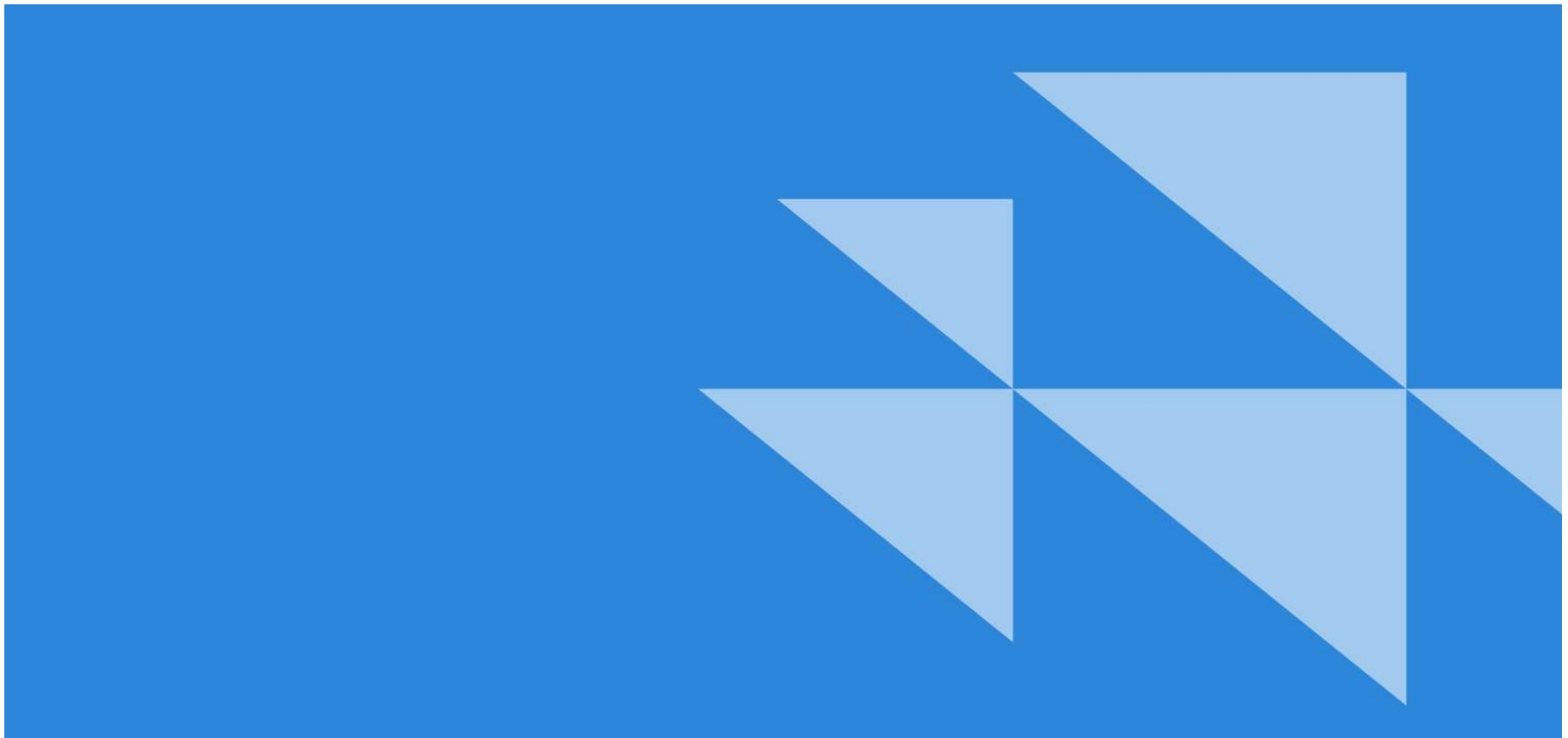

CDP Water Security Questionnaire 2019



W0. Introduction

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

Bayer is a life science company and a global leader in health care and nutrition. Our innovative products support efforts to overcome the major challenges presented by a growing and aging global population. Guided by our corporate purpose “Bayer: Science for a better life,” we help to prevent, alleviate and treat diseases. We are also making an important contribution to providing a reliable supply of high-quality food, feed and plant-based raw materials, while at the same time promoting the sustainable use of natural resources. Our business activities therefore also support the attainment of the United Nations Sustainable Development Goals. We aim to bolster profitability and create value for our customers, shareholders and employees. Around the world, the Bayer brand stands for trust, reliability and quality. Across our various businesses, our activities are guided by our corporate values of Leadership, Integrity, Flexibility and Efficiency, or LIFE for short. Our value culture ensures a common identity throughout the enterprise across national boundaries, management hierarchies and cultural differences.

The management structure of the Bayer Group comprises three divisions – Pharmaceuticals, Consumer Health and Crop Science – and the Animal Health business unit, which are also our reporting segments. The corporate functions, Business Services and the service company Currenta support the operational business. We operate sites around the world, and some are used by multiple segments. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Bayer’s interest in Covestro AG stood at 7.5% as at the end of the reporting period. Therefore, Covestro is no longer a reportable segment.

On June 7, 2018, Bayer completed the acquisition of the Monsanto Company, St. Louis, Missouri, United States (Monsanto), for US\$63 billion, including debt. The divestments to BASF required to fulfill the antitrust conditions were completed on August 1, 2018, for all businesses earmarked for divestment excluding the vegetable seed business, which was divested as of August 16, 2018. The closing of these transactions led to the hold separate order being lifted and enabled the integration of Monsanto into the Bayer Group to begin.

As in our previous CDP reports, we are reporting according to the operational control approach to provide an accurate picture of Bayer’s life science businesses. Covestro and Currenta are therefore not included in this year’s CDP report as we do not exercise full operational control over these businesses.

Certain statements contained in this report may constitute “forward-looking statements”. Actual results could differ materially from those projected or forecasted in the forward-looking statements. Factors that could cause actual results to differ materially include those discussed in Bayer’s public reports (available on the Bayer website www.bayer.com). Bayer assumes no obligation to update the information in this communication, except as otherwise required by law. Readers are cautioned not to place undue reliance on these forward-looking statements that speak only as of the date.

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

Start date	End date
Reporting year: 01/01/2018	12/31/2018

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

Country
Argentina
Belgium
Brazil
Chile
China
Germany
India
Mexico
Peru
Puerto Rico
South Africa
Spain
United States of America
Vietnam

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

Currency
EUR

(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 operational control is exercised

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

No

W1. Current state

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

Water quality and quantity	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Vital	<p>DIRECT USE: The PRIMARY USE of FRESH WATER is for cooling purposes, the production process and irrigation of field and greenhouses for seed production. Clean water is a limiting factor for our production and THUS considered essential. E.g. if the water has a high concentration of salts, it will not be appropriate for cooling purposes due to its corrosive characteristics to pipes.</p> <p>INDIRECT USE: The PRIMARY USE IN THE SUPPLY CHAIN is for raw material/ product supply, incl. seeds produced by contracted growers. Looking downstream, e.g. at Crop Science's customers, FRESHWATER is PRIMARILY USED for irrigation in agriculture. It is THUS considered vital since it could impede raw material / product supply and/or hamper the use of our crop science products.</p> <p>We expect our FUTURE DEPENDENCY IN DIRECT AND INDIRECT OPERATIONS to remain the same BECAUSE freshwater will remain vital for our production and the irrigation of fields with our current strategy, to ensure the provision of raw materials and products and the use of our products by our customers.</p>
Sufficient amounts of recycled, brackish and/or produced water available for use	Important	Not very important	<p>DIRECT USE: The PRIMARY USE of NON-FRESH WATER i.e. recycled water is for cooling purposes, through the reuse of treated wastewater or steam condensate recovery as process water and irrigation of fields and greenhouses for our seeds production. In general, it has neutral importance for our direct use. However, we selected "IMPORTANT" BECAUSE some of our sites are located in water scarce regions: Here the reuse of water is gaining importance. We also encourage our sites to efficiently utilize resources, including water. Through water recycling we reduced our water withdrawals in our operations. This is another reason WHY we consider the use of non-fresh water in direct operations as important.</p> <p>INDIRECT USE: Usually surface or municipal water is used along the value chain e.g. for irrigation in agriculture and THUS NON-FRESH WATER is NOT PRIMARILY USED and considered "not very important". Moreover, brackish and produced water are not material for Bayer.</p> <p>We expect our FUTURE DEPENDENCY IN DIRECT AND INDIRECT OPERATIONS to remain the same BECAUSE we are expecting a similar water availability situation across our sites as today based on current forecasts and we expect our suppliers and customers to continue using surface or municipal water.</p>

Company-wide water accounting

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

Water aspect	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	<p>METHOD AND FREQUENCY:</p> <p>This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM "BaySIS". BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality.</p> <p>In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.</p>

