Welcome to your CDP Water Security Questionnaire 2019

W0. Introduction

W0.1

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

EDP – Energias de Portugal, S.A. (EDP) is a listed company whose ordinary shares are publicly traded in the Eurolist by NYSE Euronext Lisbon. The company is established and headquartered in Portugal, being organized under Portuguese laws.
EDP is a vertically integrated utility company, with presence in 16 countries, in 4 continents. With more than 11,600 employees, EDP has operational activities in power generation, distribution and supply of electricity (Portugal, Spain and Brazil) and gas supply (Portugal and Spain). More recently, EDP entered the transmission business in Brazil. Through its subsidiary EDP Renewables, EDP is also one of the largest wind power operators worldwide, with on-shore wind farms in Europe (Iberian Peninsula, France, Belgium, Italy, Poland and Romania), North America (United States of America, Canada and Mexico) and South America (Brazil), and developing off-shore wind projects in the UK, France and the USA. Additionally, EDP generates power from photovoltaic plants in Portugal, Romania and the USA. Almost 70% of our energy is produced from renewable resources.
Throughout its 40 years of history, EDP has been building a relevant presence in the world energy scene. EDP supplies electricity to 9.8 million customers and gas to 1.6 million customers. In 2018, the company generated about 72 TWh of electricity worldwide, of which 66% from renewable energy sources and, by year end, had an installed capacity of 27.2 GW (74.4% renewable).
EDP's vision is to be a global energy providing company, leader in the energy transition to create superior value. Our values are Innovation, Sustainability and Humanization and our commitments are towards results, sustainability, customers and people. The company assumes the power sector's key role in the transition to a low-carbon economy and set a strategic agenda based on organic growth focused on renewables and low exposure to CO2 and sustainability risks. EDP publishes detailed information on its financial and sustainability performance and governance practices in its Annual Report and Sustainability Report, available on www.edp.com.

Key financial figures in 2018:
Turnover: EUR 15,278 million
EBITDA: EUR 3,317 million
Net profit: EUR 519 million
Net investment: 1,707 million
Net debt: EUR 13,480 million
Total assets: EUR 41,644 million

ISIN: PTEDP0AM0009
SEDOL: 4103596

W-EU0.1a

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

Electricity generation
Distribution
Other, please specify
Electricity and gas supply.

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	3,124.2	11.6	18,939,895.2
Lignite	0	0	0
Oil	0	0	0
Gas	3,729	13.8	5,525,323.5
Biomass	0	0	0
Waste (non-biomass)	0	0	0
Nuclear	0	0	0
Geothermal	0	0	0
Hydroelectric	8,792.4	32.6	19,482,306.9
Wind	11,155.9	41.3	28,197,877
Solar	145.2	0.5	227,639.8
Other renewable	0	0	0
Other non-renewable	49.2	0.2	315,888
Total	26,995.8	100	72,688,930.3

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	January 1, 2018	December 31, 2018

W0.3

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

Belgium
Brazil
Canada
France
Italy
Mexico
Poland
Portugal
Romania
Spain
United Kingdom of Great Britain and Northern Ireland
United States of America

W0.4

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

EUR

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
Smaller office facilities in Spain and Brazil.	We do not monitor quantitative water parameters (withdrawals, discharges and consumption) in our smaller office facilities. These facilities use water supplied by municipal water systems and consumption is considered immaterial (estimated to represent less than 0.001% of the Group's total water withdrawals), thus not justifying the implementation of dedicated monitoring procedures.

W1. Current state

W1.1

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

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Not very important	Freshwater is used directly for process and some cooling water in thermal generation, in hydro power plants and in general uses. Access to sufficient amounts of good quality freshwater is essential for operation of these assets, which accounted for 41% of total electricity generation in 2018. Future dependency is expected to decrease with growth of wind and solar capacity in generation portfolio (+17% between 2018 and 2022), as per EDP's Strategic update 2019-2022 and long-term strategy. Indirect use (supply chain only as the use of products does not need water): main use is coal extraction (20-30% of total supply chain water). In 2018, 84% of coal came from mines in low water stress areas (WRI Baseline Water Stress less than 10%) and only 1 mine from high water stressed areas. Coal currently accounts for 12% of our total installed capacity, and procurement is made from a vast range of alternative suppliers in different geographies. Future dependency will be further reduced, as coal capacity will decrease gradually until 2030.
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Not very important	Brackish/seawater is used directly for: cooling water in the refrigeration circuits of two coal power plants in the Iberia. Sufficient amount of brackish/seawater is essential for the operation of these assets which accounted for 18% of total electricity generation in 2018. Also, water recycled represents approximately 10% of direct water use in Pecém, located in a water stressed area. Dependency is expected to decrease in the future with a gradually reduction of coal generation installed capacity until 2030, as per EDP's strategic update 2019-2022 and long- term strategy.

			Indirect use (supply chain only as the use of products does not need water): main use is coal extraction (20-30% of total supply chain water), not being brackish/seawater intensive. Coal currently accounts for 12% of our total installed capacity, and future dependency will be further reduced, as coal capacity will decrease gradually until 2030.

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%	At a corporate level, the monitoring of total water withdrawals is done through EDP's Corporate Sustainability Information System, and its frequency depends on the operations: - quarterly for thermal (coal and natural gas), wind and solar power plants, as well as distribution activities and office buildings, and data is collected directly mostly from meter devices in each facility; - Annually for hydro power plants, and data is collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. Key Water indicators for EDP Group are published in EDP's Sustainability Report and subject to independent third-party verification.
Water withdrawals – volumes from water stressed areas	100%	We monitor, on a quarterly basis, water withdrawals of all facilities in water-stressed regions. These regions are identified through a water stress exposure assessment: assets mapping against recognized water indicators (e.g. WRI Baseline Water Stress) and further a downscaling analysis to local level, using national agencies information.
Water withdrawals – volumes by source	100%	At a corporate level, the monitoring of total water withdrawal volumes by source is done through EDP's Corporate Sustainability Information System, and its frequency depends on the operations: - quarterly for thermal (coal and natural gas), wind and solar power plants,

		as well as distribution activities and office buildings, and data is collected directly mostly from meter devices in each facility; - Annually for hydro power plants, and data is collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. Key Water indicators for EDP Group are published in EDP's Sustainability Report and subject to independent third-party verification.
Water withdrawals quality	100%	We monitor water withdrawals quality of thermal (coal and natural gas) and hydro power plants, representing 99.99% of total water withdrawals (distribution activities and office buildings are excluded, as water is withdrawn from municipality companies). The monitoring frequency depends on the parameter and type of facility. For hydro power plants, parameters monitoring (e.g. Oxygen, Temperature, pH, conductivity, redox potential and turbidity) is mostly done every two months for all quality parameters, both at bottom and surface level, and in two different points of the reservoir. In thermal power plants, in addition to the type of parameter and facility, monitoring also depends on the process (refrigeration circuits and demineralized water processes) and withdrawal sources. Water parameters such as pH, conductivity, turbidity, chlorides, suspended solids, total organic carbon are monitored continuously, weekly or monthly.
Water discharges – total volumes	100%	At a corporate level, the monitoring of total water discharges is done through EDP's Corporate Sustainability Information System, and its frequency depends on the operations: - quarterly for thermal (coal and natural gas), wind and solar power plants, as well as distribution activities and office buildings, and data is collected directly mostly from meter devices in each facility; - Annually for hydro power plants, and data is collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. Key Water indicators for EDP Group are

		published in EDP's Sustainability Report and subject to independent third-party verification.
Water discharges – volumes by destination	100%	At a corporate level, the monitoring of total water discharge volumes by destination is done through EDP's Corporate Sustainability Information System, and its frequency depends on the operations: - quarterly for thermal (coal and natural gas), wind and solar power plants, as well as distribution activities and office buildings, and data is collected directly mostly from meter devices in each facility; - Annually for hydro power plants, and data is collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. Key Water indicators for EDP Group are published in EDP's Sustainability Report and subject to independent third-party verification.
Water discharges – volumes by treatment method	Not relevant	Since hydro power plants, wind and solar farms represent 74% of EDP's total generation capacity, as recommended in the Question-level Guidance, this water aspect is reported as not relevant. It is expected to remain not relevant due to the addition of 7.2GW of new renewable generation capacity foreseen in EDP's Business Plan 2019-2022. We monitor total water discharge volumes by treatment method in our thermal power plants, where such monitoring is either a legal requirement or an environmental management system requirement.
Water discharge quality – by standard effluent parameters	Not relevant	Since hydro power plants, wind and solar farms represent 74% of EDP's total generation capacity, as recommended in the Question-level Guidance, this water aspect is reported as not relevant. It is expected to remain not relevant due to the addition of 7.2GW of new renewable generation capacity foreseen in EDP's Business Plan 2019-2022. We monitor water discharge quality parameters in our thermal power plants, where such monitoring is either a legal requirement or an environmental management system requirement. Wastewater quality discharges

		from thermal power plants are publicly available on EDP's website.
Water discharge quality – temperature	Not relevant	Since hydro power plants, wind and solar farms represent 74% of EDP's total generation capacity, as recommended in the Question-level Guidance, this water aspect is reported as not relevant. It is expected to remain not relevant due to the addition of 7.2GW of new renewable generation capacity foreseen in EDP's Business Plan 2019-2022. We monitor water discharge temperature in our thermal power plants (wastewater and cooling water), where such monitoring is either a legal requirement or an environmental management system requirement.
Water consumption – total volume	100%	At a corporate level, the monitoring of total water withdrawals is done through EDP's Corporate Sustainability Information System, at a quarterly basis for thermal (coal and natural gas), wind and solar power plants, as well as distribution activities and office buildings, and data is collected directly mostly from meter devices in each facility. It is worth noticing that EDP considers water use in hydro power plants a non-consumptive use. Key Water indicators for EDP Group are published in EDP's Sustainability Report and subject to independent third-party verification.
Water recycled/reused	Not relevant	Since hydro power plants, wind and solar farms represent 74% of EDP's total generation capacity, as recommended in the Question-level Guidance, this water aspect is reported as not relevant. It is expected to remain not relevant due to the addition of 7.2GW of new renewable generation capacity foreseen in EDP's Business Plan 2019-2022. In Pecém thermal power plant, EDP both recycles water in its refrigeration circuits, and reuses treated water from the Effluent Treatment Station, using it as cooling water in the refrigeration circuits. In its hydro portfolio, EDP has 2,807MW of pumping storage, representing 5% of water used for hydro power generation in 2018.

The provision of fully-functioning, safely managed WASH services to all workers	100%	The health and safety of those contributing to EDP Group's activities - employees, service providers, contractors or subcontractors - are key priorities for the Group. Within its Health and Safety Work Policy, EDP is committed to make available the required resources to guarantee a safe and healthy environment for all its workers, ensuring compliance with the law. The Policy applies to all EDP Group companies, in all geographies, and requires all service providers to adopt practices in line with its underlying principles. Occupational health and safety are integral parts of EDP Group's activities and are considered in all decisions: project design, construction, exploitation, HR management, procurement, customer relations, supplier relations and with the general public. Additionally, through internal and third-party health and safety audits, the required resources to guarantee a safe and healthy environment for all workers and compliance with the law are verified.

