equity-method, and share the importance of considering water resources. For example, an affiliated company, TEPCO Town Planning Co. Ltd, have managed and renovated the printing method of electric pole advertisement of their suppliers so that they reduce water consumption from 4,600 litters per a year to 0. In addition, the printing process renovation work not only to reduce the amount of water used, but also to eliminate to use chemicals (organic solvents) and the need to use protective masks. It contribute the surrounding environment protected and employees making it easier to work. Moreover, it has been improved productivity due to process changes also improved earnings. Good practice is shared by TEPCO group company e-mail magazine.

**Comment**

# W2. Business impacts

## W2.1

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

## W2.1a

**(W2.1a) Describe the water-related detrimental impacts experienced by your organization, your response, and total financial impact.**

**Country/Region**
Japan

**River basin**
Tone

**Type of impact driver**
Physical

**Primary impact driver**
Flooding

**Primary impact**
Reduced revenues from lower sales/output

**Description of impact**
In September of 2015, with the passing of the typhoon, heavy rains continued and the embankment was destroyed in Kinugawa River in Tone river system. It was necessary to stop the distribution of electricity so that it does not interfere with the rescue operation even though a large scale blackout did not occur. Power outage at 11,000 houses had occurred and it took six days to recover. The financial impact was ¥ 14,225,640, when the lost electricity sales were estimated from the average electricity consumption per household. In addition to this, labour costs (total 1300 staff members work for 7 days) and equipment restoration costs for resuming power transmission after a power failure occurred.

**Primary response**
Develop flood emergency plans

**Total financial impact**
14225640

**Description of response**
At Tokyo Electric Power Grid Co., Ltd., the Ryugasaki branch office confirmed the heavy rain special warning, prepared the equipment needed for the flood, and confirmed the power supply network on the assumed flood area map. Although there were no large-scale blackouts due to heavy rain, it was necessary to shut off the electricity so that it would not interfere with the restoration. By checking the distribution network in advance, the blackout area was minimized. After the water was drained, 38 employees and vehicles in other branch were supported, priority was given, power transmission was resumed, and efficient restoration work was performed. The establishment of a system for recovery from floods and lessons learned from the responses obtained through these restoration operations are horizontally spread throughout the company and used for future flood control. Total financial impact was calculated as follows. The average monthly electricity consumption per household was 248 kWh, and the amount used for six days when a power failure occurred was 49.74 kWh. The unit price of the electricity charge was 26 yen, which is the unit price of the two-stage charge (more than 120 kWh and up to 300 kWh) in the plan of the metered lamp B. The number of household outages was 11,000. From the above, Total financial impact is 49.74 kWh × 26 yen × 11,000 houses = 14,225,640 yen.

## 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?**

Through our environmental management system, we ascertain emissions volumes, consumption volumes, and retention volumes for PCB (polychlorinated biphenyl) waste, toxic substances subject, ozone depleting substances, and asbestos. Substances subject to management are managed appropriately in accordance with applicable laws and we work towards emissions reduction by promoting switching to products not containing applicable substances. PCB has chemically stable properties such as high incombustibility and high electrical insulation, but gradually accumulates in the body by chronic ingestion due to its nature that it is soluble in fat, causing various symptoms. We are aware of the potential impact on water quality due to PCB leakage due to accidents, etc. by environmental impact assessment. By installing waterproof barrier etc. and installing oil film detection shutoff valves etc., leakage risk is sufficiently reduced. In addition, we are strictly handling leakage countermeasures and waste disposal appropriately for our power producers in the value chain as well as our company.

## W-EU3.1a

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

| Potential water pollutant | Description of water pollutant and potential impacts | Management procedures | Please explain |
|---|---|---|---|
| Other, please specify (PCB) | PCB has chemically stable properties such as high incombustibility and high electrical insulation, but gradually accumulates in the body by chronic ingestion due to its nature that it is soluble in fat, causing various symptoms. We are aware of the potential impact on water quality due to PCB leakage because of accidents, etc. is really high by environmental impact assessment. | Compliance with effluent quality standards<br>Measures to prevent spillage, leaching, and leakages<br>Community/stakeholder engagement<br>Emergency preparedness | Through our environmental management system, we ascertain emissions volumes, consumption volumes, and retention volumes for PCB (polychlorinated biphenyl) waste, toxic substances subject, ozone depleting substances, and asbestos. Substances subject to management are managed appropriately in accordance with applicable laws and we work towards emissions reduction by promoting switching to products not containing applicable substances. By installing waterproof barrier etc. and installing oil film detection shutoff valves etc., leakage risk is sufficiently reduced. In addition, we are strictly handling leakage countermeasures and waste disposal appropriately for our power producers in the value chain as well as our company. The PCB leakage correspondence procedure is tested at once a year, confirming that it functions in an emergency situation, and the environmental internal audit confirms the progress of the procedure and the status of the test implementation. Moreover, we have our own detoxification facilities so that we could reduce our PCB stock by ourselves, and process other companies' PCB also. |

## 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**
Six-monthly or more frequently

**How far into the future are risks considered?**
>6 years

**Type of tools and methods used**
Tools on the market
International methodologies
Databases

**Tools and methods used**
WRI Aqueduct
Environmental Impact Assessment
Life Cycle Assessment
Regional government databases
Other, please specify (Cabinet Office, Central disaster prevention meeting September 6, 2012, (2) About metropolitan area large-scale flood measures general rules [decision matter])

**Comment**
We make use of various methods and databases to assess water-related risks in our direct operations and supply chain.

**Supply chain**

**Coverage**
Full

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

**Frequency of assessment**
Annually

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

**Type of tools and methods used**
International methodologies
Databases

**Tools and methods used**
Environmental Impact Assessment
Life Cycle Assessment
Regional government databases

**Comment**
We make use of various methods and databases to assess water-related risks in our direct operations and supply chain.