Water withdrawals – volumes from water stressed areas	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water withdrawals – volumes by source	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water withdrawals quality	26-50%	METHOD AND FREQUENCY: We do not monitor the quality of our water withdrawals via our central Bayer Site Information System “BaySIS”, BECAUSE the relevant regulations related to water withdrawal quality requirements differ widely. Therefore, this aspect is monitored directly at our sites. According to GMP (Good Manufacturing Practice), all of our Health Care sites (26-50% of sites) have to analyze the incoming water. Therefore, all water withdrawals are CONTINUOUSLY analyzed whenever water is withdrawn to decide whether there needs to be a treatment before it can be used. Usually, water parameters are measured via online measurements. Adherence to legal regulations is checked regularly e.g. through our internal HSE Audits which take place every 3 years.
Water discharges – total volumes	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water discharges – volumes by destination	76-99%	METHOD AND FREQUENCY: We monitor our water discharges by destination to ensure that all releases to the environment are within the local legal requirements and that no high contaminated waste water is released to the environment. As the local regulations differ widely the water discharge volumes are generally monitored directly at our sites via CONTINUOUS ONLINE MONITORING, each time that water is discharged. Often, the online monitoring system is directly connected to the monitoring system of the local authorities. Control measurements are conducted by the local authorities at least TWICE PER YEAR. Internally, adherence to legal regulations is checked regularly in our internal HSE Audits which take place every 3 years. As we are not able to guarantee 100% coverage without annual monitoring at global level, we selected 76-99 % of sites.
Water discharges – volumes by treatment method	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water discharge quality – by standard effluent parameters	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management.

		Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water discharge quality – temperature	76-99%	METHOD AND FREQUENCY: As the local regulations differ widely, in general, water discharge temperatures are monitored directly at our sites via CONTINUOUS ONLINE MONITORING, each time that water is discharged. Often, the online monitoring system is directly connected to the monitoring system of the local authorities. Control measurements are conducted by the local authorities at least TWICE PER YEAR. Internally, adherence to legal regulations is checked regularly in our internal HSE Audits which take place every 3 years. As we are not able to guarantee 100% coverage without annual monitoring at global level, we selected 76-99 % of sites.
Water consumption – total volume	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
Water recycled/reused	100%	METHOD AND FREQUENCY: This aspect is monitored ANNUALLY via our central BAYER SITE INFORMATION SYSTEM “BaySIS”. BaySIS is a company-wide monitoring tool with direct access for the individual sites. The system encompasses automated controls and different workflows that have to be followed to ensure data quality. In BaySIS, all sites that are considered environmentally relevant according to pre-defined parameters ANNUALLY report water-related key performance indicators BECAUSE we consider them important for our environmental management. Therefore we regularly monitor these indicators, which allow us to set respective targets in sites with relevant water parameters and to initiate corrective actions.
The provision of fully-functioning, safely managed WASH services to all workers	76-99%	Health and safety of our employees are very important aspects for Bayer. As highlighted in our Water Position, we use our local presence to support projects providing access to clean water and sanitation to our employees and the communities in which we operate. By end of 2017, we signed the “WASH at the workplace” pledge of the WBCSD. METHOD AND FREQUENCY: We constantly monitor and assess our HSE performance including the existence of fully-functioning WASH services through our audits worldwide, according to ANNUAL HSE Audit programs as defined on a risk-based approach. All our production sites provide fully-functioning WASH services to all workers, and we estimate these sites to represent over 95% of Bayer’s total water usage. Since our operations include many small Crop Science farming sites worldwide and audits are conducted on a random basis, we are not able to guarantee 100% coverage.

(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?

Water aspect	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	42,106	Much higher	In 2018 total water withdrawal was MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business. Water volumes from all sources are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018. Please note that differences between volumes of water consumed and water discharged can be explained, for example, by quantities of water used as raw materials in products, unquantified losses due to evaporation, leaks and volumes of condensate generated through the use of steam as a source of energy. This is why total water consumption does not equal total water withdrawals minus discharges (C (26,868) ≠ W (42,106) - D (18,280).
Total discharges	18,280	Much higher	In 2018 total water discharges were MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business. Water discharges are expected to rise IN THE FUTURE because of the newly acquired agricultural business,

			which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018. Please note that differences between volumes of water consumed and water discharged can be explained, for example, by quantities of water used as raw materials in products, unquantified losses due to evaporation, leaks and volumes of condensate generated through the use of steam as a source of energy. This is why total water consumption does not equal total water withdrawals minus discharges (C (26,868) ≠ W (42,106) - D (18,280).
Total consumption	26,868	Much higher	In 2018 total water consumption was MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business. Water consumption is expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018. Please note that differences between volumes of water consumed and water discharged can be explained, for example, by quantities of water used as raw materials in products, unquantified losses due to evaporation, leaks and volumes of condensate generated through the use of steam as a source of energy. This is why total water consumption does not equal total water withdrawals minus discharges (C (26,868) ≠ W (42,106) - D (18,280).

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

% withdrawn from stressed areas	Comparison with previous reporting year	Identification tool	Please explain
16	Much higher	WRI Aqueduct	<p>REASON FOR CHANGE TO PREVIOUS YEAR: Due to the newly acquired agriculture business, the number of sites in water scarce areas has increased, including their share in total water withdrawals.</p> <p>APPLICATION OF TOOL TO EVALUATE WHETHER WATER HAS BEEN WITHDRAWN FROM STRESSED AREAS: To identify the sites in water-scarce regions we have applied the Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool (thresholds: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator). We analyzed all sites worldwide which are considered environmentally relevant and thus monitored in our central BAYER SITE INFORMATION SYSTEM "BaySIS". From BaySIS, we mapped the total water use to each site that was located in a water-scarce region according to the WRI Aqueduct analysis and defined those sites as "large user", which used more than 0.5% of our total water use. In this process 10 Bayer sites were identified based on 2018 data which are located in a water-scarce region and are relevant for our water-risk analysis. These sites have the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).</p>

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

Source	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	13,352	Much higher	Water withdrawal from FRESH SURFACE WATER IS RELEVANT as it is VITAL for cooling purposes, production processes as well as irrigation of fields and greenhouses for seed production. Clean water is a limiting factor for our production and THUS considered essential. E.g. if the water has a high concentration of salts, it will not be appropriate for cooling purposes due to its corrosive characteristics to pipes. In 2018 total water withdrawal from fresh surface water was MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business. Water volumes are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018.
Brackish surface water/Seawater	Not relevant			As in previous years, brackish surface water was NOT RELEVANT in 2018 BECAUSE we did not use brackish surface water in our operations. As described above, brackish water is not suitable for our production. E.g. if the water has a high concentration of salts, it will not be appropriate for cooling purposes due to its corrosive characteristics to pipes. This is also the reason WHY (non-) usage is consistent with the previous year and is expected to stay the same for our operations IN THE FUTURE.
Groundwater – renewable	Relevant	16,568	Much higher	Groundwater is RELEVANT BECAUSE we have own deep wells in many sites for our own water supply. In 2018 total water withdrawal from groundwater was MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business. Water volumes are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018.
Groundwater – non-renewable	Not relevant			As in previous years, non-renewable groundwater was NOT RELEVANT in 2018 BECAUSE we do not use non-renewable groundwater in our operations. We do not have any sites in regions with non-renewable groundwater aquifers. This is also the reason WHY (non-) usage is consistent with the previous year and is expected to stay the same for our operations IN THE FUTURE.
Produced/Entrained water	Not relevant			As in previous years, produced water was NOT RELEVANT in 2018 BECAUSE we did not use produced water in our operations. We only extract very small volumes of produced water from our raw materials. The volumes are therefore not significant enough to be used for production. This is also the reason WHY (non-) usage is consistent with the previous year and is expected to stay the same for our operations IN THE FUTURE.
Third party sources	Relevant	12,186	Much higher	Water from third party sources is RELEVANT BECAUSE we withdraw water from third parties for drinking water in most sites. In addition, water from third party sources is used for production. In 2018 total water withdrawal from third party sources was MUCH HIGHER COMPARED TO LAST YEAR MAINLY DUE TO the newly acquired agriculture business. Water volumes are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018.