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%	EDP analysed and monitored 100% of its hydro power plant flows in Iberia and Brazil. Following this assessment, EDP implemented downstream environmental flows (e-flows) where required (41% of total hydro power plants). Both in Europe and Brazil, legislation requires the implementation of e-flow regimes as a mitigation environmental measure to improve water body ecological status and to achieve good ecological potential. EDP monitors the effectiveness of these e-flows and readjusts them when necessary to guarantee the ecological quality of the water bodies. Until now,

		results point out to the increase of the ecological quality downstream.
Sediment loading	100%	The potential accumulation of sediments upstream of the reservoir is regularly monitored as part of the operating standards used for hydroelectric power plants. Its monitoring is carried out mainly by the direct inspection at the water intake, and indirectly by bathymetric studies or underwater inspection in the surroundings of the dam. In addition to these operating standards, EDP regularly implements mitigation measures through an adequate spillway management during flood periods to promote solid flows to go downstream, simulating the natural flow. Extraordinarily, and usually in small power plants, it is used the mechanical transport of sediments accumulated upstream, to downstream. In addition to these routine measures, EDP has in place a plan of bathymetric studies to assess the sedimentation potential in the total area of the reservoir. These studies are being implemented in Portugal.
Other, please specify		

W1.2b

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

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	209,415,169	Higher	Total water withdrawals include all assets within EDP's boundary defined in W0.5 and W0.6a: hydro (representing 99.3% of the total withdrawals), thermal (coal and natural gas), wind, solar, as well as distribution activities and office buildings. Specifically for hydro power plants, data was collected either through direct measurements or by calculations, using electricity generated

			at the site level and the reservoir water level. In 2018, water withdrawal was 36% higher than in 2017. This result is explained by the 69% increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Due to the high hydro power contribution in the EDP Group's water performance (99.3% of the total withdrawals), water withdrawals will tend to decrease or increase depending on if it is a dry or wet year, respectively. However, future water withdrawals dependency is expected to decrease with growth of wind and solar capacity in generation portfolio, as per EDP's Strategic Update 2019-2022 and long-term strategy. We use the following thresholds for monitoring trends: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".
Total discharges	209,395,510	Higher	Total discharges include all assets within EDP's boundary defined in W0.5 and W0.6a, with: hydro (representing 99.3% of the total withdrawals), thermal (coal and natural gas), wind, solar, as well as distribution activities and office buildings. Specifically for hydro power plants, data was collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. In 2018, water discharge was 36% higher than in 2017. This result is explained by the 69% increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Due to the high hydro power contribution in the EDP Group's water performance (99.3% of the total discharges), water discharges will tend to decrease or increase depending on if it

			is a dry or wet year, respectively. However, future water discharges are expected to decrease with growth of wind and solar capacity in generation portfolio, as per EDP's Strategic Update 2019-2022 and long-term strategy. We use the following thresholds for monitoring trends: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".
Total consumption	19,659	Lower	Water consumption is a company-wide calculation: withdrawals minus discharges. It is worth noticing that EDP considers water use in hydro power plants a non-consumptive use. In 2018, water consumption was 25% lower than in 2017. This result is explained by the better hydrological conditions in Iberia in 2018, after the drought period in 2017, which led to a lower use of thermal power plants. Water consumption will tend to increase or decrease depending on if it is a dry or wet year, respectively, according to the use of thermal power plants. Future water use is expected to decrease with growth of wind and solar capacity in generation portfolio, as per EDP's Strategic update 2019-2022 and long-term strategy. We use the following thresholds for monitoring trends: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".

W1.2d

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

	% withdrawn from	Comparison with previous reporting year	Identification tool	Please explain

	stressed areas			
Row 1	0.01	Lower	WBCSD Global Water Tool	EDP has two thermal power plants located in water stressed areas (Pecém in Brazil and Castejón in Spain), representing 0.005% of the total water withdrawals reported in question 1.2b. There was a 50% decrease when compared to 2017 mainly due to the reduction of their electricity generation and the implementation of water reuse and recycling measures in some of Pecém industrial processes. For water stress exposure assessment EDP uses the WBCSD Global Water Tool (version 2015), WRI Aqueduct and WWF Water Risk Filter to conduct a first high-level risk assessment, by mapping all its thermal and hydro generation assets against widely recognized water availability indicators (Annual Renewable Water Supply per Person (ARWS) and Baseline Water Stress (BWS)). Wind generation and distribution assets are excluded given their low dependency on water availability. Analysis is conducted at watershed level, using both current state indicators and projections and applying the following thresholds: ARWS less than 1,700 m3/person/year and BWS higher than 20%. A downscaling analysis at local level is done, using information gathered from National Governmental Agencies (location specific water availability indicators) and company's operational teams (asset water dependency, constraints from local competitive uses). This is done for all geographies where EDP has generation activities (Portugal, Spain and Brazil), and considering the facilities location. It is worth noticing that withdrawal sources are closely located to the facilities and, thus, water-stress classification is valid for both situations. Assessment is updated regularly under EDP's environmental risk assessment. We use the following thresholds to monitor trends: +/- 15%: "about the same"; +/- 16-

				50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

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	207,891,958	Higher	99.3% of total water withdrawals comes from fresh surface water for hydro power generation as well as gas power generation. In 2018, water withdrawal from fresh surface water was 37% higher than in 2017. This result is explained by the 69% increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Due to the high hydro power contribution in the EDP Group’s water performance (99.99% of the total fresh surface water withdrawals), water withdrawals from this source will tend to decrease or increase depending on if it is a dry or wet year, respectively. However, future water withdrawals dependency is expected to decrease with growth of wind and solar capacity in generation portfolio, as per EDP’s Strategic Update 2019-2022

				and long-term strategy. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.
Brackish surface water/Seawater	Relevant	1,509,190	About the same	Seawater is relevant as it is used as cooling water in the refrigeration circuits of the two coastal coal power plants in Portugal and Spain. There was a 12% withdrawal decrease, aligned with the 15% decrease of electricity generation from these facilities due to better hydrological conditions in 2018, after the drought period in the Iberia in 2017. Future dependency is expected to decrease with the shutdown of coal power plants in Iberia until 2030, as per EDP’s Strategic Update 2019-2022 and long- term strategy. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.
Groundwater – renewable	Relevant	3	Much lower	Withdrawals from wells are used for human consumption and other general uses. The lower volume reported in 2018 when compared to the previous year basically reflects the lower human and general uses consumption. Given the very low volumes involved and the availability of alternative

				sources, company dependency on this source is low and it is expected to remain low in the future. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.
Groundwater – non-renewable	Relevant	183	About the same	Withdrawals from deep water holes are mainly used in a process water circuit of one of EDP’s gas power plants. Its electricity generation was slightly lower in 2018, when compared to 2017 (-8%), justifying the constant volume withdrawn from this source between 2017 and 2018. Given the very low volumes involved and the availability of alternative sources, company dependency on this source is low and it is expected to remain low in the future. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.
Produced/Entrained water	Not relevant			Not applicable. EDP does not use produced or process water. It is not expected to be used in the future.
Third party sources	Relevant	13,835	Lower	Pecém coal power plant is the main user of third-party sources in EDP Group, being supplied by the local water supply concessionaire. There was a 18% withdrawal decrease due to both the implementation of water reuse and recycling

				measures in some of its industrial processes, and a decrease of its electricity generation. Future dependency is expected to remain constant with the full operationalization of the water efficiency measures. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

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	207,884,518	Higher	In 2018, water discharges to fresh surface water was 37% higher than in 2017. This result is explained by the 69% increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Due to the high hydro power contribution in the EDP Group’s water performance (99.99% of the total fresh surface water discharges), water discharges to this source will tend to decrease or increase depending on if it is a dry or wet year, respectively. However, future water discharges are expected to decrease with growth of wind and solar capacity in generation portfolio, as per

				EDP's Strategic Update 2019-2022 and long-term strategy. We use the following thresholds to monitor trends: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".
Brackish surface water/seawater	Relevant	1,510,986	About the same	Discharges to seawater are mainly of cooling water used in the refrigeration circuits of three EDP's coal power plants: Sines, Aboño and Pecém. There was a 12% discharge decrease, aligned with not only the 15% decrease of electricity generation from both Iberian facilities due to better hydrological conditions in 2018, but also the 25% decrease of electricity generation and implementation of water reuse and recycling measures in some of Pecém industrial processes. Future dependency is expected to be reduced with the gradual decrease of coal capacity until 2030, as per EDP's Strategic Update 2019-2022 and long- term strategy. We use the following thresholds to monitor trends: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".
Groundwater	Not relevant			EDP does not make discharges to groundwater. It is not expected to make this discharges in the future.
Third-party destinations	Relevant	6	Lower	These effluents sum up all domestic wastewater produced in all activities within the reporting boundary and sent to municipal treatment. The lower volume reported in 2018 when compared to the previous year basically

				reflects the lower human consumption and general uses. It is expected that third-party destinations will remain constant over the years. We use the following thresholds to monitor trends: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

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
2.9	Freshwater withdrawals	MWh	Higher	Intensity indicator is expressed in m3/MWh. Numerator refers to total freshwater withdrawals in EDP’s activities, as reported in W1.2h. Information is collected directly mostly from meter devices for thermal, wind and solar power plants, distribution activities and office buildings. For hydro facilities, data is collected either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level. Denominator refers to total net electricity generation, collected through online systems that monitor each power plant’s electricity injection in the grid. The higher value in 2018 (+33% vs. 2017) is explained by the 69% increase of hydropower generation due to the better hydrological conditions in Iberia in 2018.

				Due to the high hydro power contribution in the EDP Group's water performance (99.99% of the total freshwater withdrawals), this water intensity indicator will tend to decrease or increase depending on if it is a dry or wet year, respectively. After the water consumption reduction measures implemented in Pecém (Brazil) last year (to water reuse and recycling in some of its industrial processes) it is not expected more water management structural measures since it has been optimized within the organization over the years. Thus, future freshwater withdrawals will mainly depend on the hydrological conditions in Iberia. Water intensity indicator is being used for internal and external analysis on water dependency and efficiency in water use, to drive water performance improvement projects at operational level and to inform our water strategy. We use the following thresholds for monitoring trends in water intensity indicator: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".

W2. Business impacts

W2.1

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

No

W2.2

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

No

W3. Procedures

W-EU3.1

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

EDP has a third-party certification, by Lloyds, of its corporate environmental management system (CEMS), according to ISO 14001:2015. The CEMS covers the scope: "Corporate management of environmental policies and strategic environmental plans, environmental information and performance of EDP Group organisations" and it frames operation's performance at a site level. Under this standard, EDP identifies its main environmental aspects and their materiality, considering stakeholder's expectations and the result of an internal Environmental Risk Assessment Tool, detailed at a business level, linking environmental aspects with impacts and risks (regulatory, operational, etc.). This tool covers both impacts on the environment (Ex. Water pollution) but also company's dependency on natural resources (ex: water dependence).
Additionally, for each discharge point of thermal power plants, EDP must comply with pollutant emission limits according to environmental licensing permits. Thus, the pollutants to be monitored are expressly included in these licenses, issued by the National Environmental Authorities. Moreover, in Europe, these parameters are based on a facilities' performance level achieved with the application of the best available techniques (BAT), as considered by the European Commission. BATs evolve over time and are discussed with the economic agents of each activity sector. EDP participated in the latest BAT analysis for the large combustion plant sector. EDP monitors these pollutants with different frequencies in accordance with the environmental permits. Some examples of this are level of discharge of heavy metals and temperature level (thermal pollution).
Hydro power plants do not emit pollutants into the water. Water quality parameters are regularly monitored in the reservoir as the existence of the dams can scale up some pollution problems already present in the water upstream the reservoir. For example, when high levels of organic matter and nutrients exist due to diffuse pollution from agriculture or urban sewage discharges, the level of water eutrophication in the reservoir can increase with the consequent decrease of water quality. In critical situations, where dams exist in rivers with significant bad upstream quality, EDP has been voluntarily involved in the implementation of solutions to increase water quality in the reservoirs, mitigating the environmental impacts resulting from these situations. In formal or informal multipurpose reservoirs, EDP also actively acts in acute situations that lead to water quality decrease. A strong and common example of this situation is after strong summer fires, with the increase of ashes in the river streams or in reservoirs used afterwards for water consumption.

Finally, EDP has also in place Emergency Procedures to prevent accidental spills (ex. from oil or chemical substance), as they may become potential pollution sources, for instance causing water body's physical and chemical changes, with the decrease of oxygen in the water, and affecting fauna and flora (by coating, and by reducing the availability of food, for example). A wide range of measures are implemented, such as retention basins in transformers and in oil

tanks, water/oil separators and the existence of spill absorbent materials in the most critical areas of industrial facilities.
Potential detrimental impacts on water (both for ecosystems and human health) associated with pollutants release are limited to our electricity generation activities. For our other electricity sector activities, electricity distribution and electricity and gas supply such impacts are deemed not relevant. In our supply chain, the largest water impacts happen in coal extraction, with coal representing 12% of our total installed capacity. EDP is a member of Bettercoal promoting site and self-assessments of the mines. 100% of its suppliers follow Bettercoal Code, which includes the commitment to natural resource sustainable management and pollution control. EDP also monitors and promotes the Environmental Management Systems of its fuel suppliers, with 82% of critical suppliers certified in accordance with ISO 14001.