**Other stages of the value chain**

**Coverage**
None

**Risk assessment procedure**
<Not Applicable>

**Frequency of assessment**
<Not Applicable>

**How far into the future are risks considered?**
<Not Applicable>

**Type of tools and methods used**
<Not Applicable>

**Tools and methods used**
<Not Applicable>

**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 | Sufficient amounts of freshwater are important for our direct operations because they are necessary for electricity production. We always obtain information on water availability of each region from WRI Aqueduct, regional government databases, and assesses its impact on our business. |
| Water quality at a basin/catchment level | Relevant, always included | Sufficient amounts and quality of freshwater are important for our direct operations because they are necessary for electricity production. We always obtain information on water availability and quality of each region from regional government databases, and assesses its impact on our business. With regard to the quality of stored water and effluent water, in the conditioning ponds of hydroelectric power plants, conduct environmental impact assessments at all times (at least 4 times a year) and during floods (at any time) based on the Environmental Basic Law and the survey guidelines. The survey involves sampling of items such as water temperature, transparency, light colour, pH, COD, BOD, turbidity, and so on. The survey points are upstream of the dam, in the reservoir, and downstream of the dam. As the evaluation of the survey results varies in measurement value due to the influence of the season, rainfall, etc., the trend in the long cycle is grasped. In addition to the environmental impact assessment, in order to prevent the outflow of machine oil used in the hydroelectric power plants, an oil detection devices are deployed and constantly monitored. In the pumped storage hydro-power plant, we monitor the turbidity from the upstream and the like constantly so that there is no oil outflow to the downstream. Even if it is detected, an adsorbing mat, etc. are installed so as not to flow into the downstream area. In Agatsumagawa River, water quality deterioration and bad smell have occurred by reproduction of algae. We have improved the environment so that aquatic life can live in cooperation with river management authority. |
| Stakeholder conflicts concerning water resources at a basin/catchment level | Relevant, always included | Sufficient amounts of freshwater are important for our direct operations because they are necessary for electricity production, and any stakeholder conflicts concerning water resources including fishery resources may have some negative impact on our business. We keep collecting information on potential conflicts from various sources, especially our internal company knowledge accumulated in our power plants, and prepare to deal with them as our risk management. |
| Implications of water on your key commodities/raw materials | Relevant, always included | Hydroelectric power accounts for 6% of our main products, electric power, and in the future, the meaning of water is very significant in making renewable energy the main power source. And for hydroelectric power plants, we evaluate its potential water risks using our internal company knowledge, i.e. influence on power generation accompanying in precipitation changes, and regional government databases (precipitation data, etc.). We understand that a certain amount of freshwater is used by some of our suppliers, especially coal producers. They need lots of water to extract and wash coal, and in avoiding fire accident in stockyards. We use our internal company knowledge (location of our suppliers, etc.) to assess potential water risks of these suppliers. Results of the assessment is used as a part of our risk scenario analysis. |
| Water-related regulatory frameworks | Relevant, always included | The amount of water withdrawals and discharge in hydroelectric power generation are regulated by the River Act, and the operation is carried out to protect the respective flow rates. In closed waters such as Tokyo Bay, strict restrictions are imposed by COD etc. in order to suppress eutrophication of the sea area. Because we have many thermal power stations in this area, strengthening these regulations have some impact on our company. Therefore, it is necessary to pay attention to national standards whether rational regulatory review will be conducted. |
| Status of ecosystems and habitats | Relevant, always included | In the operation of hydroelectric power plants, we are trying to understand the impact on the ecosystem. For example, In Agatsumagawa River, water quality deterioration and bad smell have occurred by reproduction of algae. We have improved the environment so that aquatic life can live in cooperation with river management authority. |
| Access to fully-functioning, safely managed WASH services for all employees | Relevant, always included | TEPCO is committed to creating a fair and secure working environment to all employees, and helps them maintain and improve their health. And we ensure the safety of water by providing fully-functioning WASH services at all power plants and offices. The tap water quality standards are stipulated by the Ministry of Health, Labour and Welfare based on the law, and we use water that satisfies this standard. We continuously monitor if we are providing all of our employees at all of our facilities with safe drinking water and sanitation. Monitoring is conducted using the internal company method of water quality management. Failure to do so will entail significant risk. We take into account the information gained through this monitoring when we evaluate water-related risks. |
| 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 | Customers are concerned about the risk of stop electricity when the river would break due to a natural disaster such as heavy rain, causing a flood, and the electrical equipment would be flooded. Moreover, facing electricity deregulation in Japan, TEPCO needs to prevent customers from defecting. Since our water issues (especially contaminated water issues) may have some impact on our reputation, we are working on collecting opinions from customers on water issues and improving transparency of information disclosed so that our credibility is enhanced. For example, we hold a tour of the Fukushima Daiichi Nuclear Power Station, have customers check on measures against contaminated water (such as the amount of reduction in production and the status of treatment), and conduct direct dialogues. |
| Employees | Relevant, always included | TEPCO is committed to creating a fair and secure working environment to all employees, and helps them maintain and improve their health. And we ensure the safety of water by providing fully-functioning wash services at all power plants and offices. Failure to do so will entail significant risk, so that we violate the laws and rules of society. As Possible risks, it happens employees' health damages, troubles for power supply, and confusion in society. Our company thinks people preciously than anything. We confirm the working environment at the Health and Safety Committee and continuously monitor if we are providing all of our employees at all of our facilities with safe drinking water and sanitation. We take into account the information gained through this monitoring when we evaluate water-related risks. In addition, based on the work environment questionnaire conducted by the labour union, the interactive communication can be conducted with the CEO on the working environment of employees including water use. Although the public waterworks bureau measures residual chlorine of drinking water every day, we also regularly check the water quality. |
| Investors | Relevant, always included | Hydroelectric power accounts for 6% of our main products, electric power, and in the future, the meaning of water is very significant in making renewable energy the main power source. And for hydroelectric power plants, we evaluate its potential water risks using our internal company knowledge, i.e. influence on power generation accompanying in precipitation changes, and regional government databases (precipitation data, etc.). Moreover, since our water issues (especially contaminated water issues) may have some impact on our reputation, which in turn may influence investors' behaviour, we are working on promptly disclosing correct data and accurate information on contaminated water in which investors seem keenly interested. At the time of announcement of financial results, we publish major progress and major countermeasures for polluted water decontamination at Fukushima Daiichi Nuclear Power Station as explanatory materials for analysts. Reaction from investors and analysts are reflected in our risk analysis. |
| Local communities | Relevant, always included | Relationship with local communities are essential to our business. We conduct mutual communication on water related issues with the local communities where our facility locates so as to reflect their opinions and secure transparency. Results of these communications are reflected in our risk analysis. For example, in the Oze area located upstream of the Tone River water system where the hydroelectric power plants are located, about 40% of the Oze area designated as a national park is owned by TEPCO. While we implement nature conservation through discharge of river maintenance flow, we maintain the natural environment of the Oze area like Installations of a public toilet complete with a septic tank, and it also contribute to water source conservation in the Tone River water system. On the other hands, we recognize that good relations with fishery related persons, local residents, etc. are an important foundation for power station management on continuing. |
| NGOs | Relevant, always included | In dialogue with NGOs, we are working on reflecting opinions from them and securing transparency. We are working on promptly disclosing correct data and accurate information on contaminated water in which NGOs seem keenly interested. Results of these communications are reflected in our risk analysis. For example, in the Oze area located upstream of the Tone River water system where the hydroelectric power plants are located, about 40% of the Oze area designated as a national park is owned by TEPCO. While we implement nature conservation through discharge of river maintenance flow, we maintain the natural environment of the Oze area through two-way communication with the Oze Conservation Foundation, and it also contribute to water source conservation in the Tone River water system. |
| Other water users at a basin/catchment level | Relevant, always included | Water risks are common issues for local users. In dialogue with them, we are working on information exchange and sharing countermeasures especially in case of water shortages. In the environmental impact assessment of the thermal power plant, we refer to the warm discharge data of other companies.Results of these communications are reflected in our risk analysis. |
| Regulators | Relevant, always included | Legislative amendments may have some impact on our business. We are working on getting a situation of status change in close communications with regulators concerning water issues, especially Ministry of Environment or Ministry of Land, Infrastructure, Transport and Tourism. Results of these communications are reflected in our risk analysis. In closed waters such as Tokyo Bay, strict restrictions are imposed by COD etc. in order to suppress eutrophication of the sea area. Because we have many thermal power stations in this area, strengthening these regulations have some impact on our company. Therefore, initiatives such as encouraging rational review of regulations are necessary. On the other hand, with regard to the flood risk of rivers caused by heavy rain etc., we participated in discussions at the Central Disaster Management Council of the Cabinet Office and the Ministry of Land, Infrastructure, Transport and Tourism, and shared the risks. Based on the risks presented at the Central Disaster Prevention Council, measures are taken to prevent inundation of electrical facilities. |
| River basin management authorities | Relevant, always included | A status change in river basin management plan may have some impact on our facilities' operations. We maintain close communication with local river management authorities of the Ministry of Land, Infrastructure and Transport on water issues and are working on information exchange. In addition, we monitor the fact that the hydroelectric power plants is conducting water discharge with minimum flow based on the River Law, and submit annual data to the local river management authorities. On the other hand, river basin management authorities are considering the water quality, and we are cooperating in the improvement of water quality. For example, in the Agatsuma River in the Tone River water system, we cooperated with the Ministry of Land, Infrastructure, Transport and Tourism's business for improvement of water quality, because rainwater infiltrated into the sulphur mine mountain and penetrated underground, and water in which sulphur components are dissolved flows into the river. So we put lime juice into the river and neutralize the river water. This project contributes not only to establishing a good relationship with river basin management authorities but also to reducing the deterioration of our hydropower facilities. Results of these communications are reflected in our risk analysis. |
| Statutory special interest groups at a local level | Relevant, sometimes included | Concerning thermal effluent and Fukushima contaminated water problem, we conduct dialogues in a regular basis with fishery cooperatives and agricultural cooperatives in the power station location area. The opinions received there are reflected in water discharge management and business management including risk analysis. |
| Suppliers | Relevant, sometimes included | Since coal producers need a certain amount of water with extracting and washing coal, we estimate that existing water risk in our supply chain is procurement of coal. Although there is a possibility that the shortage of water in the area where coal is mined affects the procurement of coal and the operation of the thermal power plant may possibly be affected. We manage water-related procurement risks by diversifying suppliers based on our risk analysis. In addition, in areas where there are risks of flooding due to natural disasters such as heavy rain, suppliers take into consideration the risks that distribution would be cut off and supply would be stopped. For example, around Tonegawa river and Arakawa river. |
| Water utilities at a local level | Relevant, always included | Water supply stability and tariffs are significant factors in our water risk assessment. Since they are different depending on the local water utilities, each of our facilities is considering the supply stability and tariffs under its contract and continues close communication with them. Although the supply of freshwater from water utilities is stable, we exchanged opinions on operations and countermeasures under weather conditions such as typhoons and are trying to reduce the impact on our power station operation. |
| 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.**