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

Destination	Relevance	Volume (megaliters/ year)	Comparison with previous reporting year	Please explain
Fresh surface water	Relevant	2,051	Much higher	<p>After careful analysis, some of our wastewater is categorized as environmentally safe according to official provisions and is returned to the natural water cycle without treatment.</p> <p>Water discharges to fresh surface water are RELEVANT in few sites where water can be directly returned to the natural water cycle without treatment (after being tested and categorized as environmentally safe).</p> <p>Some 36% of all water used by Bayer is cooling water that is only heated in this process and does not come into contact with products. It can be returned to the water cycle without further treatment in line with the relevant official permits.</p> <p>In 2018 total water discharges to fresh surface water were MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business.</p> <p>Water discharges to fresh surface water are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018.</p>
Brackish surface water/seawater	Not relevant			<p>As in previous years, discharges to brackish surface water/ seawater are NOT RELEVANT BECAUSE we do not discharge water to brackish surface water from our operations. This is also the reason WHY discharges are the same compared to the previous year and are expected to stay the same IN THE FUTURE.</p>
Groundwater	Not relevant			<p>As in previous years, discharges to groundwater are NOT RELEVANT BECAUSE only very small amounts of wastewater that are categorized as environmentally safe according to official provisions are leaching to groundwater. These amounts are not significant and are therefore included in the discharges to fresh surface water. This is also the reason WHY discharges are the same compared to the previous year and are expected to stay the same IN THE FUTURE.</p>
Third-party destinations	Relevant	16,229	Much higher	<p>Water discharges to third-party destinations are RELEVANT as the water is discharged to treatment plants before it can be led back to the environment. All wastewater is subject to strict controls before it is discharged into the various disposal channels. In 2018, 89% of Bayer's wastewater worldwide was purified in wastewater treatment plants (Bayer or third-party facilities). Following careful analysis, the remaining volume was categorized as environmentally safe according to official provisions and returned to the natural water cycle.</p> <p>In 2018 total water discharges to third party destinations were MUCH HIGHER COMPARED TO LAST YEAR DUE TO the newly acquired agriculture business.</p> <p>Water discharges to third-party destinations are expected to rise IN THE FUTURE because of the newly acquired agricultural business, which has only been included in our 2018 water balance on a pro-rata basis starting June 7, 2018.</p>

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

% recycled and reused	Comparison with previous reporting year	Please explain
1-10	Much higher	<p>i) CHANGE TO PREVIOUS YEAR: The amount of reused or recycled water increased in 2018 due to our newly acquired agriculture business.</p> <p>ii) IMPACT: Where possible we recycle or reuse water IN ORDER TO REDUCE our fresh water consumption. The various forms of recycling include closed cooling cycles, reuse of treated wastewater and recirculation of steam condensates as process water.</p> <p>iii) FUTURE TREND: We expect the amount of recycled and reused water to stay about the same in the future.</p>

Value-chain engagement

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

- Yes, our suppliers
- Yes, our customers or other value chain partners

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

% of suppliers by number	% of total procurement spend	Rationale for this coverage	Impact of the engagement and measures of success	Comment
1-25%	26-50	<p>i) HOW AND WHY THEY WERE SELECTED: Bayer requests more than 2% of its suppliers (ca 2,174 out of 101,188), representing ca. 32 % of the total procurement spend, to report on water management. BECAUSE IT IS NOT FEASIBLE to assess all 101,188 suppliers, they are selected based on COUNTRY AND BUSINESS CATEGORY SUSTAINABILITY RISKS AND STRATEGIC IMPORTANCE (e.g. in terms of procurement spend and long-term collaboration prospects).</p> <p>ii) HOW SUPPLIERS ARE INCENTIVIZED TO REPORT: A Special clause in our standard supply contracts requests suppliers to comply with the sustainability requirements defined in our Supplier Code of Conduct. Suppliers receive access to trainings and extensive information material, e.g. on responsible use of water, as offered by capability building conferences and information platforms from "Together for Sustainability" (TfS) and the "Pharmaceutical Supply Chain Initiative" (PSCI), where Bayer is a member.</p>	<p>The TYPE OF INFORMATION requested includes HSE and sustainability aspects, e.g. water consumption or water reduction programs. During on-site audits the suppliers' water management is also checked. Wherever evaluation results are unsatisfactory, the INFORMATION IS USED to develop improvement measures. In the event of critical results, Bayer requests the suppliers to rectify the identified weaknesses within an appropriate period of time based on specific action plans.</p> <p>To MEASURE THE SUCCESS, we set ambitious targets and measure success in terms of target fulfillment, e.g. our target is to continue to evaluate all strategically important legacy Bayer suppliers by the end of 2020. SUCCCESS IS also MEASURED through re-assessments or follow-up audits. Our regular monitoring shows that in 2018 343 of our 794</p>	

			suppliers evaluated have improved their sustainability performance.	
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(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement	Details of engagement	% of suppliers by number	% of total procurement spend	Rationale for the coverage of your engagement	Impact of the engagement and measures of success	Comment
<ul style="list-style-type: none"> Incentivizing for improved water management and stewardship 	<ul style="list-style-type: none"> Water management and stewardship is integrated into supplier evaluation processes 	<ul style="list-style-type: none"> 1-25 	<ul style="list-style-type: none"> 26-50 	<p>RATIONALE: Bayer regards adherence to sustainability standards within its supply chain as an important lever for minimizing risks. This is WHY sustainability clauses are in our electronic ordering systems and standard supply contracts. The sustainability clause requests all suppliers to comply with the sustainability requirements defined in our Supplier Code of Conduct and authorizes Bayer to conduct EVALUATIONS AND ON-SITE AUDITS, if necessary. BECAUSE it is not feasible to assess all 101,188 suppliers, suppliers are selected based on country and business category sustainability risks and strategic importance. TO FURTHER INCENTIVIZE suppliers to participate in the engagement, suppliers receive access to trainings and extensive information material, e.g. on responsible use of water, as offered by capability building conferences and information platforms from TfS and PSCI.</p>	<p>OUTCOMES OF THE ENGAGEMENT: In the event of a critical sustainability performance, Bayer requests suppliers to rectify identified weaknesses within an appropriate period of time based on specific action plans. We do not only build supplier capabilities, but also minimize procurement-specific risks and ensure smooth production processes through these requirements.</p> <p>HOW SUCCESS IS MEASURED: Our regular monitoring shows that in 2018 343 of our 794 suppliers evaluated have improved their sustainability performance.</p>	
<ul style="list-style-type: none"> Innovation & collaboration 	<ul style="list-style-type: none"> Educate suppliers about water stewardship and collaboration 	<ul style="list-style-type: none"> Less than 1% 	<ul style="list-style-type: none"> 1-25 	<p>RATIONALE: We offer our suppliers a wide range of development and dialogue opportunities on sustainability. Within the scope of our supplier sustainability evaluations, we have identified a country risk particularly for China and India. DESCRIPTION OF ENGAGEMENT: In 2018, we conducted supplier training and workshops in China and India in cooperation with PSCI and TfS. The PSCI Sustainability webinar offers additional advanced training modules for our suppliers. One PSCI sustainability webinar deals with the management of active pharmaceutical ingredients (API) in wastewater. Through Bayer's Health, Safety and Environment (HSE) audits, suppliers are also educated regarding specific findings, among others about water stewardship. Furthermore, the PSCI website also provides a resource library with water-related information for suppliers.</p>	<p>OUTCOMES OF THE ENGAGEMENT: Through the supplier capability trainings and audits, Bayer improves the suppliers' awareness and know-how regarding water-related activities. Through this kind of education, suppliers get an improved understanding of Bayer's sustainability requirements and thereby are able to better carry out their water management.</p> <p>HOW SUCCESS IS MEASURED: Bayer is keeping track of the suppliers' sustainability performance. In the event of a critical sustainability performance, Bayer requests suppliers to rectify identified weaknesses within an appropriate period of time based on specific action plans. 373 suppliers from member companies participated at the Supplier Capability Training of PSCI in China and 318 suppliers attended the event in India in September 2018. In addition, the PSCI webinar on how to manage APIs in wastewater received more than 4,600 views.</p>	

(W1.4c) What is your organization’s rationale and strategy for prioritizing engagements with customers or other partners in its value chain?

PARTNERS: Crop Science (CS) engages with participants in the food chain such as farmers, the processing industry, exporters and dealers.
METHOD & STRATEGY: The central element is the BayG.A.P. program via which Bayer TRAINS growers to successfully implement good agricultural practices. Our TRAININGS teach farmers how to use crop protection products effectively and safely, mainly as part of customer events or through courses in cooperation with partners e.g. local, regional and international associations. CS is intensifying its DIRECT COOPERATION with farmers and the food value chain. The goal is to develop integrated solutions for sustainable agriculture to safeguard and increase yields and to improve the quality of harvested produce. Bayer also reinforces its support for sustainable agriculture with Bayer ForwardFarming: a knowledge platform to demonstrate sustainable agriculture in practice. We advise our customers and recommend biological remediation systems such as Phytobac™ to prevent discharges into water bodies of crop protection active ingredients. We also collaborate with external partners on the development of a digital geo information system for water protection in agriculture. Bayer supports grower’s education in the area of sustainable use of water resources to decrease our seed production water consumption footprint.
PRIORITIZATION: Bayer focuses on training activities in countries where there are no statutory requirements or certification for users regarding the safe handling of crop protection products.
MEASURES: We track the reach of our trainings and partnerships. In 2018, ca. 1 mio farmers worldwide received safety training from Bayer. CS has initiated >500 food chain partnership initiatives in >40 countries. >300 growers worldwide have been trained with BayG.A.P. (expected to rise to 10,000 by end of 2020). 30 growers from India obtained the G.A.P. Letter of Conformance. Phytobac is tested in numerous EU countries with >4,600 systems installed.