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
Hydrocarbons	Hydrocarbons from accidental spills and not due to a continuous discharge situation. Oil spills may cause water body's physical and chemical changes, with the decrease of oxygen in the water, and affecting fauna and flora (by coating, and by reducing the availability of food, for example). Accidental spill frequency is extremely low (1 situation within EDP Group in the last decade). In a qualitative scale, these impacts are considered as highly significant based on either different standards or the materiality process with high relevance for society.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Community/stakeholder engagement Emergency preparedness Other, please specify Environmental Risk Management Tool.	The compliance with wastewater quality standards is ensured through its treatment, monitoring and reporting to the competent authorities. To prevent spillage, leaching, and leakages, there are retention basins in transformers and in oil tanks, water/oil separators and spill absorbent materials in the most critical areas of industrial facilities. Moreover, the collection of several kind of wastewaters in different drainage networks is a complementary procedure to risk mitigation regarding potential water pollutants' impacts: chemical wastewaters, oily wastewaters, domestic

			sewage and clean rain water. Annually, Environmental Declarations are made for all thermal power plants in Iberia, where environmental performance results are provided. These declarations are distributed to the main stakeholders. Also, visits to the industrial facilities are promoted. There are emergency plans in place, as well as specific training actions and accident drills (including testing of scenarios with water damage). EDP has ongoing several Environmental Risk Management Modelling for each of its critical facilities to evaluate the potential damage of oil spills and other potential environmental impacts (occurring as consequences of accidental situations), to better inform decision making.
Coal combustion residuals	Coal combustion residuals (fly ashes, bottom ashes and gypsum) from coal power plants rejected into the water by accident, and not due to a continuous discharge situation. These accidental leakages may have high level content of heavy metals, with potential environmental impacts both in fauna and flora, as well as in human	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Community/stakeholder engagement Emergency preparedness Other, please specify Environmental Risk Management Tool.	The compliance with effluent quality standards is ensured through waste water treatment, monitoring and report to the competent authorities. Coal power plants have landfills for ash and gypsum waste, equipped with sedimentation basins to prevent these kinds of wastes from reaching the

	health when the food chain is contaminated. Accident frequency is extremely low (1 situation with limited impact within EDP Group in the last decade).		water. Annually, Environmental Declarations are made for all thermal power plants in Iberia, where environmental performance results are provided. These declarations are distributed to the main stakeholders. Also, visits to the industrial facilities are promoted. There are emergency plans in place, as well as specific training actions and accident drills (including testing of scenarios with water damage). EDP has ongoing several Environmental Risk Management Modelling for each of its critical facilities to evaluate the potential damage of oil spills and other potential environmental impacts (occurring as consequences of accidental situations), to better inform decision making.
Thermal pollution	The discharge of hot water in EDP's thermal power plants can extraordinarily lead to a raise in temperature of the local water body. This may contribute to the decrease of dissolved oxygen and the change of the local natural environmental with adverse impacts in local fauna and flora living conditions. No significant environmental impacts have been recorded.	Compliance with effluent quality standards Measures to prevent spillage, leaching, and leakages Community/stakeholder engagement Emergency preparedness Other, please specify Monitoring of waterbody temperature.	Thermal pollution is controlled at all EDP thermal power plants as there are legal limits to the temperature rise in the receiving water body. Annually, Environmental Declarations are made for all thermal power plants in Iberia, where environmental performance results are provided. These

			declarations are distributed to the main stakeholders. Also, visits to the industrial facilities are promoted. Also, there are emergency plans in place, as well as specific training actions and accident drills (including testing of scenarios with water damage). EDP has ongoing several Environmental Risk Management Modeling for each of its critical facilities to evaluate the potential damage of oil spills and other potential environmental impacts (occurring as consequences of accidental situations), to better inform decision making.

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
Enterprise Risk Management
International methodologies
Databases

Tools and methods used

WBCSD Global Water Tool
WRI Aqueduct
WWF-DEG Water Risk Filter
ISO 31000 Risk Management Standard
Environmental Impact Assessment
IPCC Climate Change Projections
FAO/AQUASTAT
Regional government databases
Other, please specify
Internal company methods.

Comment

Internal company methods include, but are not limited to, standard risk identification and quantification methodologies (e.g. Monte Carlo simulations, short and long-term impact estimation on EBITDA), and an environmental corporate risk assessment tool aligned with ISO 31000 and ISO 14001:2015, which includes water-related regulation follow-up procedures at corporate, business unit and asset level, supported by a proprietary Regulation Database information system, managed at corporate level.

Supply chain

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
Enterprise Risk Management

Tools and methods used

WRI Aqueduct

ISO 31000 Risk Management Standard

Comment

Water risks throughout the supply chain are identified, assessed and managed both in EDP's Water Risk Map, in which supply chain risks are identified as strategic, as they are important to forecast possible future restrictions in direct and indirect water use, and in EDP's assessment of generation assets' exposure to water stress locations, where current and future water stress exposure of coal mines are assessed regularly using the WRI Aquaduct through their specific coordinates.

Other stages of the value chain

Coverage

None

Comment

Use of EDP's products (electricity and gas) does not involve water use. As such, we do not include other stages of the value chain water risks in our risk assessment procedures.

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	Current and future water availability is vital to EDP's thermal and hydro electricity generation. Water (freshwater; sea water in two power plants) is used for cooling and for water-steam circuits in our CCGT and coal-fired power plants in Portugal, Spain and Brazil (25% of installed capacity). Use is mostly non-consumptive (99% of withdrawals are returned to water bodies with minimal changes) but assets operation depends upon enough water being available for withdrawal. Water is also essential for electricity generation in our hydroelectric power plants in Portugal, Spain and Brazil (33% of installed capacity). All water use in hydro generation depends upon enough incoming flows availability. Current and future availability is assessed through: i) EDP's Corporate Business Risk model – Assessment of key risks, as well as mapping of emerging risks. Water availability risks (e.g. business risks such as increase in competitive uses; strategic risks such as climate-change induced structural changes in hydro flows) are embedded into the model's taxonomy, phases and responsibilities. It uses standard risk methodologies and inputs from sustainability and business unit teams (e.g.

		climate scenarios; local level competitive uses); ii) Assessment of generation assets' exposure to water stress locations. It uses WBCSD Global Water Tool, WRI Aqueduct and FAO/AQUASAT (current – forecasts up to 2040) and WWF Water Risk Filter for a high-level assessment, downscaled with information from National Agencies (location specific indicators) and operational teams' inputs (local competitive uses); iii) Detailed risk quantification for competitive uses and structural decrease in hydro flows in EDP Water Risk Map. Risks are aggregated according to expected frequency and impact and applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).
Water quality at a basin/catchment level	Relevant, always included	Water quality is mostly essential for water-steam process in thermal power plants. Dry years may decrease the water quality withdrawn by the company, leading to the increase of operational costs of the water treatment process. This is an operational physical risk identified and included indirectly in the corporate risk map. The decrease of water availability is directly associated with local degradation of water quality, thus, this risk is assessed indirectly through the current and future availability assessment: i) EDP's Corporate Business Risk model – Assessment of key risks, as well as mapping of emerging risks. Water availability risks (e.g. business risks such as increase in competitive uses; strategic risks such as climate-change induced structural changes in hydro flows) are embedded into the model's taxonomy, phases and responsibilities. It uses standard risk methodologies and inputs from sustainability and business unit teams (e.g. climate scenarios; local level competitive uses); ii) Assessment of generation assets' exposure to water stress locations. It uses WBCSD Global Water Tool, WRI Aqueduct and FAO/AQUASAT (current – forecasts up to 2040) and WWF Water Risk Filter for a high-level assessment, downscaled with information from National Agencies (location specific indicators) and operational teams' inputs (local competitive uses); iii) Detailed risk quantification for competitive uses and structural decrease in hydro flows in EDP Water Risk Map. Risks are aggregated according to expected frequency and impact and applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons

		(5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, always included	Current and future stakeholder conflicts - most relevant competitive uses of water – can constraint operation of our thermal and hydro power plants. Thermal power plants located in water stress areas are the most vulnerable (Castejón, Spain; Pecém, Brazil). In Portugal, some of EDP's hydro reservoirs are multipurpose, and operation must conciliate the needs of the different water users. Examples include Castelo de Bode reservoir, also the main water supplier to Lisbon. Risks arising from potential restrictions to operation are integrated into EDP's water risk assessment through: i) EDP's Corporate Business Risk model – Assessment of key risks, as well as mapping of emerging risks. Increase in competitive uses is a water availability business risk and is embedded into the model's taxonomy, phases and responsibilities. It uses standard risk methodologies and inputs from sustainability and business unit teams (e.g. climate scenarios; local level competitive uses); ii) Detailed quantification of risks associated with competitive uses in EDP Water Risk Map. Risks are aggregated according to expected frequency and impact and applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile). EDP cooperates with local and national competent authorities in the development of River Basin Management Plans and implementation of action plans on flood regularization, ecological flows, flow supply for touristic activities and waterbodies continuity. EDP has an open channel with the Portuguese main water supply company and works with the competent authorities in water resource management. In Spain and Brazil, where EDP has assets in water stress areas, EDP's teams hold regular meetings with State entities to anticipate future conflicts.
Implications of water on your key commodities/raw materials	Not relevant, included	The most relevant commodities for EDP's operation are fossil fuels for electricity generation. According to the 2015 characterization study of EDP's supply chain impacts, water use in coal extraction accounts for 20-30% of our total supply chain water use. Water implications on fossil fuels are included in our water-related risk assessment, but the risk is considered not relevant, as coal accounts for 12% of total installed capacity, and procurement is made from a vast range of

		alternative suppliers in different geographies. Moreover, in 2018, 84% of EDP's coal purchases came from mines located in low water stress areas (WRI Baseline Water Stress <10%) and only 1 mine from high stress areas. Future dependency will be further reduced, as coal capacity will decrease gradually until 2030, and so it is expected that this issue will continue to be evaluated as not relevant.
Water-related regulatory frameworks	Relevant, always included	Water-related regulation (e.g. hydro generation taxes, ecological flows legal regimes, water discharges quality requirements, regulation of the EU Water Framework Directive) can constraint the operation of our thermal and hydro power plants (e.g. requirement to release ecological flows in hydro power plants), as well as increase investment and operational costs (e.g. higher investment associated with the installation of cooling towers that reduce water withdrawals in thermal power plants; increase in wastewater treatment costs prior to discharge). Current and future water-related regulatory and tariff risks are assessed through: i) EDP's Corporate Business Risk model – Assessment of key risks, as well as mapping of emerging risks. Water regulation risks (e.g. regulatory risks such as changes in water pricing) are embedded into the model's taxonomy, phases and responsibilities. Assessment uses standard risk methodologies and inputs from sustainability and business unit teams (e.g. water-related environmental regulation; emerging regulatory issues); ii) Specific water-regulation follow-up procedures conducted at corporate, business unit and asset level (e.g. identification of emerging issues; participation in public consultations; involvement in River Basin Management Plans) and supported by a proprietary Regulation Database information system, managed at corporate level.
Status of ecosystems and habitats	Relevant, always included	Current and future local ecosystem and habitat status is integrated into EDP's water risk assessment in the planning phase of all new thermal and hydro generation projects. Projects undergo Environmental Impact Assessment, including monitoring programs on water communities and fresh water habitats prior to development, and forecast of potential future impacts and design of mitigation measures. In the operation phase, risk is assessed and managed mostly at business unit level (Portugal, Spain and Brazil), through site-specific monitoring plans that assess any material changes on the status of water ecosystems and habitats resulting from the power plant operation. Examples

		of such monitoring plans/tools include: i) water quality monitoring of reservoirs, encompassing biological quality parameters, physicochemical and hydromorphological parameters; ii) use of limnological information collected under the monitoring of reservoirs to support the implementation process of environmental flow regimes; iii) EDP also has in place a global site-specific modelling program to assess potential risks to local ecosystems. Several scenarios of accidents with potential environmental impacts, such as fires, spills, etc. are tested against a baseline environmental condition. Results inform new mitigation action plans, including monitoring plans implemented in addition to the National Environmental Authorities requirements.
Access to fully-functioning, safely managed WASH services for all employees	Not relevant, explanation provided	EDP provides access to clean water and suitable sanitation conditions for all employees in 100% of our facilities. This is a legal requirement in the geographies where EDP operates and is a company commitment under its participation in the United Nations' Global Compact. The issue therefore poses no risks to our operations and it is expected to remain not relevant to our operations and, as such, it is not included in our water risk assessment.
Other contextual issues, please specify	Not considered	No other issues factored into EDP's water related risk assessment.

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	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards.

		Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. As a relevant stakeholder for EDP, costumers are engaged at different levels such as: surveys, customer Ombudsman, commercial offices, dedicated websites in each geography and edponline (reserved area both on the websites and app). Aiming at arising customer awareness, and at the same time promoting money savings to them, EDP has launched a service through which it provides efficient appliances for domestic customers. These appliances, for instance water heaters and electric storage water heaters, are not only energy efficient, but also allow customers to reduce its water bills. In Brazil, EDP conducted a customer awareness campaign to celebrate the World Water Day, where hourglasses were distributed to measure the ideal bath time according to the recommendations of the World Health Organization (WHO).
Employees	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. As a relevant stakeholder for EDP, employees are engaged for water awareness through some projects. For instance, EDP has an internal ongoing project - Econnosco - targeting employees, which aims to raise awareness and promote ecoefficiency on the use of resources, including water. Since 2015 the project is also implemented in Brazil and important reductions on water consumption have been obtained. The project allows us to gather information on staff level of awareness to water-related issues, providing inputs for our water risk assessment process.

Investors	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Our water risk assessment includes the quantification of the potential financial impact of each identified risk on the company's EBITDA. We report the issue in several different ESG road shows or other investor surveys, when the topic is raised. Also, reporting and communication are done through the CDP Water Programme and EDP's Annual Sustainability Report.
Local communities	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. At a local level, water issues are strongly dependent on the facility type and local conditions. EDP reports local environmental declarations under EMAS (Eco-Management and Audit Scheme Registers) in Iberia and when needed initiatives

		are taken to increase water quality or availability to local communities. Engagement to support water risk assessment is also made through multistakeholder commissions on Reservoirs Management or River Basin Councils WG. Current and future stakeholder conflicts (e.g. competitive uses) are then integrated into our water risk management process. This involves, when necessary, the cooperation with competent authorities to ensure adequate management of shared water resources (e.g. flood regularization, ecological flows, flow for touristic activities). EDP has in place edp+perto, an internal training tool to raise capacity to deal with local engagement process where current and future stakeholder conflicts are addressed.
NGOs	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. EDP has in place several partnerships with NGOs, either local or national, concerning mostly environmental protection, where water is a key element considered. For instance, the Doces Nascentes Capixabas Project in Brazil, in the Baixo Guandu river basin, where the increased water consumption and the drought periods in the last years have been affecting the local hydrological conditions. EDP has been supporting this project, together with the Instituto Terra, to protect and restore water resources and to raise awareness among local water users.
Other water users at a basin/catchment level	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the

		regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Water users at a catchment level are considered local communities with direct interest in water issues, so engagement to support water risk assessment is also made through local initiatives or through formal multistakeholder commissions on Reservoirs Management or River Basin Councils working groups. Current and future stakeholder conflicts – of which the most relevant are competitive uses – are then integrated into our water risk management process. This involves, when necessary, the cooperation with the competent authorities to ensure adequate management of shared water resources by addressing issues such as: flood regularization, ecological flows or flow supply for touristic activities. EDP has in place edp+perto, an internal training tool aiming to raise internal capacity to deal with the local engagement process and best practices of local stakeholder management. Current and future stakeholder conflicts are addressed in this training program.
Regulators	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process are directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Water regulation issues are closely followed both at corporate

		and Business Unit level. EDP cooperates with: Eurelectric Hydro Group and Environmental Protection WG; Portuguese Environmental Authorities, in Portugal; Consejo Nacional del Agua (Spain National Water Council) and UNESA, in Spain. In Brazil, EDP participates in the Ceará State Watershed Committee, the entity that manages local water resources in the water stress area where our Pecém thermal power plant is located.
River basin management authorities	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. In Portugal, EDP works with the environmental authorities, namely in Public Water Bodies Programs, ecological flows regimes, Flood Risk Management Plans, the Portuguese Commission on Reservoirs Management and the River Basin Councils. In Brazil, EDP participates in the Ceará State Watershed Committee, the entity that manages local water resources in the water stress area where our Pecém thermal power plant is located.
Statutory special interest groups at a local level	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy

		and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Special interest groups at a local level are integrated into our stakeholder management procedures. Tourist activities, for example, are object of special attention in hydro power plants with multipurpose reservoirs. In Caniçada hydro power plant (Portugal), EDP agreed to operate its hydro power plant having in consideration a water level that allows, simultaneously, recreational activities. Another example is in the Castelo de Bode dam (Portugal) where EDP provides water for nautical sports such as kayaking, adjusting its flows to guarantee these activities when needed.
Suppliers	Not relevant, included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Assessment of potential supply chain water risks was included in our 2015 characterization study of EDP's purchases. The study identified sustainability impacts of our supply chain, including water consumption. It was conducted using procurement data, environmentally extended input-output data and a global water resources model. Main water use is associated with fossil fuel extraction. 20-30% of our supply chain water footprint comes from coal extraction. However, we do not anticipate a substantive impact in our operation as currently 12% of our installed capacity is coal based, and future dependency will be further reduced, as coal capacity will decrease gradually until 2030. Also, risk is further mitigated by working with a vast range of alternative supplier's active in

		different geographies and 100% of EDP's suppliers follow Bettercoal Code, which includes the commitment to natural resource sustainable management and pollution control.
Water utilities at a local level	Relevant, always included	EDP conducts a materiality analysis, assessing and setting the relevance of an issue for EDP and its stakeholders, to support the organisation's decision-making and strategy development process. Material issues obtained with this process are the ones able to affect the value creation for the company in the short, medium and long term, and at the same time, are recognized as being important for the different EDP's stakeholders. This process is updated on an annual basis and includes the following stakeholders (not exhaustive): suppliers, regulators, peers, investors, customers, employees, local communities, NGO; academia, media, etc. These are key stakeholders for EDP as they affect or are affected by the company's strategy and performance, in accordance to AA 1000 standards. Water is considered a material issue inside the Environmental Issues Category, and the yearly results of this process is directly linked to the Corporate Environmental Risk Tool and supports the water related risk assessment developed by the company. Current and future stakeholder conflicts – of which the most relevant are competitive uses, such as water supply – are integrated into our water risk identification and management procedures. Special attention is paid to hydro power plants with multipurpose reservoirs, of which we operate several in Portugal, where we strive to conciliate the needs of the different water users. Examples include Castelo de Bode hydro power plant, which reservoir is also the main water supplier to the city of Lisbon. EDP has an open channel with the Portuguese main water supply company, which owns the local water uptake, to support the engagement process.
Other stakeholder, please specify	Not considered	No other stakeholders considered into EDP's water related risk assessment.

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.

Identification, assessment and management of water-related risks are integrated into EDP's risk procedures and undertaken for all EDP Group within EDP's direct operations in a two-layer process: 1) Corporate Business Risk model – Water business risks (e.g. increase in competitive uses), regulatory risks (e.g. changes in water pricing) and strategic risks (e.g. climate-change induced structural change in water availability) are embedded into the model's taxonomy,

phases and responsibilities. It uses standard risk methodologies (e.g. ISO 31000, short/long-term impact on EBITDA), and is conducted on a short to medium timescale (< 5-10 years) for most risks, using a long-term perspective for climate-related physical risks (e.g. structural reduction in precipitation). 2) In-depth Water Risk Analysis - a) Water Risk Map. Includes business, regulatory, strategic and operational water risks, aggregated according to expected frequency and impact, applying Monte Carlo simulation for short/medium (< 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile). b) Assessment of generation assets' exposure to water stress locations. It uses WBCSD Global Water Tool, WRI Aqueduct and FAO/AQUASAT (current/forecasts up to 2040) and WWF Water Risk Filter for a high-level assessment, followed by downscaling with National Agencies information (water availability indicators) and operational teams' inputs (water dependency, competitive uses); c) Water regulation follow-up. It is conducted at corporate, business unit and asset level (e.g. participation in public consultations; involvement in River Basin Management Plans);
Water risks throughout the supply chain are also identified, assessed and managed both in 2a), in which risks within the supply chain are identified as strategic due to the importance of forecasts of possible future restrictions in direct and indirect water use and in 2b) where current and future water stress exposure of coal mines are assessed regularly using the WRI Aquaduct through the mines' specific coordinates.
This risk evaluation is integrated into the company's development strategy, business plan and project investment analysis (e.g. scenario analysis with water availability and regulation effects in energy prices and volumes; hydro resource evaluation integrating long-term effects of climate change and impact on new hydro capacity).

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?

Substantive financial impact is one that can affect over 1% of the Group's EBITDA. Definition applies to EDP's direct operations. Examples include the impact of decrease in EDP hydro generation in Iberia, in a long-term perspective, resulting from climate change-induced structural decrease in precipitation (estimated financial impact of 60 M€).

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	47	1-25	The number of facilities exposed to water risks account for 13% of EDP Group's facilities: Two thermal power plants, Pecém in Brazil and Castejón in Spain, and the remaining are hydro power plants in Portugal. Some hydro power plants in Portugal were sold in 2018, justifying the lower number of facilities exposed to water risk when compared with the previous reporting year.

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

Portugal

River basin

Lima

Number of facilities exposed to water risk

2

% company-wide facilities this represents

Less than 1%

% company's annual electricity generation that could be affected by these facilities

1-25

% company's total global revenue that could be affected

Less than 1%

Comment

Facilities in Lima River Basin account for 0.6%, 1.4% and 0.5% of EDP Group's facilities, electricity generation and revenues, respectively. Identified in EDP Water Risk

Map as being exposed to risks of climate change induced structural decrease in precipitation and revision of ecological flows regime.

Country/Region

Portugal

River basin

Other, please specify

Cávado

Number of facilities exposed to water risk

5

% company-wide facilities this represents

1-25

% company's annual electricity generation that could be affected by these facilities

1-25

% company's total global revenue that could be affected

Less than 1%

Comment

Facilities in Cávado River Basin account for 1.4%, 2.7% and 0.3% of EDP Group's facilities, electricity generation and revenues, respectively. Identified in EDP Water Risk Map as being exposed to risks of climate change induced structural decrease in precipitation and revision of ecological flows regime.

Country/Region

Portugal

River basin

Douro

Number of facilities exposed to water risk

14

% company-wide facilities this represents

1-25

% company's annual electricity generation that could be affected by these facilities

1-25

% company's total global revenue that could be affected

1-25

Comment

Facilities in Douro River Basin account for 4.0%, 9.1% and 2.2% of EDP Group's facilities, electricity generation and revenues, respectively.
Identified in EDP Water Risk Map as being exposed to risks of climate change induced structural decrease in precipitation, increase in competitive uses and revision of ecological flows regime.

Country/Region

Portugal

River basin

Other, please specify

Mondego

Number of facilities exposed to water risk

12

% company-wide facilities this represents

1-25

% company's annual electricity generation that could be affected by these facilities

Less than 1%

% company's total global revenue that could be affected

Less than 1%

Comment

Facilities in Mondego River Basin account for 3.4%, 0.9% and 0.4% of EDP Group's facilities, electricity generation and revenues, respectively. Identified in EDP Water Risk Map as being exposed to risks of climate change induced structural decrease in precipitation and revision of ecological flows regime.

Country/Region

Portugal

River basin

Tejo

Number of facilities exposed to water risk

10

% company-wide facilities this represents

1-25

% company's annual electricity generation that could be affected by these facilities

1-25

% company's total global revenue that could be affected

Less than 1%

Comment

Facilities in Tejo River Basin account for 2.8%, 2.0% and 0.5% of EDP Group's facilities, electricity generation and revenues, respectively. Identified in EDP Water Risk Map as being exposed to risks of climate change induced structural decrease in precipitation and revision of ecological flows regime.

Country/Region

Portugal

River basin

Guadiana

Number of facilities exposed to water risk

2

% company-wide facilities this represents

Less than 1%

% company's annual electricity generation that could be affected by these facilities

Less than 1%

% company's total global revenue that could be affected

Less than 1%

Comment

Facilities in Guadiana River Basin account for 0.6%, 0.6% and 0.2% of EDP Group's facilities, electricity generation and revenues, respectively. Identified in EDP Water Risk Map as being exposed to risks of climate change induced structural decrease in precipitation and revision of ecological flows regime.

Country/Region

Spain

River basin

Ebro

Number of facilities exposed to water risk

1

% company-wide facilities this represents

Less than 1%

% company's annual electricity generation that could be affected by these facilities

Less than 1%

% company's total global revenue that could be affected

Less than 1%

Comment

Castejón Natural Gas power plant account for 0.3%, 0.9% and 0.7% of EDP Group's facilities, electricity generation and revenues, respectively. It is located in a water stress area identified through EDP's water stress exposure assessment: high level mapping using WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter, followed by a local level assessment using specific water availability indicators from national agencies and internal knowledge of company's operational teams.