TEPCO practices comprehensive risk management to prevent accidents or disasters. We believe that water risks have to be dealt with in a comprehensive manner as part of a company-wide risk assessment, because water risks could significantly affect our operations. For example, a reduced availability of water could affect the amount of electricity generated at our hydro power plants.

According to the evaluation by WRI Aqueduct, the hydroelectric power generation area is evaluated as Medium-High at the maximum, and because the maintenance flow rate is able to be secured at all hydropower stations, we judge that there is no power station located in water stressed area.

We recognize that this tool will be able to evaluate in the next 20 years and this situation has not changed since last year.

In addition, it is judged that seawater is used for cooling water of all thermal power plants, and they are not located in water stressed areas.

In the current and future prospects we continuously collect information on the fact that power stations are not located in water stressed areas.

We are confirmed that water related risks are sufficiently low by conducting the same assessment for businesses who operate power generation business in the value chain.

The Risk Management Committee, chaired by the president of TEPCO as the chief risk management executive, plays a central role in assessing and evaluating risks related to direct operations and supply chain that could have a particularly serious impact on business. Its deliberations are reflected in annual management plans. And annual management plans are approved by board. Risks associated with water are also assessed and evaluated in this process in consideration of those stemming from economic and climatic conditions, industry deregulation, equipment and operations, and interest rate fluctuation. Risks specific to each risk management unit (head office departments, offices, and power plants) are managed and addressed by each risk manager. Risks common to all risk management units are addressed by internal committees.

## W4. Risks and opportunities

### W4.1

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

Yes, only within our direct operations

### W4.1a

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

We understand that our power generation business has smaller water risks by referring evaluations of WRI Aqueduct. However, for our company's continuation, it is really important to measure radioactive contaminated water management in Fukushima Daiichi Nuclear Power Stations. In particular, proceeding decommissioning project for Fukushima Daiichi Nuclear Power Stations as the road map mentioned "Comprehensive Special Business Plan" which has decided by Nuclear Damage Compensation and Decommissioning Facilitation Corporation and TEPCO, is really essential. Currently, TEPCO's business is proceeded based on "Revised Comprehensive Special Business Plan (The Third Plan)" drafted by the Nuclear Damage Liability Facility Fund and TEPCO. The substantive change in our business is supposed to be the delay, incomplete execution or revision of this plan. When we determine if there is such a substantive change, we take into account factors such as the gap between the plan and achievement, and the achievability of the plan, which reflects the results of our risk evaluation. There can be no single, pre-determined quantitative threshold with which we can determine if a change is substantive or not. Our determination is rather comprehensive, based on multiple criteria, which include qualitative ones. This definition of 'substantive change' applies to our direct operations and supply chain, but we do not anticipate such a substantive change in our supply chain. Our Revised Comprehensive Special Business Plan (The Third Plan) deeply concerns our whole business, operations, revenue or expenditure. The revised comprehensive special business plan (third plan) is closely related to the whole business, revenue or expenditure. Decommissioning of the Fukushima Daiichi Nuclear Power Station plays an important role in this plan, and contaminated water management is an important factor. The cost of decommissioning the Fukushima Daiichi Nuclear Power Station is estimated at approximately 1 trillion yen, and 30% of this cost will be spent on contaminated water treatment. As for the decommissioning reserve, we plan to allocate approximately 160 billion yen to the polluted water countermeasure program from FY2019 to FY2021. The solution of polluted water problems will lead to the success of the abolition project. To complete a comprehensive special business plan within a set period.