W2. Business impacts

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

No

(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

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

Yes, water-related risks are assessed

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

Value chain stage	Coverage	Risk assessment procedure	Frequency of assessment	How far into the future are risks considered?	Type of tools and methods used	Tools and methods used	Comment
Direct operations	Full	<ul style="list-style-type: none"> Water risks are assessed as part of an enterprise risk management framework 	<ul style="list-style-type: none"> Six-monthly or more frequently 	<ul style="list-style-type: none"> More than 6 years 	<ul style="list-style-type: none"> Tools on the market Enterprise Risk Management International methodologies Databases Other 	<ul style="list-style-type: none"> WBCSD Global Water Tool WRI Aqueduct ISO 31000 Risk Management Standard IPCC Climate Change Projections FAO/AQUASTAT Internal company methods External consultants Other, please specify: EcoVadis, On-site audits 	<p>Water is integrated into our company-wide risk management process together with other non-financial risks. We assess risks using a long-term perspective, e.g. likelihood of occurrence based on a period of 10 years. Risks are monitored continuously by the risk owners while the risk portfolio is reviewed regularly by the Bayer Risk Committee.</p> <p>Environmental risks are reviewed as part of the HSE management system and internal audits. Water KPIs are monitored in our central site database BaySIS.</p>
Supply Chain	Full	<ul style="list-style-type: none"> Water risks are assessed as part of an enterprise risk management framework 	<ul style="list-style-type: none"> Six-monthly or more frequently 	<ul style="list-style-type: none"> More than 6 years 	<ul style="list-style-type: none"> Tools on the market Enterprise Risk Management International methodologies Databases Other 	<ul style="list-style-type: none"> WBCSD Global Water Tool WRI Aqueduct ISO 31000 Risk Management Standard IPCC Climate Change Projections FAO/AQUASTAT Internal company methods External consultants Other, please specify: EcoVadis, On-site audits 	<p>We verify our suppliers' adherence to Bayer's Code of Conduct through continuous supplier assessments and audits. Among others, this allows us to identify water-related supply chain risks. We receive additional results via audits and assessments of suppliers which are shared with us via the "Together for Sustainability" initiative and the "Pharmaceutical Supply Chain Initiative".</p>
Other stages of the value chain	<ul style="list-style-type: none"> Full 	<ul style="list-style-type: none"> Water risks are assessed as part of an enterprise risk management framework 	<ul style="list-style-type: none"> Six-monthly or more frequently 	<ul style="list-style-type: none"> More than 6 years 	<ul style="list-style-type: none"> Enterprise Risk Management Databases Other 	<ul style="list-style-type: none"> ISO 31000 Risk Management Standard Regional government databases Other, please specify: Decision Support Tool to reduce runoff from agricultural fields 	<p>Our ERM also includes downstream risks. The risks are integrated into our company-wide ERM using the same process and time horizon stated in the first row. In addition, an internal Stewardship (STW) tool is used to identify areas of concern related to water quality. STW is developing water protection tools in order to promote Best Management Practices in Agriculture. Major goal is to reduce non target transport of pesticides (valid for a broad range of product categories) into water bodies.</p>

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

Contextual issue	Relevance & inclusion	Please explain
Water availability at a basin/catchment level	Relevant, always included	<p>i) Relevance: As described above, Bayer uses water for cooling purposes, the production process and irrigation of field and greenhouses for seed production. Clean water is a limiting factor for our production and THUS considered essential. THEREFORE, water availability at a basin level is relevant for us and included in our water-related risk assessments.</p> <p>ii) Assessment: Water withdrawals, use and discharges (including quality parameters) are measured at site level and monitored annually in our central Bayer Site Information System "BaySIS" (TOOL/METHOD: internal company methods). BaySIS allows analyses across several dimensions, e.g. water use, withdrawals and discharges by geography or divisions/sites. Additionally, we have identified the sites in water-risk regions applying the water risk framework of the WRI, included in the AQUEDUCT WATER RISK ATLAS.</p>
Water quality at a basin/catchment level	Relevant, always included	<p>i) Relevance: As described above, clean water is a limiting factor for our production and THUS considered essential. E.g. if the water has a high concentration of salts, it will not be appropriate for cooling purposes due to its corrosive characteristics to pipes. THEREFORE, water quality at a basin level is relevant for us and included in our water-related risk assessments.</p> <p>ii) Assessment: Water withdrawals and use including quality parameters as well as discharge quality are measured at site level and monitored annually in our central Bayer Site Information System "BaySIS" (TOOL/METHOD: internal company methods). BaySIS allows analyses across several dimensions, e.g. water use, withdrawals and discharges by geography or divisions/sites. Additionally, we have identified the sites in water-risk regions applying the water risk framework of the WRI, included in the AQUEDUCT WATER RISK ATLAS.</p>
Stakeholder conflicts concerning water resources at a basin/catchment level	Not relevant, included	<p>i) Relevance: We consider this issue not relevant BECAUSE in the last years no relevant stakeholder conflicts concerning water resources at local level have been identified.</p> <p>ii) Assessment: We assess environmental incidents via our Bayer Site Information System (BaySIS), which requests information from all sites on incidents, including e.g. community complaints (TOOL/METHOD: internal company methods). As we are consciously managing and monitoring our water use and quality parameters at site level, we currently do not expect this issue to become relevant in the future.</p>
Implications of water on your key commodities/raw materials	Not relevant, included	<p>i) Relevance: This issue is not relevant BECAUSE at the moment water quantity and quality meet our current demands without materially impacting the environment. However, we are conscious of the importance of water for our business and, with a preventive approach, we analyze in detail the most relevant water-related aspects for our business.</p> <p>ii) Assessment: Regarding the supply of raw materials, our Supplier Code of Conduct (SCoC) and our Sustainability Contract Clause are the main strategy to protect us against sustainability related supplier risks, e.g. it contains aspects related to water management and responsible water use. The SCoC is an important component for supplier selection and evaluation like sustainability online assessments and on-site audits. In 2018, Bayer requested more than 2% (ca. 2174 out of 101,188) suppliers, representing ca. 32% of the total procurement spend, to report on water management. Through partnerships, we further drive those topics. Supplier evaluation was conducted by a leading web-based service provider of sustainability performance evaluations (TOOL/METHOD: OTHER: EcoVadis) for sustainability performance monitoring. Besides, the main initiatives in which we foster the engagement with suppliers and their evaluation in relation to sustainability topics are "Together for Sustainability" and the "Pharmaceutical Supply Chain Initiative". Based on these regular evaluations and projections, we currently do not expect this issue to become relevant in the future.</p>
Water-related regulatory frameworks	Relevant, always included	<p>i) Relevance: With its business focus and a water use of 124 million m3, Bayer operates in a water-intensive industry. This is why water-related regulatory frameworks are relevant for our business as we have to comply with various water-related regulations, e.g. the EU Water Framework Directive in Europe. Compliance with regulatory frameworks is essential for our</p>

		<p>long-term economic success. We do not tolerate any violation of laws, codes of conduct or internal regulations. Compliant and lawful conduct also factors into the performance evaluations of all managerial employees.</p> <p>ii) Assessment: The regulatory framework and changes in regulation are taken into account in our risk management system, as well as in the analysis made by our HSE and sustainability managers (TOOL/METHOD: INTERNAL COMPANY METHODS, ERM). Potential compliance risks are entered into a global compliance risk management database that we use to develop suitable measures for specific processes, business activities or countries, for example. At a local level, these aspects are also factored in our internal assessments at the production sites (e.g. in the context of their ISO 14001 certifications) and included in HSE audits. Compliance with the relevant wastewater thresholds at our production sites worldwide is reviewed by supervisory authorities and external assessors and also at regular intervals through on-site audits by internal experts.</p>
Status of ecosystems and habitats	Relevant, always included	<p>i) Relevance: Biodiversity is an important asset to us, which we aim to protect and preserve in the scope of all our activities. Biodiversity is of particular relevance for the activities of Bayer's Crop Science Division. An example of the relevance of the status of ecosystems and habitats for our business is shown by the importance of insects. Insects are the dominant pollinators in agricultural systems, providing pollination services for many of our crops. It is estimated that five to eight percent of global crop production is directly attributable to animal pollination.</p> <p>ii) Assessment: Our goal is to develop products that have the least possible side effects on biodiversity. This is ensured by sophisticated and thorough environmental safety testing and risk assessment. With regard to our sites, the assessment of ecosystems and habitats is an important task of the environmental managers at our sites (TOOL/METHOD: INTERNAL COMPANY METHODS). Bayer Real Estate, Bayer's strategic business partner for real estate and facility management, established a global real estate database, which includes, among others, information on protected areas within 10 km from each site. This information is based on a comparison of the geographical coordinates against internationally recognized protected areas (e.g. ASEAN Heritage, Barcelona Convention, UNESCO-MAB Biosphere Reserve) as well as information provided directly by the individual sites. In the past, we identified three sites that are within a radius of three kilometers from such areas. However, none of the sites examined is directly located in any of the identified protected areas. Due to our portfolio changes in 2018, we will undertake an updated comparison of the geographical coordinates of our production sites against those of internationally recognized protected areas in 2019.</p>
Access to fully-functioning, safely managed WASH services for all employees	Relevant, always included	<p>i) Relevance: Providing employees with access to fully-functioning, safely managed WASH services is relevant because clean water, sanitation and hygiene are important for us as mentioned in our water position and we consider it as relevant for employee satisfaction. For example, satisfaction could be impacted if the access to safe water, sanitation and hygiene (WASH) was not provided at certain sites, thus cutting across Bayer's signature under the WASH at the Workplace Pledge of the WBCSD (World Business Council For Sustainable Development). Signing the pledge reflects our commitment to ensure WASH access for all employees in all premises under our control. In the past, we've invested significantly in clean water, sanitation and hygiene projects both at our facilities and in surrounding communities, with a focus on nine countries: Argentina, Brazil, Chile, China, Guatemala, India, Malawi, Mexico and South Africa. Our sites provide safe and clean drinking water for all employees, contractors, and visitors.</p> <p>ii) Assessment: HSE and sustainability managers constantly assess our HSE performance incl. water related aspects and fully-functioning WASH services through our audits at our sites worldwide (TOOL/METHOD: INTERNAL COMPANY METHODS). With Bayer's signature under the WASH at the Workplace Pledge of the WBCSD (World Business Council For Sustainable Development), Bayer has committed itself to implementing access to safe water, sanitation and hygiene at the workplace at an appropriate level of standard for all employees in all premises under our control.</p>
Other contextual issues, please specify		