Country/Region

Brazil

River basin

Other, please specify

Atlântico Nordeste Oriental

Number of facilities exposed to water risk

1

% company-wide facilities this represents

Less than 1%

% company's annual electricity generation that could be affected by these facilities

1-25

% company's total global revenue that could be affected

1-25

Comment

Pecém Coal power plant account for 0.3%, 4.8% and 2.9% of EDP Group's facilities, electricity generation and revenues, respectively. It is located in a water stress area identified through EDP's water stress exposure assessment: high level mapping using WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter, followed by a local level assessment using specific water availability indicators from national agencies and internal knowledge of company's operational teams.

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

Portugal

River basin

Other, please specify

All portuguese river basins in 4.1c.

Type of risk

Physical

Primary risk driver

Increased water scarcity

Primary potential impact

Reduced revenues from lower sales/output

Company-specific description

Structural decrease in hydro generation productivity. Both IPCC (Intergovernmental Panel on Climate Change) and EEA (European Environment Agency) long-term scenarios forecast a relevant decrease in average annual precipitation in the Iberian Peninsula (10% to 30%, depending upon scenarios, although current portfolio is located mainly in the region with 10% decrease).
Hydro generation is an important source of value for EDP in Iberia, mainly in Portugal where 77% of the Group's hydro capacity is installed (in Spain, it accounts for only 5%). A structural decrease in precipitation, and thus in hydro generation, can negatively affect EDP’s revenues.
Assessment of this risk is part of EDP Water Risk Map, a comprehensive quantification exercise, including market, regulatory, strategic and operational water risks. It covers the company's operations in Portugal and Spain. Risks are aggregated according to expected frequency and impact and are derived by applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).
In the first semester of 2018, a deep-dive exercise on climate change risks provided a more in-depth knowledge of key climate risks, namely related with changing precipitation patterns. This analysis allowed an updated of the 2015 Water Risk Map.

Timeframe

More than 6 years

Magnitude of potential impact

Medium-high

Likelihood

More likely than not

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

60,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Estimated yearly decrease in EDP hydro generation revenues in Iberia, in a long-term perspective, is about EUR 60 million. Value assumes a structural decrease of 10% in hydro productivity in the long-term, yearly production of 12 TWh and a pool price of 50€/MWh.

Primary response to risk

Other, please specify

Generation portfolio diversification

Description of response

EDP manages the risk mainly through a diversified generation portfolio in terms of technologies and geographies. EDP's Business Plan 2019-2022 investments in new generation capacity are also diversified: addition of 7.2GW (25% solar, 73% wind on-shore and off-shore, and 2% hydro), 60% of which in North America, 25% in EU and 15% in Brazil. Geographic diversification significantly reduces the risk, as structural reduction in precipitation is not likely to occur in all geographies and with same magnitude.

EDP developed a specific Water Risk Map and conducts a periodic assessment of generation assets exposure to water stress areas, using high level mapping tools (WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter) and local level analysis (site specific data from local authorities and information on assets specific operating conditions from local company staff). All new power plant project valuation considers sensitivities to lower inflows scenarios, thus enabling informed decision making.

Cost of response

2,250,000,000

Explanation of cost of response

Major risk mitigation process is EDP's diversification strategy for generation portfolio growth. The planned accumulated net expansion investment for the period of 2019-2022

in renewables is ~ EUR 9 bn, i.e., EUR 2.25 bn/year on average. This investment will be distributed across diversified geographies and generation technologies.

Country/Region

Portugal

River basin

Douro

Type of risk

Physical

Primary risk driver

Other, please specify

Increase in competitive uses.

Primary potential impact

Reduced revenues from lower sales/output

Company-specific description

Water transfers in Spain are expected to increase until 2027, mainly due to irrigation purposes. This will reduce trans-border river flows to Portugal and thus water inflows to many of EDP's hydroelectric power plants in Portugal, especially in the Douro river basin. This increase in competitive uses has a potential negative impact in the volume of electricity generation from these assets.

Assessment of this risk is part of EDP Water Risk Map, a comprehensive quantification exercise, including business, regulatory, strategic and operational water risks. It covers the company's operations in Iberia, where 82% of the Group's total hydro generation capacity is located (77% in Portugal and 5% in Spain). Risks are aggregated according to expected frequency and impact and applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).

In the first semester of 2018, a deep-dive exercise on climate change risks provided a more in-depth knowledge of key climate risks, namely related with changing precipitation patterns. This analysis allowed an updated of the 2015 Water Risk Map.

Timeframe

More than 6 years

Magnitude of potential impact

Medium-high

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

68,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Decrease in EDP hydro generation in Portugal, in a medium to long-term perspective (up to 15 years).
Value assumes the structural decrease in the Douro basin hydro generation assets in line with inputs of Spanish Hydrological Plans will may lead to a maximum loss (P95%) of 68M€.

Primary response to risk

Engage with regulators/policymakers

Description of response

EDP is following the negotiations between the Portuguese and Spanish governments on the Iberian Water Convention. Our generation Business Unit staff has been providing technical information and expertise to the Portuguese negotiators.
Also, EDP manages the risk mainly through a diversified generation portfolio in terms of technologies and geographies. EDP's Strategic Update 2019-2022 investments in new generation capacity are also diversified: 7.2GW in renewables (25% solar, 73% wind on-shore and off-shore, and 2% hydro), 60% of which in North America, 25% in EU and 15% in Brazil. Geographic diversification significantly reduces the risk, as structural reduction in precipitation is not likely to occur in all geographies and with same magnitude.
EDP developed a specific Water Risk Map and conducts a periodic assessment of generation assets exposure to water stress areas, using high level mapping tools (WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter) and local level analysis (site specific data from local authorities and information on assets specific operating conditions from local company staff). All new power plant project valuation considers sensitivities to lower inflows scenarios, thus enabling informed decision making.

Cost of response

2,250,000,000

Explanation of cost of response

EDP's diversification strategy for generation portfolio growth. According to its Strategic Update 2019-2022, EDP will invest a total of ~ EUR 9 bn, i.e., EUR 2.25 bn/year on average, in new renewable generation installed capacity. This investment is distributed across geographies and generation technologies. Current expenditure cost of follow-up of negotiations between Portuguese and Spanish governments is not material.

Country/Region

Portugal

River basin

Other, please specify

All portuguese river basins in 4.1c.

Type of risk

Regulatory

Primary risk driver

Regulatory uncertainty

Primary potential impact

Reduced revenues from lower sales/output

Company-specific description

Under the implementation of the European Union Water Framework Directive, concession contracts signed in 2008 for EDP's hydroelectric power plants in Portugal demand new ecological flow regimes. This has a potential negative impact on our operation: reduced revenues (reduction in the volume of electricity generation from these assets) and increase in investment costs (CAPEX in ecological flow devices in hydroelectric plants currently not prepared for the new needs).
Assessment of this risk is part of EDP Water Risk Map, first developed in 2015, a comprehensive quantification exercise, including business, regulatory, strategic and operational water risks. It covers the company's operations in Iberia, where 82% of the Group's total hydro generation capacity is located (77% in Portugal and 5% in Spain). Risks are aggregated according to expected frequency and impact and applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).

Timeframe

1 - 3 years

Magnitude of potential impact

Medium-low

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

3,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Decrease in EDP hydro generation in Portugal, on an annual basis, in the short, mid-term.
Value assumes maximum loss (P25%) with e-flows in all EDP's concessions with this legal requirement.

Primary response to risk

Engage with regulators/policymakers

Description of response

Negotiations are currently being held with Portuguese authorities to establish the new regime details, namely volumes to be released and its relation to yearly hydrological conditions. These are expected to minimize the financial impact risk on the company's operations. EDP has an ongoing 7-year monitoring plan of the ecological status of water bodies downstream of its hydro generation assets. Periodic reports are sent to national authorities and will help inform its final decision on the ecological flows regimes, adjusting the need for new investments to the real ecological conditions of the affected ecosystems.

Cost of response

500,000

Explanation of cost of response

Current expenditure cost of downstream ecological status monitoring plan and of engagement with national authorities on the new ecological flows regime definition. Monitoring and engagement costs are recurring.

Country/Region

Spain

River basin

Ebro

Type of risk

Physical

Primary risk driver

Increased water stress

Primary potential impact

Increased operating costs

Company-specific description

Castejón gas power plant has been identified as a generation asset at risk from water stress location in EDP's Water Stress Exposure Assessment.
A high-level assessment revealed an Annual Renewable Water Supply indicator below 1,700 m3/person/year and a Baseline Water Stress indicator over 20%, according to WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter. Also, Water stress situation was confirmed by information from National Information Systems on Water Resources.
Castejón has not been subject to any water-related constraints in the last years, although evidences have shown that electricity generation might be facing future operational constraints. Due to low river flow, cooling water discharges can be compromised because of the high temperatures impact on the ecosystem.

Timeframe

More than 6 years

Magnitude of potential impact

Low

Likelihood

Likely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Revenue loss from stopping generation during water scarcity situations, up to 1 week, in a 10-year period.

Primary response to risk

Adopt water efficiency, water re-use, recycling and conservation practices

Storage tank to use in water scarce time

Description of response

There are risk reduction measures undergoing, namely water use optimization measures: investment in a reserve tank with automated connections to reduce between 20-30% of water withdrawals from the river in dry seasons.

Cost of response

25,000

Explanation of cost of response

Annualised CAPEX during the Castejón's useful life of the reserve tank.

Country/Region

Brazil

River basin

Other, please specify

Atlântico Nordeste Oriental

Type of risk

Physical

Primary risk driver

Increased water stress

Primary potential impact

Increased operating costs

Company-specific description

Pecém coal-fired plant has been identified as a generation asset at risk from water stress location in EDP's Water Stress Exposure Assessment.
A high-level assessment revealed an Annual Renewable Water Supply indicator below 1,700 m3/person/year and a Baseline Water Stress indicator over 20%, according to WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter. Also, Water stress situation was confirmed by information from National Information Systems on Water Resources.
Pecém is installed at the industrial and Port Complex of Pecém, where multiple other water users, namely industrial, are also present. Water for plant operation is provided by the municipal water and sewage concessionaire. Projected increase in both water scarcity in the region and competitive uses is foreseen to have a potential negative financial effect for the company: higher operation costs (rising water tariffs and taxes) and limitations to operation.

Timeframe

Current up to 1 year

Magnitude of potential impact

Medium

Likelihood

Unlikely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

17,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Increase in water stress leads to new regulatory constraints, namely with an increase of water tariffs and taxes, as well as potential limits to operation. Potential financial impact was obtained by the maximum annual loss initially announced by the Brazilian authorities. At the present time, this value is considered a pass-through cost, according with the existing Power Purchase Agreement.

Primary response to risk

Adopt water efficiency, water re-use, recycling and conservation practices

Water reuse and recycling practices.

Description of response

EDP started investing in the second semester of 2017 in water reuse and recycling initiatives in Pecém power plant: water recycling in its refrigeration circuits and treated water reuse from the Effluent Treatment Station, using it as cooling water in the refrigeration circuits. Also, EDP participates in the region's Watershed Committee, the entity that manages the state's water resources, and are involved in negotiations with the local State Government regarding the final value for the water emergency tax announced in the September 2016.

Cost of response

1,000,000

Explanation of cost of response

CAPEX in the plant's water reuse and recycling process (aprox. R$ 4M). It is expected that the return on investment will occur in less than 3 years.
Current expenditure cost of follow-up of negotiations between the Brazilian authorities, which is a recurring cost, is fully integrated into our budgetary cycles.

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	Main water use in EDP's supply chain is associated with coal extraction. According to the 2015 characterization study of EDP's supply chain impacts, water use in coal extraction accounts for 20-30% of our total supply chain water use. The study identified economic, social and environmental impacts of our supply chain, including water consumption and was conducted using procurement data, environmentally extended

		input-output data and a global water resources model. Restrictions to coal suppliers' operations in water stress areas can potentially impact supply and price in international markets. However, we do not anticipate a substantive impact as in 2018, 84% of EDP's coal purchases came from mines located in low water stress areas (WRI Baseline Water Stress <10%) and only 1 mine from high stress areas. Coal currently accounts for 12% of our total electricity generation installed capacity, and procurement is made from a vast range of alternative suppliers in different geographies. Future dependency will be further reduced, as coal capacity will decrease gradually until 2030 as per EDP's Strategic Update 2019-2022 and long-term strategy.