For more details follow the link below:

https://www4.tepco.co.jp/en/decommission/progress/watertreatment/index-e.html

### W4.1b

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

| | Total number of facilities exposed to water risk | % company-wide facilities this represents | Comment |
|---|---|---|---|
| Row 1 | 1 | Less than 1% | The facility exposed serious water risks is only Fukushima Daiichi Nuclear Power Station. TEPCO has 196 power generation stations (as of the end of FY2017), and the proportion of total operations is 0.5%. |

## W4.1c

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

**Country/Region**
Japan

**River basin**
Other, please specify (Pacific Ocean)

**Number of facilities exposed to water risk**
1

**% company-wide facilities this represents**
Less than 1%

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

**% company's annual electricity generation that could be affected by these facilities**
Less than 1%

**% company's global oil & gas production volume that could be affected by these facilities**
<Not Applicable>

**% company's total global revenue that could be affected**
1-25

**Comment**
Currently, TEPCO's business is proceeded based on "Revised Comprehensive Special Business Plan (The Third Plan)" drafted by the Nuclear Damage Liability Facility Fund and TEPCO. The substantive change in our business is supposed to be the delay, incomplete execution or revision of this plan. When we determine if there is such a substantive change, we take into account factors such as the gap between the plan and achievement, and the achievability of the plan, which reflects the results of our risk evaluation. There can be no single, pre-determined quantitative threshold with which we can determine if a change is substantive or not. Our determination is rather comprehensive, based on multiple criteria, which include qualitative ones. This definition of 'substantive change' applies to our direct operations and supply chain, but we do not anticipate such a substantive change in our supply chain. Our Revised Comprehensive Special Business Plan deeply concerns our whole business, operations, revenue or expenditure. Decommissioning of the Fukushima Daiichi Nuclear Power Station plays an important role in this plan, and contaminated water management is an important factor. The cost of decommissioning the Fukushima Daiichi Nuclear Power Station is estimated at approximately 1 trillion yen, and 30% of this cost will be spent on contaminated water treatment. As for the decommissioning reserve, we plan to allocate approximately 160 billion yen to the contaminated water countermeasure program from FY2019 to FY2121. The solution of contaminated water problems will lead to the success of the abolition project. To complete a comprehensive special business plan within a set period.

## W4.2

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

**Country/Region**
Japan

**River basin**
Other, please specify (Pacific Ocean)

**Type of risk**
Physical

**Primary risk driver**
Inadequate infrastructure

**Primary potential impact**
Increased operating costs

**Company-specific description**
It is really important for us to measure radioactive contaminated water treatment in Fukushima Daiichi Nuclear Power Station as risk management. At the Fukushima Daiichi Nuclear Power Station, some of the groundwater flowing from the mountain-side to the sea is entering into the nuclear reactor building at a rate of approximately 150 tons / day, converting into newly contaminated water. For this reason, we are implementing various measures to counter the risk of contaminated water flowing into the port of the power station and the risk of contaminated water flowing out from the storage tanks. These measures are based on our three basic policies of "REMOVE the source of water contamination", "REDIRECT fresh water from contaminated areas", and "RETAIN contaminated water from leakage". Decommissioning of the Fukushima Daiichi Nuclear Power Station plays an important role in this plan, and contaminated water management is an important factor. The cost of decommissioning the Fukushima Daiichi Nuclear Power Station is estimated at approximately 1 trillion yen, and 30% of this cost will be spent on contaminated water treatment. As for the decommissioning reserve, we plan to allocate approximately 160 billion yen to the contaminated water countermeasure program from FY2019 to FY2021. The solution of contaminated water problems will lead to the success of the abolition project. To complete a comprehensive special business plan within a set period.

**Timeframe**
More than 6 years

**Magnitude of potential impact**
High

**Likelihood**
Virtually certain

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

**Potential financial impact figure (currency)**
160000000000

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

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

**Explanation of financial impact**
We estimate that the expenses related to contaminated water treatments of Fukushima Nuclear Power Plant are about 30% of the cost of 1 trillion yen required for decommissioning work. As for the decommissioning reserve, we plan to allocate approximately 160 billion yen to the contaminated water countermeasure program from FY2019 to FY2021.

**Primary response to risk**
Pollution abatement and control measures

**Description of response**
At the Fukushima Daiichi Nuclear Power Station, some of the groundwater flowing from the mountain-side to the sea is entering into the nuclear reactor building at a rate of approximately 150 tons/day, converting into newly contaminated water. For this reason, we are implementing various measures to counter the risk of contaminated water flowing into the port of the power station and the risk of contaminated water flowing out from the storage tanks. These measures are based on our three basic policies of "REMOVE the source of water contamination", "REDIRECT fresh water from contaminated areas", and "RETAIN contaminated water from leakage". Specifically, contaminated water are treated as Multiple facilities including a Multi-nuclide Removal Facility (Advanced Liquid Processing System = ALPS) ,"Groundwater Bypass System" serves to reduce the amount of contaminated water flowing into the reactor building, and This land-side impermeable wall consists of frozen soil using a frozen construction method that can ensure excellent prevention of water seepage in order to block the flow of groundwater, etc. are set up.

**Cost of response**
160000000000

**Explanation of cost of response**
We estimate that the expenses related to contaminated water treatments of Fukushima Nuclear Power Station are about 30% of the cost of 1 trillion yen required for decommissioning work. As for the decommissioning reserve, we plan to allocate approximately 160 billion yen to the contaminated water countermeasure program from FY2019 to FY2021.