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

Stakeholder	Relevance & inclusion	Please explain
Customers	Relevant, always included	<p>We consider customers as relevant in our water risk assessments BECAUSE they have a significant impact on the success of our business. The water-related RISK considered is water shortage in agriculture. Many of our customers (farmers) are reliant on irrigation water in using our product (seeds) to grow their agricultural products. Another risk is a potential decrease in customer satisfaction, for example if product delivery was delayed due to water-related issues. Such a delay could be due to a shut-down of production due to an extreme water scarcity or if the quality of the water withdrawn is not high enough for our production.</p> <p>METHOD OF ENGAGEMENT: In 2018, our everyday business once again included dialogue with our customers – especially with respect to their satisfaction with our products and services. We analyze needs and satisfaction as well as complaints by our customers, and thus foster partnership-based cooperation and dialogue with them. For example, every two years Crop Science conducts customer surveys through their country organizations according to a standardized process, aiming to make the dialogue more target group- and region-specific.</p> <p>Another dialogue example is Monsanto's Water Utilization Learning Center located in Nebraska, which focuses on better understanding water and its role in growing food. The Learning Center is located on one of the most important water resources for agriculture in the United States – the Ogallala Aquifer. This location is ideal for studying water issues, irrigation systems, water use efficiency and overall irrigation management. Scientists at the Learning Center conduct research and demonstrations year-round to provide farmers with information about how to increase their annual crop yields through better, more efficient water management.</p> <p>Furthermore, Bayer conducted a new stakeholder survey and materiality analysis in 2018 including customers. The results will be used to define new Group targets in 2019.</p>
Employees	Relevant, always included	<p>Employees are relevant in water risk assessment BECAUSE clean water, sanitation and hygiene are important for us as mentioned in our water position. Furthermore they play a crucial role in determining our overall water consumption. The key employee-related RISK factor considered in our water-related risk assessments is a potential decline in employee satisfaction. E.g. satisfaction could be impacted if the access to safe water, sanitation and hygiene (WASH) was not provided at certain sites, thus cutting across Bayer's signature under the WASH at the Workplace Pledge of the WBCSD, which reflects our commitment to ensure WASH access for all employees in all premises under our control.</p> <p>METHOD OF ENGAGEMENT: We assess employee satisfaction with the help of institutionalized feedback discussions and the Group-wide Employee Survey, which is usually conducted about every 2 years. Bayer's score of 79% on the Employee Engagement Index in the 2017 survey – collated from responses to questions about satisfaction, loyalty, advocacy and pride – was 8 % points above the global benchmark of the provider IBM. In addition, we introduced the Employee Echo, a scaled-down version of the global Employee Survey, in 2018. This is intended to help us identify trends in the course of a year, allowing us to adjust already initiated measures early on. The initial Employee Echo polled 25% of employees worldwide (excl. the acquired agriculture business).</p> <p>We also have several initiatives to create awareness for water use and consumption among employees. E.g. our site in Ansung, South Korea, has conducted employee awareness campaigns about water use in order to reduce water consumption. Within this awareness campaign, employees were trained in the sustainable use of water. At the site Belford Roxo, Brazil, annual courses took place for all employees regarding environmental topics incl. water and wastewater management. Every new employee is trained about water management and reuse of water.</p>
Investors	Relevant, always included	<p>We consider investors as relevant in our risk assessment BECAUSE water related risks and opportunities could have an impact on their investment decisions as the main RISK considered.</p> <p>For example, our investor base comprises investors that require Bayer to report on its sustainability performance, incl. topics such as water. Not meeting our investors' expectations could negatively impact their investment decision.</p> <p>METHOD OF ENGAGEMENT: We include investors in our internal monitoring and assessments and we disclose the relevant information on water topics in our Annual Report and in our CDP Water Report. Furthermore, we have regular dialogues with investors, analysts and rating agencies, and conduct roadshows and investor conferences as well as stockholder forums. We explain our strategy and implementation of our nonfinancial targets,</p>

		<p>and provide information on the most important fields of our sustainability activities, including water-related topics.</p> <p>Bayer's investor relations activities in 2018 focused on the acquisition of Monsanto and our Capital Markets Day, where we presented our new medium-term targets, along with the accompanying communications for the equity and debt measures. We intensified our contact with investors and analysts in general at a number of roadshows and conferences in Germany and abroad.</p> <p>We continued our dialogue with sustainability-oriented investors, analysts and rating agencies in 2018. The discussions focused on the acquisition of Monsanto, as well as on business ethics, product stewardship and the environmental impact of our activities.</p>
Local communities	Relevant, always included	<p>We consider local communities as relevant in our risk assessment BECAUSE the acceptance of the local community is key for the successful operation and the reputation of Bayer. Furthermore, local communities play a decisive role in the success of any investment project. The key RISK we consider is a potential loss of reputation and acceptance within the community, e.g. due to water withdrawals beyond annually renewable levels in the watershed or exceeded water pollution limits.</p> <p>METHOD OF ENGAGEMENT: Local communities are one of the stakeholder groups included in our regulatory and internal assessment through various methods of engagement. An important part of our stakeholder dialogue takes place in the direct vicinity of our sites. We are working on being recognized everywhere as a reliable partner and attractive employer that is aware of its social responsibility. In the case of investment projects for example, the involvement of the local community plays a decisive role in ensuring their success. In the communities near our production sites in particular, we keep an open dialogue between community members and local management, which is supported by the respective country organization. This dialogue includes personal discussions with citizens' initiatives, representatives of church communities and the regional press. This community dialogue is anchored in a globally valid corporate policy on site management.</p>
NGOs	Relevant, always included	<p>We consider NGOs as relevant in our risk assessment BECAUSE they publicly comment on certain company matters which might impact our reputation and therefore potentially our business growth as the main RISK considered. E.g., the topic of active ingredients in the (aquatic) environment is a key water-related issue discussed by NGOs.</p> <p>METHOD OF ENGAGEMENT: NGOs play a role in forming public opinions. For this reason, we have internally systemized collaboration with this stakeholder group. To this end, we look to understand the interests of NGOs, take their perspectives on board and enter into dialogue with the relevant experts. Exchange with different NGOs is communicated to the Board of Management and its content is thereby incorporated into our considerations. Bayer is also actively engaged in the U.N. Global Compact and its initiatives, the CEO Water Mandate and local networks. We are a member of the CEO Water Mandate's steering committee and actively participate in two work streams of the Mandate's Water Steward Action Platform. All Bayer segments maintain open dialogue with the societal stakeholders of relevance to them and develop individual dialogue formats for this purpose.</p> <p>NGOs are INCLUDED in our risk assessment for specific topics such as pharmaceuticals in the environment. Here, an exchange among companies and NGOs is taking place in forums, industry initiatives (e.g. Pharmaceutical Supply Chain Initiative) and other exchange platforms. One example of a multi-stakeholder dialogue in which Bayer was actively involved in was the national dialogue on trace substances in Germany under the patronage of the German environmental ministry. The dialogue involved stakeholder representatives from environmental associations, politics at local and national level, water utilities and industry.</p> <p>A social initiative where we worked with the NGO "EFFORT" is Water, Agriculture, Sanitation and Hygiene (WASH), targeted at uplifting rural farmers across several regions in India.</p>
Other water users at a basin/catchment level	Relevant, always included	<p>We consider other water users at a local level as relevant in our risk assessment BECAUSE they could have an impact on the water quality and quantity in a shared river basin as the main RISKS considered. For instance, if the water does not meet our quality requirements, e.g. having a high concentration of salts, it will not be appropriate for cooling purposes due to its corrosive characteristics to pipes. Moreover, if withdrawal rates from other water users go beyond annually renewable levels in the watershed, this could have an impact on the availability of water for our manufacturing purposes.</p> <p>METHOD OF ENGAGEMENT: We include other water users at a local level in our risk assessment and we continuously conduct comprehensive benchmarking and best practice analyses including other companies and competitors to identify risks and opportunities at a global and a local level. They were also included in our water assessment process for our 2018 water target. It is essential to Bayer to maintain an open and active dialogue with all our stakeholders, including water users that share the same water source.</p> <p>One example of a multi-stakeholder dialogue in which Bayer was actively involved in was the national dialogue on trace substances in Germany under the patronage of the German environmental ministry. The dialogue involved stakeholder representatives from environmental associations, politics at</p>