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

Resilience

Primary water-related opportunity

Increased resilience to impacts of climate change

Company-specific description & strategy to realize opportunity

A severe impact of climate change is related with a structural reduction of water availability, affecting the productivity of EDP's hydro generation. The adjustment of EDP's generation portfolio is already in place and will increase the resilience to water risks.

According with EDP's strategic update of 2019-2022, the strategy for the next years will be focused on the diversification of generation by technology (investing mostly in new wind and solar, thus reducing the exposure to hydro – 7.2GW of renewable capacity additions, ~98% wind & solar) and by geography (expanding in North America, Latam and Europe).

In 2018, EDP already started pursuing this strategy, through the sale of small-hydro power plants in Portugal, reinvesting in other geographies and technologies.

Estimated timeframe for realization

Current - up to 1 year

Magnitude of potential financial impact

High

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

Potential financial impact figure (currency)
2,250,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact
Total new capex expected for 2019-2022 of 12Bn€, from which 75% is dedicated to renewable generation (EUR 9 bn; EUR 2.25 bn/year on average).

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)
2 Hydro power plants in Lima river basin.

Country/Region
Portugal

River basin
Lima

Latitude
41.866054

Longitude
-8.241919

Primary power generation source for your electricity generation at this facility
Hydroelectric

Total water withdrawals at this facility (megaliters/year)
3,057.04

Comparison of withdrawals with previous reporting year

Much higher

Total water discharges at this facility (megaliters/year)

3,057.04

Comparison of discharges with previous reporting year

Much higher

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use.
Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin. The high increases in both withdrawal and discharge volumes are explained by the increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Thresholds used: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

Facility reference number

Facility 2

Facility name (optional)

5 Hydro power plants in Cávado river basin.

Country/Region

Portugal

River basin

Other, please specify

Cávado

Latitude

41.61674

Longitude

-8.36298

Primary power generation source for your electricity generation at this facility

Hydroelectric

Total water withdrawals at this facility (megaliters/year)

4,485.7

Comparison of withdrawals with previous reporting year

About the same

Total water discharges at this facility (megaliters/year)

4,485.7

Comparison of discharges with previous reporting year

About the same

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use.
Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin.
Both withdrawal and discharge volumes remained constant between 2017 and 2018. This is explained by the fact that 4 of these 5 hydro power plants have pumping systems, reducing the dependency on the hydrological conditions.
Thresholds used: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

Facility reference number

Facility 3

Facility name (optional)

14 Hydro power plants in Douro river basin.

Country/Region

Portugal

River basin

Douro

Latitude

41.153052

Longitude

-7.779113

Primary power generation source for your electricity generation at this facility

Hydroelectric

Total water withdrawals at this facility (megaliters/year)

78,198.61

Comparison of withdrawals with previous reporting year

Much higher

Total water discharges at this facility (megaliters/year)

78,198.61

Comparison of discharges with previous reporting year

Much higher

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use. Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin. The high increases in both withdrawal and discharge volumes are explained by the increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Thresholds used: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

Facility reference number

Facility 4

Facility name (optional)

12 Hydro power plants in Mondego river basin.

Country/Region

Portugal

River basin

Other, please specify

Mondego

Latitude

40.385266

Longitude

-8.043322

Primary power generation source for your electricity generation at this facility

Hydroelectric

Total water withdrawals at this facility (megaliters/year)

4,970.3

Comparison of withdrawals with previous reporting year

Higher

Total water discharges at this facility (megaliters/year)

4,970.3

Comparison of discharges with previous reporting year

Higher

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use. Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin. The increases in both withdrawal and discharge volumes are explained by the increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Thresholds used: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

Facility reference number

Facility 5

Facility name (optional)

10 Hydro power plants in Tejo river basin.

Country/Region

Portugal

River basin

Tejo

Latitude

39.480479

Longitude

-7.991989

Primary power generation source for your electricity generation at this facility

Hydroelectric

Total water withdrawals at this facility (megaliters/year)

16,729.25

Comparison of withdrawals with previous reporting year

Much higher

Total water discharges at this facility (megaliters/year)

16,729.25

Comparison of discharges with previous reporting year

Much higher

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use.
Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin. The high increases in both withdrawal and discharge volumes are explained by the increase of hydropower generation due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. Thresholds used: +/- 15%: “about the same”; +/- 16-50%: “higher”/”lower”; +/- 51%: “much higher”/”much lower”.

Facility reference number

Facility 6

Facility name (optional)

2 Hydro power plants in Guadiana river basin.

Country/Region

Portugal

River basin

Guadiana

Latitude

38.046951

Longitude

-7.650575

Primary power generation source for your electricity generation at this facility

Hydroelectric

Total water withdrawals at this facility (megaliters/year)

2,958.17

Comparison of withdrawals with previous reporting year

Much lower

Total water discharges at this facility (megaliters/year)

2,958.17

Comparison of discharges with previous reporting year

Much lower

Total water consumption at this facility (megaliters/year)

0

Comparison of consumption with previous reporting year

About the same

Please explain

Water use in hydro power plants is considered a non-consumptive use.
Withdrawal and discharge volumes were obtained by direct measurements/calculations, considering electricity generated and the reservoir level. Coordinates are given at the center of the river basin. The biggest power plant in this river basin is multipurpose, meaning that agriculture and human consumption uses have priority when compared with electricity generation. Under the subconcession agreement, in 2018, the water level of the reservoir prevented water use for electricity generation, which justifies the decrease in both withdrawal and discharge volumes.

Facility reference number

Facility 7

Facility name (optional)

Castejón.

Country/Region

Spain

River basin

Ebro

Latitude

42.0833

Longitude

-1.6

Primary power generation source for your electricity generation at this facility

Gas

Total water withdrawals at this facility (megaliters/year)

1,091.29

Comparison of withdrawals with previous reporting year

Lower

Total water discharges at this facility (megaliters/year)

196.75

Comparison of discharges with previous reporting year

Much lower

Total water consumption at this facility (megaliters/year)

894.54

Comparison of consumption with previous reporting year

Lower

Please explain

Castejón's electricity generation has decreased 53% when compared to 2017, due to the better hydrological conditions in Iberia in 2018, after the drought period in 2017. This explains the lower values for the three indicators: withdrawal, discharge and consumption volumes.
Withdrawal and discharge volumes are collected directly mostly from meter devices in each facility.
Water consumption is calculated as withdrawals minus discharges.
Thresholds used: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".

Facility reference number

Facility 8

Facility name (optional)

Pecém.

Country/Region

Brazil

River basin

Other, please specify

Atlântico Nordeste Oriental

Latitude

-4

Longitude

-38.87542

Primary power generation source for your electricity generation at this facility

Coal - hard

Total water withdrawals at this facility (megaliters/year)

9,234.48

Comparison of withdrawals with previous reporting year

Lower

Total water discharges at this facility (megaliters/year)

651.1

Comparison of discharges with previous reporting year

Lower

Total water consumption at this facility (megaliters/year)

8,583.38

Comparison of consumption with previous reporting year

Lower

Please explain

When compared to 2017, the lower values for water withdrawal, discharge and consumption volumes of 2018 are explained by the 25% decrease of Pecém's electricity generation as well as the implementation of water reuse and recycling measures in some of its industrial processes.
Withdrawal and discharge volumes are collected directly mostly from meter devices in each facility.
Water consumption is calculated as withdrawals minus discharges.
Thresholds used: +/- 15%: "about the same"; +/- 16-50%: "higher"/"lower"; +/- 51%: "much higher"/"much lower".

W5.1a

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

Facility reference number

Facility 1

Facility name

2 Hydro power plants in Lima river basin.

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

3,057.04

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 2 facilities in Lima River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 2

Facility name

5 Hydro power plants in Cávado river basin.

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

4,485.7

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 5 facilities in Cávado River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 3

Facility name

14 Hydro power plants in Douro river basin.

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

78,198.61

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 14 facilities in Douro River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 4

Facility name

12 Hydro power plants in Mondego river basin.

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

4,970.3

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 12 facilities in Mondego River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 5

Facility name

10 Hydro power plants in Tejo river basin.

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

16,729.25

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 10 facilities in Tejo River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 6

Facility name

2 Hydro power plants in Guadiana river basin.

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

2,958.17

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

0

Comment

Data includes 2 facilities in Guadiana River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 7

Facility name

Castejón.

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

1,090.13

Brackish surface water/seawater

0

Groundwater - renewable

0

Groundwater - non-renewable

0

Produced/Entrained water

0

Third party sources

1.16

Comment

Data includes 1 facility in Ebro River Basin which uses fresh water from a river for the cooling and process water circuits, and from a municipal water supplier for human consumption.

Facility reference number
Facility 8

Facility name
Pecém.

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

Brackish surface water/seawater
0

Groundwater - renewable
0

Groundwater - non-renewable
0

Produced/Entrained water
0

Third party sources
9,234.48

Comment
Data includes 1 facility in the Atlântico Nordeste Oriental River Basin which uses fresh water from a municipal water supplier for the cooling and process water circuits, and from another type of third party organization for human consumption.

W5.1b

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

Facility reference number
Facility 1

Facility name
2 Hydro power plants in Lima river basin.

Fresh surface water
3,057.04

Brackish surface water/Seawater
0

Groundwater
0

Third party destinations

0

Comment

Data includes 2 facilities in Lima River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 2

Facility name

5 Hydro power plants in Cávado river basin

Fresh surface water

4,485.7

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

Data includes 5 facilities in Cávado River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 3

Facility name

14 Hydro power plants in Douro river basin.

Fresh surface water

78,198.61

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

Data includes 14 facilities in Douro River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 4

Facility name

12 Hydro power plants in Mondego river basin.

Fresh surface water

4,970.3

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

Data includes 12 facilities in Mondego River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 5

Facility name

10 Hydro power plants in Tejo river basin.

Fresh surface water

16,729.25

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

Data includes 10 facilities in Tejo River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 6

Facility name

2 Hydro power plants in Guadiana river basin.

Fresh surface water

2,958.17

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0

Comment

Data includes 2 facilities in Guadiana River Basin which use fresh water from rivers. Data was obtained either through direct measurements or by calculations, using electricity generated at the site level and the reservoir water level.

Facility reference number

Facility 7

Facility name

Castejón.

Fresh surface water

195.99

Brackish surface water/Seawater

0

Groundwater

0

Third party destinations

0.76

Comment

Data includes 1 facility in Ebro River Basin which discharges water from the refrigeration circuit into the river and domestic effluents to a third-party water treatment facility.

Facility reference number

Facility 8

Facility name

Pecém.

Fresh surface water

0

Brackish surface water/Seawater

651.1

Groundwater

0

Third party destinations

0

Comment

Data includes 1 facility in the Atlântico Nordeste Oriental River Basin which domestic wastewater is discharged to the local municipal water and sewage concessionaire. Cooling water end up being discharged into the ocean.

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

Lima River Basin (2 hydro facilities).

% recycled or reused

None

Comparison with previous reporting year

About the same

Please explain

There is no water recycling or reuse in the 2 facilities located in Lima river Basin. EDP has concluded in 2017 all its investments to increase pumping services in its hydro power plants portfolio.

Facility reference number

Facility 2

Facility name

Cávado River Basin (5 hydro facilities).

% recycled or reused

11-25%

Comparison with previous reporting year

Lower

Please explain

Data was obtained using pumping volumes. More pumping is likely in dry years (e.g. 2017), so electricity generation is not compromised. 80% of these facilities have pumping, resulting in an overall decrease of water recycling due to the better hydrological conditions in Iberia in 2018.
It will tend to decrease or increase depending on the inter-annual hydro volatility. EDP investments to increase pumping services in its hydro portfolio was concluded in 2017.

Facility reference number

Facility 3

Facility name

Douro River Basin (14 hydro facilities).

% recycled or reused

1-10%

Comparison with previous reporting year

About the same

Please explain

Data was obtained using pumping volumes. More pumping is likely in dry years (e.g. 2017), so electricity generation is not compromised.
Only 21% of these facilities have pumping systems, justifying the low and steady overall variation from 2017.
It will tend to decrease or increase depending on the inter-annual hydro volatility. EDP investments to increase pumping services in its hydro portfolio was concluded in 2017.