## 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 | TEPCO undertakes comprehensive risk assessments six-monthly. So far substantive water risks associated with our suppliers have not been identified. For example, we understand that a certain amount of freshwater is used by some of our suppliers of coal when they extract and wash coal, and spraying over stockyards in order to avoid fire accident． We conducted scenario analysis using our internal company knowledge (location of our suppliers, etc.), and assessed potential water risks of these suppliers. We manage and reduce potential water risks in supply chain by ensuring multiple fuel suppliers. |

## 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**
Efficiency

**Primary water-related opportunity**
Cost savings

**Company-specific description & strategy to realize opportunity**
Water usage in all TEPCO offices are measured and monitored every fiscal year in our environmental management system. Very challenging targets (-15%) for the years FY2001-2005 were set against FY2000 benchmark, and resulted in a 39% decrease in FY2005.We pasted posters to pay attention employees for saving water. We introduce this activities as environmental consideration activities on the CSR report, so that we motivate employees and show our contribution for developing sustainable society. This initiative was a campaign in which all TEPCO employee is engaged to reduce water usage as well as energy and other resources usage in offices, and the cost reduction of this whole campaign is estimated at about a hundred million JPY. From FY2006 onwards, we have been aiming to maintain the reduced level of water usage we achieved in FY2005 since we realized we came to a point where a further reduction of water usage is extremely difficult. As a strategy to achieve on an ongoing basis, we have been monitoring our water usage in our offices every fiscal year. TEPCO has developed the group environmental policy, and for this policy, we reduce environmental burdens, manage risks of environmental pollution and take action for sure. We reduce water consumption following this policy. We monitor water consumption and publish it on our web site. We are able to show our corporate activities that we considerate water resource to the public.

**Estimated timeframe for realization**
Current - up to 1 year

**Magnitude of potential financial impact**
Low

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

**Potential financial impact figure (currency)**
60000000

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

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

**Explanation of financial impact**
The cost impact of water is really low because we could keep same level of water consumption we achieved in FY 2005. Now, we consume approximately 1,000,000t of domestic use of water / year. Since we were able to reduce 15% from then, and this means we reduce about 150,000t of domestic use of water compared to FY2005 at offices. If we assume 1t of domestic use of water as 400 JPY, we could say that we reduce about 60,000,000 JPY per year.

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**Type of opportunity**
Markets

**Primary water-related opportunity**
Stronger competitive advantage

**Company-specific description & strategy to realize opportunity**
Hydroelectric power generation is really important as a role of renewable energy. Customer needs for renewable energy are also growing thanks to the framework such as RE100. So we are going to reinforce the capacity of hydroelectric plants. In Japan, we use subsidies for equipment investment costs under the national FIT system. Overseas, we have started the hydroelectric power business in Vietnam at first, taking advantage of our long-established technological capabilities, and we are aiming to expand the project further.

**Estimated timeframe for realization**
>6 years

**Magnitude of potential financial impact**
High

**Are you able to provide a potential financial impact figure?**
Yes, an estimated range

**Potential financial impact figure (currency)**
<Not Applicable>

**Potential financial impact figure – minimum (currency)**
0

**Potential financial impact figure – maximum (currency)**
100000000000

**Explanation of financial impact**
We aim to achieve a profit level of 100 billion yen over the entire 10 years of our renewable energy business.

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## W5. Facility-level water accounting

## W5.1

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

**Facility reference number**
Facility 1

**Facility name (optional)**
Fukushima Daiichi Nuclear Power Station

**Country/Region**
Japan

**River basin**
Other, please specify (Pacific Ocean)

**Latitude**
37.42

**Longitude**
141.03

**Primary power generation source for your electricity generation at this facility**
Nuclear

**Oil & gas sector business division**
<Not Applicable>

**Total water withdrawals at this facility (megaliters/year)**
235

**Comparison of withdrawals with previous reporting year**
Lower

**Total water discharges at this facility (megaliters/year)**
85

**Comparison of discharges with previous reporting year**
About the same

**Total water consumption at this facility (megaliters/year)**
150

**Comparison of consumption with previous reporting year**
Lower

**Please explain**
The figure given is in fact the amount of water newly stored at the Fukushima Daiichi Nuclear Power Station in FY2017. The amount of water injected into the reactor decreased due to the progress of measures against contaminated water and also the amount of water stored has been decreased. Almost all of the water withdrawals at this Nuclear Power Station is stored for purification for the time being, and not discharged in the contaminated state. We estimate that the quantity of water leaked to the sea or groundwater was quite small, in the region of a few thousand litters in total.

## W5.1a

**(W5.1a) For each facility referenced in W5.1, provide withdrawal data by water source.**

**Facility reference number**
Facility 1

**Facility name**
Fukushima Daiichi Nuclear Power Station

**Fresh surface water, including rainwater, water from wetlands, rivers and lakes**
0

**Brackish surface water/seawater**
0

**Groundwater - renewable**
150

**Groundwater - non-renewable**
0

**Produced/Entrained water**
0

**Third party sources**
85

**Comment**
We do not use water of municipalities for cooling nuclear power reactors, because we use water in flowed to the building after removing cesium and desalination. For domestic use, we withdraw water from third party sources.

## W5.1b

**(W5.1b) For each facility referenced in W5.1, provide discharge data by destination.**

**Facility reference number**
Facility 1

**Facility name**
Fukushima Daiichi Nuclear Power Station

**Fresh surface water**
0

**Brackish surface water/Seawater**
85

**Groundwater**
0

**Third party destinations**
0

**Comment**

## W5.1c

**(W5.1c) For each facility referenced in W5.1, provide the proportion of your total water use that is recycled or reused, and give the comparison with the previous reporting year.**

**Facility reference number**
Facility 1

**Facility name**
Fukushima Daiichi Nuclear Power Station

**% recycled or reused**
None

**Comparison with previous reporting year**
About the same

**Please explain**
There is no facilities used recycled or reused water.

## W5.1d

**(W5.1d) For the facilities referenced in W5.1, what proportion of water accounting data has been externally verified?**

**Water withdrawals – total volumes**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water withdrawals – volume by source**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water withdrawals – quality**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water discharges – total volumes**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water discharges – volume by destination**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water discharges – volume by treatment method**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water discharge quality – quality by standard effluent parameters**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water discharge quality – temperature**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water consumption – total volume**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