		local and national level, water utilities and industry.
Regulators	Relevant, always included	<p>We consider regulators as relevant BECAUSE regulatory changes can have a significant impact on our business strategy. RISKS considered include e.g. a change in withdrawal limits that could pose a risk to our investment decisions or a change in emission limits in wastewater which could result in higher operating costs.</p> <p>METHOD OF ENGAGEMENT: The regulatory framework and changes in regulation are INCLUDED in our risk management system, as well as in the analysis made by our HSE and sustainability managers. At a local level, these aspects are also factored in our internal assessments at the production sites and included in HSE audits. At some sites, we also maintain periodical meetings with the authorities in order to follow potential changes in regulation.</p> <p>For example, in California/ U.S. Bayer is active in organizations such as the East Bay Economic Development Alliance, Bay Area Council and Biocom, addressing water access and quality issues. In Thailand, we are a Member of the Federation of Thai Industries engaged in water-related topics in Thailand. Bayer is also engaging with the EU Commission on the topic of active ingredients in the environment. Another example of a multi-stakeholder dialogue in which Bayer was actively involved in was the national dialogue on trace substances in Germany under the patronage of the German environmental ministry. The dialogue involved stakeholder representatives from environmental associations, politics at local and national level, water utilities and industry.</p>
River basin management authorities	Relevant, always included	<p>We consider river basin management authorities as relevant for all our sites BECAUSE authorities set thresholds for the quantity of water withdrawal and discharge and monitor water quality. With water being crucial for our production, a change in water withdrawal-, discharge- and emission limits could pose a RISK for our sites.</p> <p>METHOD OF ENGAGEMENT: The framework for the company's operations is determined by authorities, legislators and politicians through statutory regulations and licensing, for example. The dialogues Bayer is currently pursuing with authorities and ministries at local, national and international level include targeted discussions with political decision-makers and active involvement in specialist workshops and cooperation projects. Bayer's active participation in political decision-making processes is explicitly sought by the key players involved. This also applies to river basin management authorities where we work, for instance, on the river basin management board of Jucar (Valencia/Spain).</p>
Statutory special interest groups at a local level	Relevant, always included	<p>We consider statutory special interest groups at a local level as relevant BECAUSE they have statutory RISKS aligned to ours such as a decline in water availability or quality.</p> <p>METHOD OF ENGAGEMENT: They are INCLUDED in our regulatory and internal assessments. Our collaboration with these interest groups is important for best practice sharing for water-related issues and for the follow-up of regulations and lobbying activities. For example, in California/ U.S. Bayer is active in organizations such as the East Bay Economic Development Alliance, Bay Area Council and Biocom, addressing water access and quality issues. In Germany, we actively participate in environmentally-related working groups of the German Chemical Industry Association (VCI), as we also do on a European level with the European Chemical Industry Council (CEFIC), EFPIA or ECPA, e.g. on the topic of active ingredients in the environment. Another example is econsense, a German business network, which provides a dialogue platform and think tank to advance sustainable development in business, i.a. for the resource-efficient use of water. The Head of Corporate Sustainability and Business Stewardship at Bayer is Chairman of the econsense Board.</p>
Suppliers	Relevant, always included	<p>We consider suppliers as relevant in our risk assessment BECAUSE they can strongly impact our operations. Bayer aims at ensuring a sustainable supply chain management. Therefore our suppliers have to comply with the Supplier Code of Conduct that also addresses a responsible water management. For example, key RISKS considered in our Supplier assessments include their adherence to water-related regulation, for example with regard to discharge parameters and withdrawal limits and reputational aspects.</p> <p>METHOD OF ENGAGEMENT: Water use, risks and management aspects are covered through suppliers' sustainability performance monitoring and by</p>

		<p>HSE audits. For example, this is achieved through on-site audits by external independent audit partners, Bayer auditors as well as online assessments carried out by a leading web-based platform for sustainability monitoring (EcoVadis). Wherever the evaluation results, e.g. related to water topics, are unsatisfactory, corrective measures are defined together with our suppliers, thus ensuring they observe environmental standards in the future. Regularly conducted follow-up audits and re-assessments enable Bayer to continually observe the environmental development of our suppliers and to initiate appropriate countermeasures in a timely manner.</p> <p>In 2018, Bayer requested more than 2% of our suppliers (ca. 2174 out of 101,188 suppliers worldwide), representing ca. 32% of the total procurement spend, to report on water management. Through partnerships, we further drive those topics. Supplier evaluation was conducted by the leading web-based service provider of sustainability performance evaluations (EcoVadis) for sustainability performance monitoring. Besides, the main initiatives in which we foster the engagement with suppliers and their evaluation in relation to sustainability topics are "Together for Sustainability" and the "Pharmaceutical Supply Chain Initiative".</p>
Water utilities at a local level	Relevant, always included	<p>We consider water utilities/suppliers at a local level as relevant in our risk assessment BECAUSE they can strongly impact our operations e.g. through supply bottlenecks or major price fluctuations. As water is a limiting factor for our production, these RISKS are always factored in to our assessments.</p> <p>METHOD OF ENGAGEMENT: Bayer minimizes procurement-specific risks for goods and services of strategic importance, such as supply bottlenecks or major price fluctuations, through long-term contracts and active supplier management. In this way we ensure both the company's global competitiveness and smooth production processes. For example, Bayer verifies the observance of sustainability requirements by our suppliers through online assessments and on-site audits. Water utilities/suppliers at a local level are also included into water-related questions in the risk assessments. Furthermore, our sites are in regular contact with their water suppliers.</p> <p>One example of a multi-stakeholder dialogue in which Bayer was actively involved in was the national dialogue on trace substances in Germany under the patronage of the German environmental ministry. The dialogue involved stakeholder representatives from environmental associations, politics at local and national level, water utilities and industry.</p>

(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.

1) APPLICATION OF TOOLS: In the past, we used the WBCSD Tool, Ceres or AQUASTAT to help us identify sites with water risks. Following the acquisition of our new Crop Science business in 2018, we reviewed our water risk procedures and tested several water tools including WRI Aqueduct, the WBCSD Global Water Tool, Pfister et al. and the Global Flood Hazard Frequency and Distribution Dataset. Ultimately, we chose Aqueduct to identify sites at water risk BECAUSE it is a state-of-the art tool, providing a broad range of indicators, especially the Composite Indicator "Overall Water Risk". To intersect the Aqueduct layers with our sites, we used the geographic information system tool ArcGIS.

THE TOOLS ARE USED BECAUSE they help us identifying sites with water risks. Internal methods e.g. discussions with the sites and experts are used IN ORDER TO control the relevance of the results for Bayer. Whenever water risks are identified with these tools and deemed material to our company, they are integrated into OUR ENTERPRISE RISK MANAGEMENT. Our company-wide ERM covers non-financial risks related to our direct operations and the value chain. We also integrate audits and web-based monitoring in our SUPPLY CHAIN MANAGEMENT BECAUSE it offers a standardized assessment for an extensive scope of suppliers.

The tools are APPLIED COMPANY-WIDE e.g. the WBCSD tool and WRI Aqueduct were applied to ALL environmentally-relevant SITES. In this process, 10 sites at risk, with the potential to have a substantive impact on the business (additional threshold: >0.5% of total Bayer water use), were identified in 2018. Looking at our suppliers, we request >2% (ca. 32 of total procurement spend) to report on water management. Because it is not feasible to assess all 101,188 suppliers, suppliers are selected based on country and business category sustainability risks and strategic importance. In addition to the assessments of EcoVadis, on-site audits are conducted by external auditors.

Water is integrated into our risk assessment using a LONG-TERM PERSPECTIVE, e.g. likelihood of occurrence is calculated based on a period of up to 10 YEARS.