Facility reference number

Facility 4

Facility name

Mondego River Basin (12 hydro facilities).

% recycled or reused

1-10%

Comparison with previous reporting year

About the same

Please explain

Data was obtained using pumping volumes. More pumping is likely in dry years (e.g. 2017), so electricity generation is not compromised.
Only 8% of these facilities have pumping systems, justifying the low and steady overall variation from 2017.
It will tend to decrease or increase depending on the inter-annual hydro volatility. EDP investments to increase pumping services in its hydro portfolio was concluded in 2017.

Facility reference number

Facility 5

Facility name

Tejo River Basin (10 hydro facilities).

% recycled or reused

None

Comparison with previous reporting year

About the same

Please explain

There is no water recycling or reuse in the facilities located in Tejo River Basin. EDP has concluded in 2017 all its investments to increase pumping services in its hydro power plants portfolio.

Facility reference number

Facility 6

Facility name

Guadiana River Basin (2 hydro facilities).

% recycled or reused

76-99%

Comparison with previous reporting year

About the same

Please explain

Data was obtained using pumping volumes. Both facilities have pumping systems. Due to the Alqueva's reversible system, electricity generation is less dependent on affluent volume and weather patterns. This explains why there is no significant variation on water recycling (pumping) from 2017. EDP investments to increase pumping services in its hydro portfolio was concluded in 2017.

Facility reference number

Facility 7

Facility name

Castejón.

% recycled or reused

None

Comparison with previous reporting year

About the same

Please explain

There is no water recycling or reuse in Castejón thermal power plant.

Facility reference number

Facility 8

Facility name

Pecém.

% recycled or reused

1-10%

Comparison with previous reporting year

About the same

Please explain

In Pecém thermal power plant, EDP recycles water in its refrigeration circuits, and reuses treated water from the Effluent Treatment Station, using it as cooling water in the refrigeration circuits. Water recycled volume was obtained through the number of cycles in the refrigeration circuit with the same water volume. It is expected an increase of recycled/reused water in 2019 since its electricity generation in 2018 was lower than the expected due to maintenance operations.

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

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water volumes withdrawn are shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water withdrawals – volume by source

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water volumes withdrawn by source are shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for all operations with environmental impacts.

Water withdrawals – quality

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and

AA1000AS.
Water quality indicators are shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water discharges – total volumes

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water discharges are shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water discharges – volume by destination

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water discharges by destination are shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water discharges – volume by treatment method

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water discharges by treatment method are controlled by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water discharge quality – quality by standard effluent parameters

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water discharge quality is controlled by the competent environmental authority, under the environmental permits.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water discharge quality – temperature

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators.
Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water quality of cooling water are controlled by the competent environmental authority, under the environmental permits.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water consumption – total volume

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
Water consumption is shared and validated by the competent environmental authority.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

Water recycled/reused

% verified

76-100

What standard and methodology was used?

EDP's Sustainability Report is externally verified, including GRI water indicators. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS.
91% of EDP's facilities identified as exposed to water risks are certified in accordance to ISO 14001, having this water aspect monitored and externally verified.
EDP commits to achieve 100% ISO 14001 certification by 2020 for operations with environmental impacts.

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 Description of business impact on water	EDP has reviewed its Environmental Policies (Environmental Policy, Water Policy and Biodiversity Policy) in earlier 2018, aggregating all environmental commitments in just one Environmental Policy. This aims to guarantee a better corporate management

		Description of water-related performance standards for direct operations Description of water-related standards for procurement Reference to international standards and widely-recognized water initiatives Company water targets and goals Commitment to align with public policy initiatives, such as the SDGs Commitments beyond regulatory compliance Commitment to water-related innovation Commitment to stakeholder awareness and education Commitment to water stewardship and/or collective action Acknowledgement of the human right to water and sanitation Recognition of environmental linkages, for example, due to climate change	approach, assuming all key environmental issues will have to follow the same commitments, when applicable. Water is a key natural resource for EDP. We depend on it to operate our facilities, and we recognize the adverse environmental impacts resulting from our activities. Under our Environmental Policy we explicit commit to promote the efficient use of natural resources, namely the use and sustainable management of water in all the processes, operations and installations. To complement the new Environmental Policy, EDP has published in its website a clear understanding of what the issue means to the company as well as its management approach, supporting company's performance. 1

[1]EnvironmentalPolicyManagementApproach.pdf

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
Director on board	A Director on EDP Corporate Executive Board has formal responsibility over sustainability issues (CSO), including water. The Director currently in charge is assigned with all the company's cross-cutting critical themes, namely risk management and sustainability. This Director is responsible for: approving/submitting to Board's approval the company's water targets, policies and actions; ensuring inclusion of water risks (e.g. exposure of generation assets to water stress locations, new water taxes) in the company's risk profile; integrating water-related issues into electricity generation investment/divestment analysis (e.g. water dependency vs water stress locations, regulatory issues, price volatility-volume fluctuation for hydro generation); reporting on climate-related issues to EDP General and Supervisory Board (GSB), the highest-level corporate body below the General Shareholders Meeting, which includes a Corporate Governance and Sustainability Committee, headed by the GSB chairman.

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 Overseeing acquisitions and divestiture Overseeing major capital expenditures Providing employee incentives Reviewing and guiding annual budgets Reviewing and guiding business plans	The governance mechanisms in place to oversight water related issues is integrated in the overall mechanism in place for all sustainability issues. The executive Director in charge of sustainability oversees the Corporate Sustainability and Risk Management Offices and supports the Sustainability Committee, chaired by the President of the executive Board, where the top management of the most relevant business units discusses the Group's sustainability performance and its annual Operational Environment and Sustainability Plan. On a monthly basis, the executive Board is briefed by the company's Corporate Sustainability Officer on sustainability issues, including water issues, such as i) regular updates on the implementation of the company's policies, actions and targets on sustainability issues,

		Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding corporate responsibility strategy Setting performance objectives	including water-related issues (e.g. performance against targets); ii) Water-stress risk assessment revision and acute situations of potential impact on electricity generation; iii) results of in-depth water risk analysis (e.g. Water Risk Map); iv) inputs for analysis of investments/divestments on electricity generation, impacting business plans and annual budgets (e.g. water dependency vs exposure to water stress locations); v) proposal for new water policies, actions and targets. On a regular basis (~monthly), the most relevant water-related issues are taken to the Executive Board meetings (held in a weekly base). Additionally, sustainability performance against targets (including water related issues) as well as other strategic sustainability issues, mostly linked to climate change (water included) are reported to EDP's General and Supervisory Board (at least twice a year).

W6.3

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

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

Other C-Suite Officer, please specify

Head of Corporate Sustainability Office.

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

Highest-level of responsibility below Board lies with the Head of EDP Corporate Sustainability Department (CSD), who is also Head of the Corporate Risk Management Department, facilitating the integration of water-related issues into the company's risk profile and procedures.

Corporate departments are headed by the company's most senior managers. The Head of CSD is responsible for assisting the Executive Board of Directors (EBD) in defining policies, actions and targets, including those related to water, and monitoring their implementation at the Business Unit level.

The Head of CSD reports directly to the company's EBD in charge of sustainability. Monthly reports include updates on the implementation/proposal for new water-related policies, actions and targets; identification of potential water shortage and associated

impact on electricity generation; in-depth water risk analysis; water-related inputs for analysis of investments/divestments.

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 Director on board Corporate executive team Chief Executive Officer (CEO) Chief Financial Officer (CFO) Chief Operating Officer (COO) Chief Purchasing Officer (CPO) Chief Risk Officer (CRO) Chief Sustainability Officer (CSO)	Other, please specify EDP's performance in the DJSI Index and ISO 14001 environmental certification target to all Group activities with significant environmental aspects.	Members of EDP Corporate Executive Board of Directors, in accordance with the Board's remuneration policy, have the company's sustainability performance factored into their multiannual variable remuneration. The indicators identified are KPIs extended to all employees at a corporate level. The DJSI Index includes the level of EDP's performance on Water strategy and water risk analysis, as well as water eco-efficiency (performance on withdraws, discharges and consumption). Additionally, in all EDP's companies the executive board have annual monetary rewards linked to operational environmental indicators, such as environmental management systems certification (including continuous improvement in material issues, including water uses) and environmental accidents (goal is zero accidents).
Recognition (non-monetary)	No one is entitled to these incentives		

Other non-monetary reward	No one is entitled to these incentives		

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

Yes, trade associations

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?

EDP engages directly with water policy makers in all geographies where it operates thermal and hydro assets. Examples include participation in drafting River Management Plans in the Portuguese Commission on Reservoirs and in the Spanish National Water Council. In Brazil, for Pecém (asset in water-stressed area), EDP holds regular meetings with Ceará State authorities. Engagement in international water regulation (e.g. EU Water Framework Directive) is conducted via trade associations, notably Eurelectric.

The company's Water Management Working Group (WG) integrates Corporate Centre and Business Units (BUs) and supports the implementation of EDP's Environmental Policy, and its Water Management approach. This WG ensures the alignment with the different company's operational commitments in all activities – including direct and indirect policy engagement - across geographies. If any inconsistency is detected, it is taken to the Sustainability Committee to be discussed, and decisions are then implemented by BUs.

EDP also has dedicated structures in each geography that manage the relation with supervisory bodies and other public policy makers: Corporate Regulation and Competition Department in Portugal, Regulation and Institutional Relationship Department in Spain and Regulatory Issues Department in Brazil. These ensure the overall alignment of policy engagement activities with the corporate water strategy and implement corrective measures whenever inconsistency is detected.

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)

Annual Report available here (> 30MB):
www.edp.com/sites/default/files/portal.com/documents/rc_2018_en_compress.pdf.

Please take a look at EDP's Annual Report on the following pdf pages:
- 95 (Risk Outlook);

- 96 (Risk Managemente of the year);
- 174 (Corporate Governance chapter, section 53).

W7. Business strategy

W7.1

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

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	11-15	Water-related issues are integrated into several of EDP's long-term business objectives, namely: i) Low carbon generation: water availability as hydroelectric generation is an important source of renewable, non-air polluting, CO2 free electricity and is key to achieving our 2030 target of reducing CO2/kWh by 90% from 2005 levels. Currently, over 74.4% of EDP's generation portfolio is based on renewable sources, with hydro making up to 33% of total installed capacity. ii) Low risk profile: at a strategic level, water related risks (e.g. physical risks like exposure to water stress locations or regulatory risks like new water taxes or fees) are now subject to periodic assessment processes, contributing to the company's low risk profile.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	11-15	Strategy to achieve the above mentioned long-term objectives includes: i) Low carbon generation: long-term investment in renewable generation portfolio, where hydro generation plays an important role. EDP's Business Plan 2019-2022 investments in new generation capacity foresees addition capacity of hydro power plants. ii) Low risk profile: Geographic diversification of hydro generation capacity additions is a risk reduction strategy as structural reduction in precipitation, as foreseen in IPCC scenarios, is not likely to occur in all geographies and with same magnitude.
Financial planning	Yes, water-related issues are integrated	11-15	Water-related issues are integrated into several aspects of our financial planning, namely: i) Capital allocation (Planning for new locations): all

			EDP new electricity generation investments go through a detailed analysis which considers water dependency vs exposure to water stress locations, as well as water related regulatory and reputational risks, namely those arising from competitive uses. For new hydroelectric installed capacity, project investment analysis undergoes hydro resource evaluation encompassing scenario analysis of price volatility and changes due to volume fluctuations. ii) Change in revenues and expenditures (constraints to generation asset operation): In Brazil, the extreme drought context of recent years forced power producers to meet their short positions through electricity purchases at high market spot prices. EDP has hydroelectric generation assets in that country and joined the hydro risk renegotiation deal (with retroactive effects to January 2015) proposed by the Brazilian regulator, which materially limits the level of risk associated to the volatility in hydro generation.

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)

-1.32

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

0.18

Water-related OPEX (+/- % change)

0.14

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

-0.12

Please explain

Water-related CAPEX reduction was mainly due to the end of the investment in São Manoel hydro power plant in Brazil.
The anticipated forward trend for CAPEX is explained by the investment in new hydro capacity according to EDP's strategic update of 2019-2022.
The decrease OPEX trend (both from last year and forward trend) is explained by the sale of small-hydro power plants in Portugal and Brazil.