**Water recycled/reused**

**% verified**
Not verified

**What standard and methodology was used?**
There is no water accounting data externally verified.

## 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<br>Description of business impact on water<br>Description of water-related performance standards for direct operations<br>Description of water-related standards for procurement<br>Reference to international standards and widely-recognized water initiatives<br>Company water targets and goals<br>Commitments beyond regulatory compliance<br>Commitment to water-related innovation<br>Commitment to water stewardship and/or collective action<br>Recognition of environmental linkages, for example, due to climate change | For electricity production, freshwater is directly used in hydroelectric power plants. In thermal power and nuclear power plants we use fresh water for making it steam and generate electricity. The water used in the power generation is properly treated and its quality confirmed, but it may have an impact on the water environment in that it is draining. In addition, there is an event that contaminated water was generated inside the reactor building due to the Fukushima Daiichi Nuclear Power Station accident. For contaminated water measures in Fukushima Daiichi Nuclear Power Station, there is a standard to control the completion of indoor stagnant water treatment and the amount of polluted water generation to around 150m3 / day by 2020. And this standard is our goal, too. We request suppliers to considerate efficient use of water and resources by procurement basic policy and green procurement guidelines. We purchase products and services considering various environmental burdens over the full product life cycle from resource extraction to disposal. Participated in the Water Project of the Ministry of the Environment, we are working on preservation of rivers and ocean environment. And we support the declaration of biodiversity and action guidelines of the Keidanren or Japan Business Federation. By the agreement with the local government where the power plants are located, water discharges are conducted with each standards that are stricter than legal regulations. R & D is being carried out to properly implement decommissioning measures, including measures against contaminated water at the Fukushima Daiichi Nuclear Power Station. TEPCO has developed its group environmental policy, and we reduce environmental burdens and take action with environmental consideration in every corporate activities. Water risks caused by floods are managed in the business execution as natural disaster risks due to climate change. |

## 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 | President and Representative Executive Officer, who is responsible for installing water pollution control facility, as a member of the Board of Directors, monitors the execution status and is responsible. The Board of Directors also monitors the execution status of the Decommissioning Project of the Fukushima Daiichi Nuclear Power Plant, including contaminated water treatment, as reported by executive officers (Chief Decommissioning Officer: CDO). President is also the head of the Risk Management Committee. |

## W6.2b

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

| | Frequency that water-related issues are a scheduled agenda item | Governance mechanisms into which water-related issues are integrated | Please explain |
|---|---|---|---|
| Row 1 | Scheduled - some meetings | Monitoring implementation and performance<br>Overseeing acquisitions and divestiture<br>Overseeing major capital expenditures<br>Providing employee incentives<br>Reviewing and guiding annual budgets<br>Reviewing and guiding business plans<br>Reviewing and guiding major plans of action<br>Reviewing and guiding risk management policies<br>Reviewing and guiding strategy<br>Reviewing and guiding corporate responsibility strategy<br>Reviewing innovation/R&D priorities<br>Setting performance objectives | We have formulated action plans for business execution (business plan) including risk management issues and select responsible officers (executive officers). In addition, we report to the Board of Directors on the status of business execution quarterly, and are supervised strategies, action plans (actions) and performance targets, including revisions as necessary. CDO ( Chief Decommissioning Officer) was appointed as the chief executive officer of the decommissioning project of Fukushima Daiichi Nuclear Power Plant including contaminated water countermeasures. And the action plan for contaminated water measures was formulated and enforced at the "Management Committee of the Decommissioning Company" where CDO is in charge. Execution status is reported to the Board of Directors at least every quarter, and supervised. |

## 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, please specify (Chief Decommissioning Officer)

**Responsibility**
Both assessing and managing water-related risks and opportunities

**Frequency of reporting to the board on water-related issues**
More frequently than quarterly

**Please explain**
CDO ( Chief Decommissioning Officer) was appointed as the chief executive officer of the decommissioning project of Fukushima Daiichi Nuclear Power Plant including contaminated water countermeasures. And the action plan for contaminated water measures based on "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station" was formulated, enforced, and managed the schedule of the roadmap at the "Management Committee of the Decommissioning Company" where CDO is in charge. CDO has also a role of Managing Executive Officer, the execution status is reported to the Executive Committee and Board of Directors at least every quarter, and supervised.

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

**Responsibility**
Managing water-related risks and opportunities

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

**Please explain**
At Risk Management Committee, the risks to be considered as management issues in the business execution (business plan) for the next fiscal year are discussed, and the risks are reported to the Executive Board meeting. At the Executive Board meeting, the matters to be decided by the Risk Management Committee are discussed, and the risks to be included in the business plan for the next fiscal year are determined and approved by the president (CEO). Finally, the business plan which includes risk management is discussed and approved by Board of Directors.

## W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4

**(W-FB6.4/W-CH6.4/W-EU6.4/W-OG6.4/W-MM6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?**
Yes

## W-FB6.4a/W-CH6.4a/W-EU6.4a/W-OG6.4a/W-MM6.4a

**(W-FB6.4a/W-CH6.4a/W-EU6.4a/W-OG6.4a/W-MM6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?**

| | Who is entitled to benefit from these incentives? | Indicator for incentivized performance | Please explain |
|---|---|---|---|
| Monetary reward | Board/Executive board<br>Director on board<br>Chief Sustainability Officer (CSO)<br>Other C-suite Officer (Chief Decommissioning Officer) | Reduction of water withdrawals<br>Reduction in consumptive volumes<br>Reduction of product water intensity<br>Efficiency project or target – direct operations<br>Effluent quality improvements<br>Water-related community project | "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station" which has been decided by the governmental organization, the Inter-Ministerial Council for Contaminated Water and Decommissioning Issues, tells TEPCO has a responsibility to conclude the accident of the Fukushima Daiichi Nuclear Power Station. The goal for the end of decommissioning project is after 30-40 years when fuel debris removal starts, each year the implementation status is reviewed. It will be disincentives for Chief Decommissioning Officer (CDO) if the schedule of decommissioning project completion delays. |
| Recognition (non-monetary) | Board/Executive board<br>Director on board | Reduction of water withdrawals<br>Reduction in consumptive volumes<br>Reduction of product water intensity | "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station" which has been decided by the governmental organization, the Inter-Ministerial Council for Contaminated Water and Decommissioning Issues, tells TEPCO has a responsibility to conclude the accident of the Fukushima Daiichi Nuclear Power Station. The goal for the end of decommissioning project is after 30-40 years when fuel debris removal starts, each year the implementation status is reviewed. It will be disincentives for Chief Decommissioning Officer (CDO) if the schedule of decommissioning project completion delays. |
| Other non-monetary reward | Board/Executive board<br>Director on board | Reduction of water withdrawals<br>Reduction in consumptive volumes<br>Reduction of product water intensity | "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station" which has been decided by the governmental organization, the Inter-Ministerial Council for Contaminated Water and Decommissioning Issues, tells TEPCO has a responsibility to conclude the accident of the Fukushima Daiichi Nuclear Power Station. The goal for the end of decommissioning project is after 30-40 years when fuel debris removal starts, each year the implementation status is reviewed. It will be disincentives for Chief Decommissioning Officer (CDO) if the schedule of decommissioning project completion delays. |

## W6.5

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

## W6.5a

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

In regulatory review concerning thermal power plants and nuclear power plants installed in coastal areas in Japan, engagement is being implemented for administrative organizations. As the review of wastewater regulation by national government and local governments may have financial influences such as facility operation and additional equipment installation, we evaluate the necessity of additional conservation measures, and the contents of engagement are group environmental policy and business plan. We confirm to the partner in charge of correspondence whether it is consistent with that. If they do not agree, they are seeking policy change through industry groups such as Federation of Electric Power Companies of Japan (FEPC), and so on.