2) HOW OUTCOMES ARE USED TO INFORM INTERNAL DECISION-MAKING: As mentioned above, whenever water risks are identified and deemed material to our company, they are integrated into Bayer's ERM. The risk owners decide on a targeted risk level based on a cost-benefit analysis and define a risk management strategy as well as risk management measures. These include risk avoidance, risk reduction, risk transfer and risk acceptance. We address site-level risks e.g. flooding through our local crisis organization. We have implemented early warning systems, ensure continuous reporting and carry out regular crisis simulation exercises. Business Continuity Management assesses such risks and defines appropriate measures together with the responsible specialist units. Supplier online assessments and audits are analyzed and documented in order to define improvement measures in case of unsatisfactory results. Bayer requests the suppliers to rectify the identified weaknesses based on specific action plans.

W4. Risks and opportunities

(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, both in direct operations and the rest of our value chain

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

i. Bayer defines a risk as having a substantive financial impact, if the identified risk is relevant for the respective risk owner and/or function. E.g. with regard to our Product Supply Function, a potential impact of €7 million Cash Flow is regarded to be substantive and monitored in the database.

INDICATORS/THRESHOLDS:

Risks are evaluated using estimates of likelihood of occurrence, potential impact and/or relevance for external stakeholders.
1) Likelihood of occurrence is assessed on a scale ranging from very unlikely (<10%), unlikely (10%-30%), possible (30-50%), likely (50-70%), very likely (>70%) over a period of 10 years.

2) For risks that can be evaluated financially, potential impact is determined on a scale from moderate (> €150-250 million), medium (> €250-750 million), significant (> €750-1,500 million), major (> €1,500-2,500 million) to severe (> €2,500 million). A qualitative assessment of damages is based on criteria such as the impact on our strategy or reputation, the potential loss of stakeholder confidence, and the potential violation of sustainability principles. The higher rating – qualitatively or quantitatively – determines the overall assessment. Risks are classified as high, medium or low to assess their materiality regarding the overall risk portfolio.

The DEFINITION APPLIES to our direct operations and to our value chain. Risks are REVIEWED in our risk management system, incl. risks from seasonal fluctuations, natural disasters or actives in the environment. For EXAMPLE, actives in the environment have been assessed qualitatively with regard to sustainability principles and stakeholder confidence.

ii. In addition, sites that are located in regions considered at water risk according to WRI Aqueduct and are “large water users” are DEFINED to have the potential to have a substantive impact on the business with regard to water-related risks.

INDICATORS/THRESHOLDS:

1) The Baseline Water Stress Indicator (BWS) and the Overall Water Risk Score (OWR) from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region. Thresholds: BWS: “extremely high” = total annual water withdrawal >80% of average annual available blue water; OWR = “high” and “extremely high” = Default weighting>3 (computed out of 12 water risk indicators in WRI Aqueduct e.g. BWS, Inter-annual and seasonal variability, Upstream storage, Flood occurrence, Drought severity, Groundwater stress, Access to water, Threatened amphibians).

2) In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as “large user” when they use >0.5% of our total water use.

The DEFINITION also APPLIES to our direct operations. Metrics and thresholds are REVIEWED continuously, incl. external resources/research, internal discussions with experts and an internal review process at site/divisional level.

EXAMPLE: Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct (“high” and “extremely high” in the overall water risk indicator or “extremely high” in the baseline water stress indicator) and are defined as “large water users” (>0.5% of Bayer’s total water use).

iii. Suppliers have the potential to have a SUBSTANTIVE IMPACT on the business if they are classified as strategically important or potential high-risk suppliers.

INDICATORS/THRESHOLDS:

1) Strategically important suppliers are defined as suppliers that have a major influence on business, incl. procurement spend and long-term collaboration prospects (3-5 years).

2) The risk definition for potential high-risk suppliers is based on country and business category sustainability risks.

The DEFINITION APPLIES to our entire supply chain. Data are REVIEWED and updated continuously. Strategically important and potentially high-risk suppliers’ sustainability performance, incl. water-related aspects, is evaluated via assessments and on-site audits.

EXAMPLE: By 2020, Bayer aims to continue to evaluate all legacy Bayer suppliers with a significant procurement spend (> €1 million p.a.) that are regarded as potentially high-risk suppliers due to their combined country and category sustainability risk. Within the scope of our supplier sustainability evaluations, we have identified a country risk particularly for China and India. In this respect, we conducted supplier trainings and workshops in China and India in cooperation with PSCI and Together for Sustainability (TfS).

(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
10	1-25	<p>The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: “high” and “extremely high” in the overall water risk indicator or “extremely high” in the baseline water stress indicator).</p> <p>In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as “large user” when they use >0.5% of our total water use.</p> <p>Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the</p>

		potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).
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(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	River basin	Number of facilities exposed to water risk	% company- wide facilities this represents	% company's total global revenue that could be affected	Comment
United States of America	Sacramento River – San Joaquin River	1	1-25	Unknown	<p>The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator).</p> <p>In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use.</p> <p>Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).</p> <p>Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.</p>
United States of America	Columbia River	1	1-25	Unknown	<p>The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator).</p> <p>In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use.</p> <p>Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).</p> <p>Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.</p>
United States of America	Other, please specify: No river basin assigned	1	1-25	Unknown	<p>The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator).</p> <p>In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use.</p> <p>Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).</p> <p>Bayer divisions operate global production networks with multiple production steps for a single product across different</p>

					sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.
Peru	Other, please specify: GHAAS Basin3150	1	1-25	Unknown	The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator). In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use. Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use). Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.
Puerto Rico	Other, please specify: GHAAS Basin1835	1	1-25	Unknown	The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator). In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use. Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use). Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.
United States of America	Other, please specify: No river basin assigned	3	1-25	Unknown	The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator). In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use. Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use). Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.

United States of America	Other, please specify: GHAAS Basin251	2	1-25	Unknown	<p>The Overall Water Risk Indicator and the Baseline Water Stress Indicator from the WRI Aqueduct Water Tool have been used to measure if a site is located in a water-scarce region (threshold: "high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator).</p> <p>In BaySIS, we monitor the annual water use of all environmentally-relevant sites. We define them as "large user" when they use >0.5% of our total water use.</p> <p>Applying these thresholds to all environmentally-relevant sites worldwide, 10 Bayer sites were identified based on 2018 data as having the potential to have a substantive impact on the business as they are located in a region considered at water risk according to WRI Aqueduct ("high" and "extremely high" in the overall water risk indicator or "extremely high" in the baseline water stress indicator) and are defined as "large water users" (>0.5% of Bayer's total water use).</p> <p>Bayer divisions operate global production networks with multiple production steps for a single product across different sites (internal and external). We operate sites around the world. As of December 31, 2018, the Bayer Group comprised 420 consolidated companies in 90 countries. Depending on market and customer demands productions have individual back up and flexibility strategies. Revenue contribution of individual sites can therefore not directly be allocated.</p>
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Water-related risks and response

(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.

Risk 1, Part 1

Country	River basin	Type of risk	Primary risk driver	Primary potential impact	Company-specific description	Time-frame	Magnitude of potential impact	Likelihood
India	Other, please specify: GHAAS Basin3349	Reputation & Markets	Increased stakeholder concern or negative stakeholder feedback	Brand damage	<p>Pollution due to chemical residues in water is a general problem in several countries, e.g. in India, and not a specific Bayer problem. This circumstance might be picked up by the media or NGOs, drawing public attention to the topic.</p> <p>EFFECT ON BAYER: With the zero liquid discharge strategy of the Indian government this risk is especially relevant in India. Not meeting the wastewater quality norms would lead to a stoppage of production by the State Pollution Control Board. Our facilities in India installed on-line analyzers for monitoring critical parameters at the final ETP outlet, which are linked to the Pollution Control Board server with live data up-load and automatically shut off the discharge valve in case of exceeding the limits. Thus, we see no risk of discharging any waste water not meeting the norm. However, we believe that there is a reputational risk related to water pollution in India. If the topic receives high media coverage, this could affect our brand image, even if our own production wastewaters are not affected.</p> <p>METHOD TO IDENTIFY IMPACT: We thoroughly analyze Bayer's exposure to risks incl. water via our ERM, which reviews the risk portfolio twice a year. Pollution due to water discharges has not been identified as a risk. Based on internal discussions with the Corporate Health, Safety and Environment Dpt. (HSE) and our global water risk assessment, we identified a low reputational risk with brand damage as primary impact.</p>	More than 6 years	Low	About as likely as not