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	EDP uses EIA scenarios to assess climate-related transition risks. We integrate EIA's 450 Scenario, CPS (Current Policy Scenario) and NPS (New Policy Scenario) into our energy planning exercises and evaluate impacts on our entire business portfolio up to 2030, taking into account EDP Group Business Plan. We also used EIA 2DS Scenario for setting its GHG reduction Science Based Target (SBT). EDP's SBT was formally approved by the Science Based Target Initiative in early 2017. EDP uses IPCC scenarios to assess climate-related physical risks. We use IPCC's RCP 8.5 Scenario (business as usual), as well as RCP 6.0, 4.5 and 2.6 Scenarios (aggressive CO2 emission reductions), to identify the most relevant chronic and acute risks and evaluate potential impacts on our electricity generation and distribution activates up to 2050.

W7.3a

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

Yes

W7.3b

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

	Climate-related scenario(s)	Description of possible water-related outcomes	Company response to possible water-related outcomes
Row 1	RCP 2.6 Other, please specify IPCC SRES A2, A1B, B1	EDP assesses climate-related physical risks through IPCC's RCP 8.5 Scenario (BaU), RCP 6.0, 4.5 and 2.6 Scenarios (aggressive CO2 emission reductions), to identify the most relevant chronic and acute risks and evaluate potential impacts on electricity generation and distribution up to 2050. Under IPCC-RCP projections, average	EDP manages the risk mainly through a diversified generation portfolio in terms of technologies and geographies. EDP's Business Plan 2019-2022 investments in new generation capacity foresees: addition of 7.2GW (25% solar, 73% wind on-shore and off-shore, and 2% hydro) 60% of which in North America, 25%

		precipitation in Iberia is expected to decrease by up to 10% by 2035, compared with the 1986-2005 period. Up to 2100, EEA and IPCC forecast average decreases of annual precipitation in Iberia ranging from 10-30%. Hydro generation in Iberia accounts for 82% of the Group's hydro capacity. Thus, a structural decrease in precipitation can negatively affect EDP's revenues. Also, with IPPC SRES A2, A1B and B1, EDP assessed the risk from the number, duration and magnitude increase of extreme events, such as temperature extremes (contribution for water scarcity). Both risks are part of EDP Water Risk Map, a comprehensive quantification exercise, including market, regulatory, strategic and operational water risks, covering operations in Iberia. Risks are aggregated according to expected frequency and impact, applying Monte Carlo simulation for short/medium (up to 5 years) and long-term time horizons (5-50 years). Financial implications are expressed by the value of maximum loss (95% percentile).In early 2018, a deep-dive exercise on climate change risks provided a more in-depth knowledge of key climate risks, namely related with changing precipitation patterns.	in EU and 15% in Brazil. Geographic diversification significantly reduces the risk, as structural reduction in precipitation is not likely to occur in all geographies and with same magnitude. EDP developed a specific Water Risk Map and conducts a periodic assessment of generation assets exposure to water stress areas, using high level mapping tools (WBCSD Global Water Tool, WRI Aqueduct and WWF Water Risk Filter) and local level analysis (site specific data from local authorities and information on assets specific operating conditions from local company staff). All new power plant project valuation considers sensitivities to lower inflows scenarios, thus enabling informed decision making.

W7.4

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

Row 1

Does your company use an internal price on water?

Yes

Please explain

EDP uses an internal price on water to measure its exposure to risks or opportunities from water-related issues. A range up to 5€/m3 is used and calculated taking in

consideration different approaches, such as:
- Cost of an average MWh not generated by a hydro facility due to competitive uses (e.g. E-flows; increase in domestic consumption in multipurpose reservoirs; etc.) or decrease in precipitation during the fiscal year;
- Cost of water treatment for thermal process, varying with water quality parameters.

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 Business level specific targets and/or goals Country level targets and/or goals	Targets are monitored at the corporate level Goals are monitored at the corporate level	Goals and targets are set to measure EDP's progress on water management, within specific commitments assumed by EDP in its Group's Environmental Policy, particularly in using water resource sustainably, a strategic priority for the company. Considering consumptive fresh water uses, thermal power plants account for more than 99% of the total fresh water withdrawals of EDP Group. Thus, it is also within this scope that targets are defined, due to its corporate impact. Also, due to some geographic specificities, for instance higher operational risk from current and forecast structural reduction in precipitation, country-specific targets are also defined with corporate relevance.

W8.1a

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

Target reference number

Target 1

Category of target

Water consumption

Level

Company-wide

Primary motivation

Risk mitigation

Description of target

15% reduction of EDP Group's total fresh water consumption relative to electricity generation.

Quantitative metric

% reduction per product

Baseline year

2016

Start year

2016

Target year

2018

% achieved

100

Please explain

EDP Group's total fresh water consumption relative to electricity generation has decreased 21% between 2016 and 2018, more 6 p.p. than the defined target. This was due to the implementation of water reuse and recycling measures in some industrial processes of Pecém coal power plant, which accounts for almost half of EDP Group's fresh water consumption.
In addition to risk mitigation, this target was also defined to reduce costs and EDP's environmental impacts.

Target reference number

Target 3

Category of target

Water consumption

Level

Country level

Primary motivation

Risk mitigation

Description of target

Annually, an absolute threshold is defined for process water consumption used in water-steam circuits in all thermal power plants in Portugal.

Quantitative metric

Other, please specify

Consumption below a predefined threshold

Baseline year

2018

Start year

2018

Target year

2018

% achieved

100

Please explain

At the end of 2018, consumption was below the target: 82% of the predefined threshold. This target is defined annually.
In addition to risk mitigation, this target was also defined to reduce costs and EDP's environmental impacts.

Target reference number

Target 2

Category of target

Water pollution reduction

Level

Company-wide

Primary motivation

Reduced environmental impact

Description of target

Achieve zero environmental accidents and penalties.

Quantitative metric

Other, please specify

Zero environmental accidents and penalties.

Baseline year

2018

Start year

2018

Target year

2022

% achieved

100

Please explain

There were no environmental accidents or penalties in 2018. This target is part of EDP Group's Strategic Goals for 2022.

W8.1b

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

Goal

Promotion of water data transparency

Level

Company-wide

Motivation

Brand value protection

Description of goal

Clarify and make publicly available the water-related definitions and assumptions considered within the EDP Group for adequate management.
As mentioned in EDP's Environmental Policy, this goal is part of EDP commitments regarding communication in a transparent manner, ensuring understanding and accessibility by the interested parties.
To accomplish this goal, EDP has been aligning all the definitions and assumptions within its Business Units, so there is a global understanding and application of them in the organization.

Baseline year

2016

Start year

2017

End year

2019

Progress

On track. 100% for 2018 expected tasks: Revision of all water definitions linking strategic indicators with operational indicators. In 2018 definitions were tested and reviewed and become publicly disclosed in 2019.

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

Nine of EDP's hydro assets in Portugal have pumping devices. This allows us to reuse water by pumping it upstream during low load hours, storing it in the dam reservoir, and using it for generation again in high demand periods. Pumping is mostly done at night, making full use of zero-GHG wind power electricity.
This is a water management action with relevant positive impacts in the low carbon transition of electricity systems and GHG emissions reduction: i) maximizes wind generation; ii) secures energy storage capacity that increases system flexibility to accommodate a growing share of intermittent renewable sources (wind, solar PV); iii) improves the resilience of downstream run-of-river hydro assets, helping to reduce potential long-term climate change impacts.
In 2018, EDP generated 1,283 GWh of electricity from pumped storage hydro assets, which represented 10% of total electricity generation from these assets. In dry years such as 2017, this percentage reaches more than 25%.

Policy or action

EDP enhances the positive impact of the linkage by increasing the pumping storage capacity of its most important hydroelectricity generation assets. Between 2016 and 2017 EDP more than doubled the pumping equipped hydroelectric capacity.
This investment in pumping storage hydro assets allows EDP to increase system flexibility to accommodate a growing share of intermittent renewable sources (wind, solar photovoltaic) and improve the resilience of downstream run-of-river hydroelectric assets.
In 2018, electricity from pumped storage hydro assets represented 10% of total

electricity generation from these assets. Due to a very dry year, in 2017 this percentage reached more than 25%.

Linkage or tradeoff

Tradeoff

Type of linkage/tradeoff

Decreased energy efficiency

In closed refrigeration circuits.

Description of linkage/tradeoff

6 of EDP's thermoelectric power plants in Portugal, Spain and Brazil (60% of our thermal generating capacity) have wet cooling circuits.

The cooling capacity of closed refrigeration circuits is lower than that of open circuits (e.g. a coal-fired dry cooled power plant, compared to once-through open-loop one, has an energy penalty in the range 4-16% depending on the equipment and operating conditions), thus reducing the energy efficiency of the power plant and increasing GHG and air emissions for the same electricity output.

But on the other hand, the use of cooling towers decreases water withdrawals and subsequent rejection of water in more than 90% compared to open-circuits, reducing water dependency and impact on environment.

Thus, as expected, when comparing water withdrawals in 2018 from closed and open refrigeration circuits, the latter has much higher use of water per GWh generated (115.8 vs. 2.15 GWh/thousand m3).

Policy or action

EDP reduces the negative impact of the trade-off by the on-going implementation of operational measures that optimize the energy efficiency of the fuel conversion in each thermal power plant. This minimizes the effect of the reduced efficiency of closed water-efficient cooling circuits. As an example of an energy efficiency measure implemented by EDP was the fuel switching (from fueloil to natural gas) of coal thermal power plants startups.

Optimization of power plant energy efficiency is part of both the company’s operational performance improvement plans and of its ISO 14 001 Environmental Management System, which currently cover 96% of the assets with potential environment impacts, including 97% of the company’s electricity installed capacity.

EDP’s new thermal power plant projects have been fitted with cooling towers. Additional investment and expenditure costs were integrated into the corresponding business plans and budget cycles. All new electricity generation capacity foreseen in EDP 2018-2022 Business Plan is renewable based (wind, hydro and solar photovoltaic) and our growth strategy does not include investment in additional thermal generation capacity.

W10. Verification

W10.1

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

Yes

W10.1a

(W10.1a) Which data points within your CDP disclosure have been verified, and which standards were used?

Disclosure module	Data verified	Verification standard	Please explain
W0. Introduction	- Electricity generation: nameplate capacity and the generation by power source (W-EU0.1b).	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company. For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope of GRI G4-EU1 and GRI G4-EU2 indicators (Electricity generation installed capacity and output per energy source).
W1. Current state	- Water aspects regularly measured and monitored (W1.2; W-EU1.2a) - Total water withdrawn, discharged and consumed (W1.2b) - Total water withdrawals - by source (W1.2h) - Total water discharges - by	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company.

	destination (W1.2i) - % of total water use recycled or reused		For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope of: i) GRI 103-2 indicator (Water management approach and its components); ii) GRI 303-1 indicator (Total water withdrawals by source). Verified values exclude use of water in hydroelectric generation; iii) GRI 306-1 (Total water discharge by destination) and GRI 303-3 (% of recycled and reused water) indicators. Verified values exclude use of water in hydroelectric generation.
W2. Business impacts	- Penalties, fines and/or enforcement orders (W2.2, W2.2.a, W2.2.b)	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company. For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope GRI 307-1 indicators (Non-compliance with environmental laws and regulations – fines and penalties).
W3. Procedures	- Potential water pollutants with detrimental impact on water ecosystems or human health (W-EU3.1; W-EU3.1a)	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company. For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope

			of GRI 306-5 (Water bodies affected by water discharges) and GRI 303-2 (Water sources significantly affected by water withdrawals) indicators.
W6. Governance	- Water policy (W6.1, W6.1a) - Board level oversight and management responsibilities (W6.2, W6.2a, W6.3)	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company. For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope of GRI 103-2 indicator (Water management approach and its components).
W8. Targets	- Corporate water targets and goals (W8.1, W8.1a, W8.1b)	ISAE3000	Verification of identified data points is within the scope of the independent assurance of EDP Sustainability Report. Assurance is conducted by an independent third party according to ISAE 3000 and AA1000AS, for each annual edition of the report. The report is prepared according to the Global Reporting Initiative GRI Standards - “Comprehensive Option” and the G4 Electric Utilities Sector Disclosures. Information is consolidated at EDP Group level following the financial consolidation rules applied by the company. For 2018 data, all indicators were verified with a limited level of assurance, including the identified data points verified within the scope of GRI 103-2 indicator (Water management approach and its components).

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	Member of EDP Executive Board with formal responsibility over sustainability, risk and other company's cross-cutting critical themes.	Director on board

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	

Please confirm below