## W6.6

**(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?**
Yes (you may attach the report - this is optional)
201906-j.pdf

*The latest securities report (FY2018) is attached.*

## 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 | > 30 | In order to conclude the accident of the Fukushima Daiichi Nuclear Power Station happened in March of 2011, the governmental organization, the Inter-Ministerial Council for Contaminated Water and Decommissioning Issues has decided on a "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station". This Roadmap is mentioned "New Comprehensive Special Business Plan", and the Business Plan tells that TEPCO has a responsibility to conclude the accident of the Fukushima Daiichi Nuclear Power Station. The goal for the end of decommissioning project is after 30-40 years when fuel debris removal starts. Especially, the goal of radioactive contaminated water management is within 2020. TEPCO aims reduction of contaminated water generation to about 100 m3/day and completion of treatment of stagnant water in buildings within 2020. TEPCO continues to monitor underground water and sea water following after 2020. |
| Strategy for achieving long-term objectives | Yes, water-related issues are integrated | > 30 | The goal of radioactive contaminated water management is within 2020. TEPCO aims reduction of contaminated water generation to about 100 m3/day and completion of treatment of stagnant water in buildings within 2020. In FY 2016, about 180 billion JPY was spent for contaminated water countermeasure expenses as the mid- and long-term roadmap-related expenses for the decommissioning measures of Fukushima Daiichi Nuclear Power Plant, etc. TEPCO continues to monitor underground water and sea water following after 2020. Within the company, contaminated water management is reported by a board of directors and developed strategies. For achieving long-term decommissioning objectives, Nuclear Damage Compensation and Decommissioning Facilitation Corporation reviews technical development by "Technical Strategic Plan for Decommissioning of the Fukushima Daiichi Nuclear Power Station of Tokyo Electric Power Company Holdings, Inc". |
| Financial planning | Yes, water-related issues are integrated | > 30 | Financial planning is written in "Comprehensive Special Business Plan" which has decided by Nuclear Damage Compensation and Decommissioning Facilitation Corporation and TEPCO. This business plan has authorized by the competent ministers of Office for Nuclear Damage Compensation Facilitation Corporation in Cabinet Office and Agency for Natural Resources and Energy in the Ministry of Economy, Trade and Industry. The Business Plan tells that TEPCO has a responsibility to conclude the accident of the Fukushima Daiichi Nuclear Power Station. The goal for the end of decommissioning project is after 30-40 years when fuel debris removal starts. Especially, the goal of radioactive contaminated water management is within 2020. TEPCO aims reduction of contaminated water generation to about 100 m 3 / day and completion of treatment of stagnant water in buildings within 2020. TEPCO continues to monitor underground water and sea water following after 2020. Expenditure for contaminated water management is prospected about 30% of total decommissioning project which is about 300 billion JPY. |

### 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)**

0

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

0

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

0

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

0

**Please explain**

As a related expenses related to the mid- and long-term roadmap-related expenses for the decommissioning measures of Fukushima Daiichi Nuclear Power Plant, we spent approximately 180 billion yen as a contaminated water countermeasure expenses by fiscal 2017. Both cost and capital investment (CAPEX) have not changed since FY 2015.

### W7.3

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

| | Use of climate-related scenario analysis | Comment |
|---|---|---|
| Row 1 | Yes | Tokyo Electric Power Holdings is the first Japanese energy company to support with the April 2019 TCFD recommendations and is a core member of the Japan TCFD Consortium. According to the scenario analysis method in the TCFD recommendations, we have identified multiple climate scenarios including the 2 ° C scenario and analyzed the resilience of the TEPCO Group's business strategy. For the climate scenario, IEAWEO 2018 NPS is used as a reference. We are in the precess of identifying and updating opportunities and risks related to climate change based on scenario analysis. The contents of the scenario analysis would be reported to the ESG Committee, of which the representative director and president and executive officers such as presidents of core business companies are members. The summary of scenario analysis results would be published in the 2019 Integrated Report. |

### W7.3a

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

No

## W7.4

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

**Row 1**

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

No, but we are currently exploring water valuation practices

**Please explain**

At present, we have not introduced water pricing because our hydro and thermal power plants are not uniformly located in the water stress area. However, we are examining the future risks of climate change physical risks and WRI Aqueduct's water risks, and considering what kind of water pricing mechanism is effective in accordance with the results. At the time of new and expansion of power plants in and outside Japan, we would like to conduct environmental impact assessment appropriately and implement water pricing in advance if water stress is not uniform.

# 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<br>Business level specific targets and/or goals<br>Site/facility specific targets and/or goals<br>Brand/product specific targets and/or goals<br>Basin specific targets and/or goals | Targets are monitored at the corporate level<br>Goals are monitored at the corporate level | In thermal power plants, we monitor the amount, COD and etc. of discharging water constantly whether it is complied with the effluent standard by law. In addition, we voluntarily set a goal that we discharge water to the public area with reducing environmental burdens as possible as we can. And we reduce water consumption by collecting, purifying and recycling water for boilers. This procedure also contribute to reduce in costs. On the other hand, in hydroelectric plants, we constantly monitor discharging water not to outflow of oil to lower stream. We recognize water risks are really small by checking WRI Aqueduct evaluation for both thermal power plants and hydroelectric plants' locations. In offices, employees continue to save water in the purpose of effective utilization of water resources, and we make the goal continuing with the status quo. This goal also contributes to reduce in costs. In contaminated water management in Fukushima Daiichi Nuclear Power Station, we proceed the road map as mentioned "Comprehensive Special Business Plan" which has decided by Nuclear Damage Compensation and Decommissioning Facilitation Corporation and TEPCO. This business plan has authorized by the competent ministers of Office for Nuclear Damage Compensation Facilitation Corporation in Cabinet Office and Agency for Natural Resources and Energy in the Ministry of Economy, Trade and Industry. It is really important for TEPCO not only to continue business but also to manage risks. |

## 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**
Monitoring of water use

**Level**
Company-wide

**Primary motivation**
Reduced environmental impact

**Description of target**
Under the medium-term goal from FY 2001 to FY 2005, each TEPCO employee has worked on energy saving and resource saving. The extremely difficult reduction target (-15%) of office water use was set based on approximately 2.2 million tons in FY 2000 results. In FY 2005, we reduced water use to 1.34 million tons and achieved a 39% reduction. We introduce this activity as an environmentally conscious activity in our integrated report and show that we contribute to the development of a sustainable society. This effort has been continued since FY 2006, and the amount of water used in FY 2017 was 1.19 million tons.

**Quantitative metric**
% sites monitoring water withdrawals total volumes

**Baseline year**
2005

**Start year**
2006

**Target year**
2018

**% achieved**
100

**Please explain**
Water usage in all TEPCO offices are measured and monitored every fiscal year in our environmental management system. Very challenging targets were set against FY2000 benchmark, and resulted in a 39% decrease in FY2005. This initiative was a campaign in which all TEPCO employee is engaged to reduce water usage as well as energy and other resources usage in offices, and the cost reduction of this whole campaign is estimated at about a hundred million JPY. As a strategy to achieve on an ongoing basis, we have been monitoring our water usage in our offices and all facilities every fiscal year. We continue to monitor water consumption and publish it on our integrated report and web site. We are able to show our consideration for water resource to the public.

## W8.1b

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

**Goal**
Other, please specify (Contaminated water management)

**Level**
Site/facility

**Motivation**
Risk mitigation

**Description of goal**
In TEPCO's business, hydroelectric plants and thermal power plants have small water risks, because they are located in smaller water risk areas. On the other hand, proceeding decommissioning project for Fukushima Daiichi Nuclear Power Stations as the road map mentioned "Comprehensive Special Business Plan" which has decided by Nuclear Damage Compensation and Decommissioning Facilitation Corporation and TEPCO, is really important for us to continue our business, and we have a responsibility to revitalize Fukushima. Especially for contaminated water management, the governmental organization, the Inter-Ministerial Council for Contaminated Water and Decommissioning Issues has established, and it has been managing schedules and risks. The Mid-and-long-term Roadmap set FY2020 a goal of completion of contaminated water treatment retained in the facilities at the Fukushima Daiichi Nuclear Power Station, and TEPCO formulated action plans for reducing the risk of contaminated water and completing processing based on the roadmap. By these countermeasures, we have achieved reduction of stagnant contaminated water in buildings from 400m3 / day to about 120-130 m3 / day, as we nearly achieved the goal 100m3 / day. We continue to reduce contaminated water generation as this level.

**Baseline year**
2011

**Start year**
2016

**End year**
2020

**Progress**
We have achieved the schedule goal mentioned "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station". Specifically, completion of the contaminated water treatment (RO concentrated salt water) in May 2015 by fully utilizing the polynuclear species removal equipment and the high performance polynuclear removal equipment. With regard to "REDIRECT" measures, we proceed pump-up of groundwater from the well near the facilities (operating from September 2015), and installed the Land-side Impermeable Wall (Frozen Soil Wall) (starting freezing in March 2016), etc. As for "RETAIN" countermeasures, installation of Sea-side impermeable wall (closing in October 2015), etc. are carried out in FY2015.Measures against polluted water are making steady progress in line with the Mid-and-long-Term Roadmap. For contaminated water management, we proceed as "Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station", and aim to complete contaminated water management within 2020. By these countermeasures, we have achieved reduction of stagnant contaminated water in buildings from 400m3 / day to about 120-130 m3 / day in 2016, as we nearly achieved the goal of 100m3 / day. We continue to reduce contaminated water generation as this level.

## W9. Linkages and trade-offs

### W9.1

**(W9.1) Has your organization identified any linkages or tradeoffs between water and other environmental issues in its direct operations and/or other parts of its value chain?**

Yes

### W9.1a

**(W9.1a) Describe the linkages or tradeoffs and the related management policy or action.**

**Linkage or tradeoff**

Linkage

**Type of linkage/tradeoff**

Decreased GHG emissions

**Description of linkage/tradeoff**

TEPCO Fuel & Power constantly monitors the concentration of impurities in the boiler water and works to reduce the amount of blow. Boiler water can only be blown off when it is concentrated to a certain extent, thus reducing the amount of fuel burned in the boiler. Therefore, CO2 emissions from energy consumption and water consumption can be reduced simultaneously. In addition, by using recycled water in the boiler, in FY 2017 we reduced the amount of water consumption equivalent to 14% of the total boiler water volume.

**Policy or action**

This initiative at TEPCO Fuel &Power contribute to reduce not only water consumptions and CO2 emissions, but also operating costs. Thus, this initiative is being implemented at all thermal power stations including combined cycle power generation facilities. In FY 2017 we reduced the amount of water consumption equivalent to 14% of the total boiler water volume.

**Linkage or tradeoff**

Linkage

**Type of linkage/tradeoff**

Decreased energy use

**Description of linkage/tradeoff**

Pumping operations in hydroelectric power which is easy to adjust the amount of power generation and plays a role as a peak power source, require power to raise water to dams, and as pumped storage increases, energy use also increases. On the other hand, when the supply capacity of renewable energy power generation increases, especially when the supply capacity of solar power generation during the daytime increases, the supply amount may exceed the power demand amount. Pumped storage power is expected as the adjustment power in this case. In other words, surplus solar power is used to raise water to the reservoir for pumped storage power generation .

**Policy or action**

Based on the national 5th Energy Basic Plan, aiming to renewable power as a main source of energy for 2050, pumped storage power generation is assumed to be its coordinating power. Thus we will use existing pumped storage power as a balancing force for supply and demand together with aiming at becoming the main power source of renewable energy.

## W10. Verification

### W10.1

**(W10.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1d)?**

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

## W11. Sign off

### W-FI

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

### W11.1

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

| | Job title | Corresponding job category |
|---|---|---|
| Row 1 | Executive Vice President, Chief Financial Officer and executive officer in charge of ESG | Chief Financial Officer (CFO) |

## W11.2

**(W11.2) 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)].**

Yes

## Submit your response

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

English

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

| | Public or Non-Public Submission | I am submitting to |
|---|---|---|
| I am submitting my response | Public | Investors |

**Please confirm below**

I have read and accept the applicable Terms