Risk 1, Part 2

Are you able to provide a potential financial impact figure?	Potential financial impact figure (currency)	Potential financial impact figure – minimum (currency)	Potential financial impact figure - maximum (currency)	Explanation of financial impact	Primary response to risk	Description of response	Cost of response	Explanation of cost of response
Yes, a single figure estimate	56,500,000			<p>CALCULATION APPROACH: Brand damage could have an impact on our stock price. For example, we estimated an impact of a 0.1% decrease of our stock price, which would affect the company's market capitalization by around €56.5 million based on year-end 2018 market capitalization.</p> <p>TIMESCALE: As financial markets can react quickly, we assume a short-term timescale for this effect.</p>	Engage with local communities	<p>Bayer is actively engaged in a continuous dialogue with stakeholders including e.g. employees, customers, neighbors, NGOs, politicians and the general public. We are actively participating in stakeholder panels at river-basin level.</p> <p>In India, we are actively participating in the Industry forum of the Estate. Waste management incl. water and wastewater are part of the agenda points for various site level meetings and interactions. The site conducts trainings on the subject as part of the ISO 14001 activities. Every employee from each level takes part and contributes to the subject and improvement measures. To create awareness for water management, various boards are displayed at prominent locations across the site.</p> <p>Furthermore, we take action to ensure the correct application of our products. Other relevant actions are the comprehensive monitoring systems at this site to ensure appropriate reaction times and risk management responses. The entire volume of the generated industrial waste is pumped to the ETP for treatment through a ground pipeline. There is a holding capacity of more than 10 days between receipt of generated process waste water in the ETP and discharge after biological treatment and final discharge. This provides ample scope for action even in worst case scenario of failure in treatment process.</p>	0	There are no specific costs related to this response strategy as the above measures are part of the normal operating procedures and HSE management at our sites.

Risk 2, Part 1

Country	River basin	Type of risk	Primary risk driver	Primary potential impact	Company-specific description	Time-frame	Magnitude of potential impact	Likelihood
Germany	Other, please specify: all EU basins	Regulatory	Tighter regulatory standards	Constraint to growth	<p>EXPLANATION: Increasing requirements for the use of crop protection, pharmaceutical or chemical products under existing and upcoming EU Directives may lead to restrictions in some uses and an increasing need for measures to reduce the concentration of respective active ingredients mainly in surface water. This might impact individual Bayer products. This discussion is especially relevant for Germany where Bayer's headquarter is located.</p> <p>EFFECT ON BAYER: In a worst-case scenario, active ingredients might be prohibited in certain uses representing a constraint to growth for Bayer.</p> <p>DETAILS ON METHOD FOR IDENTIFYING THE PRIMARY IMPACT: The risk was analyzed as part of our company-wide Enterprise Risk Management (ERM) evaluating the risk with regard to likelihood of occurrence (on a 5-step scale as described in question 4.1a) and impact. As the impact could not be evaluated financially, it was evaluated qualitatively in terms of reputation and sustainability and found to be low.</p>	4-6 years	Low	Likely

Risk 2, Part 2

Are you able to provide a potential financial impact figure?	Potential financial impact figure (currency)	Potential financial impact figure – minimum (currency)	Potential financial impact figure - maximum (currency)	Explanation of financial impact	Primary response to risk	Description of response	Cost of response	Explanation of cost of response
Yes, an estimated range		0	149,000,000	During our risk assessment, it was concluded that the primary potential impact cannot be evaluated financially. Following our risk analysis method, the risk was evaluated qualitatively with regard to reputational effects and sustainability	Engage with regulators/policymakers	Bayer was actively involved in the national dialogue on trace substances under the patronage of the German environmental ministry. The dialogue involved representatives from environmental associations, politics, water utilities and industry. Bayer is also engaging with the EU Commission on the topic. Active pharmaceutical ingredients (API) can enter the environment through human or animal excreta, improper disposal or during production. Surface waters are particularly relevant. Pharmaceuticals and Consumer Health carry out ecotoxicological investigations of pharmaceutical residues and degradation products to assess the potential environmental impact of these products. In connection	4,610,000	As Bayer's EU lobbying work also included water-related discussions, we added the costs incurred at our liaison offices in Europe in 2018 to estimate the costs of our engagement with policy makers in the EU: Including human resources, material and project expenses, the costs incurred at our liaison offices totaled

				<p>and was classified as risk with low impact.</p> <p>For risks that can be evaluated quantitatively, risks with low impact are defined to have a financial impact of less than EUR 150 million. Therefore, we came up with an estimated financial impact between EUR 0 and 149 million for this risk.</p> <p>Timescale: Our ERM takes a long-term perspective e.g. likelihood of occurrence is calculated based on a period of 10 years.</p>		<p>with the approval process for human and veterinary pharmaceuticals in Europe and the US, an environmental risk assessment takes place for all new active ingredients.</p> <p>Furthermore, to our knowledge, the existing concentrations of individual API in drinking water do not have any relevant adverse effects on human health. On the basis of its report on mixtures of API in drinking water published in 2017, the WHO currently does not identify any immediate health risks and sees no need to act in the short term. To further guarantee the safety of drinking water resources partly against the background of a potential increase in the use of pharmaceuticals, the WHO recommends that this issue be observed comprehensively over a longer period of time. Bayer is actively participating in the stakeholder dialogue.</p>		<p>approximately €1.31 million in Berlin, Germany and €3.3 million in Brussels, Belgium. The costs represent 2018 costs and are recurring each year.</p>
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(W4.2a) Provide details of risks identified within your value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Risk 1, Part 1

Country	River basin	Stage of value chain	Type of risk	Primary risk driver	Primary potential impact	Company-specific description	Timeframe	Magnitude of potential impact	Likelihood
India	Other, please specify: Several basins in developing countries	Supply chain	Reputation & markets	Negative media coverage	Company brand damage	<p>EXPLANATION: Low enforcement of wastewater standards for pharmaceutical or chemical suppliers especially in developing countries could potentially lead to incidences of increased respective concentrations in environmental water bodies and potentially in drinking water.</p> <p>EFFECT ON BAYER: If such incidences occur and are picked up by (social) media or NGOs, they impose a reputational risk for the entire industry, including Bayer.</p> <p>DETAILS ON METHOD FOR IDENTIFYING THE IMPACT: The risk was analyzed as part of our company-wide Enterprise Risk Management (ERM) evaluating the risk with regard to likelihood of occurrence (on a 5-step scale as described in question 4.1a) and impact. As the impact could not be evaluated financially, it was evaluated qualitatively and found to be low.</p>	1-3 years	Low	More likely than not

Risk 1, Part 2

Are you able to provide a potential financial impact figure?	Potential financial impact figure (currency)	Potential financial impact figure – minimum (currency)	Potential financial impact figure - maximum (currency)	Explanation of financial impact	Primary response to risk	Description of response	Cost of response	Explanation of cost of response
Yes, an estimated range		0	1490,000,000	<p>During our risk assessment, it was concluded that the potential impact on reputation cannot be evaluated financially. Following our risk analysis method, the risk was evaluated qualitatively and was classified as risk with low impact. For risks that can be evaluated quantitatively, risks with low impact are defined to have a financial impact of less than EUR 150 million. Therefore, we came up with an estimated financial impact between EUR 0 and 149 million for this risk.</p> <p>Timescale: Our ERM takes a long-term perspective e.g. likelihood of occurrence is calculated based on a period of 10 years.</p>	Increase requested supplier reporting on water	<p>Our Supplier Code of Conduct (SCoC) and our Sustainability Contract Clause are the main strategy to protect us against sustainability related supplier risks, e.g. it contains aspects related to water management and responsible water use. The SCoC is an important component for supplier selection and evaluation like sustainability online assessments and on-site audits. In 2018, Bayer requested more than 2% (ca. 2,174 out of 101,188 suppliers), representing ca. 32% of the total procurement spend, to report on water management. Through partnerships, we further drive those topics. Supplier evaluation was conducted by a leading web-based service provider of sustainability performance evaluations (EcoVadis) for sustainability performance monitoring. Besides, the main initiatives in which we foster the engagement with suppliers and their evaluation in relation to sustainability topics are "Together for Sustainability" and the "Pharmaceutical Supply Chain Initiative".</p>	312,000	<p>To estimate the reported costs we summed up the membership fees for the two supplier initiatives and the interface to EcoVadis. In 2018 we spent more than 112,000 € for membership fees for supplier initiatives and EcoVadis and about € 200,000 on initiatives related to the engagement with suppliers and their assessment and audits in relation to sustainability topics, including water.</p>

Water-related opportunities

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

Type of opportunity	Primary water-related opportunity	Company-specific description & strategy to realize opportunity	Estimated time-frame for realization	Magnitude of potential financial impact	Are you able to provide a potential financial impact figure?	Potential financial impact figure (currency)	Potential financial impact figure – minimum (currency)	Potential financial impact figure - maximum (currency)	Explanation of financial impact
Products and services	Increased sales of existing products/services	<p>The OPPORTUNITY is Crop Science's excellent position to offer products and services that support improved cultivation techniques and thus improve water management in agriculture. This opportunity is considered STRATEGIC BECAUSE the whole agricultural business is strongly tied to water and weather phenomena. ACTION TO REALIZE this opportunity: Crop Science is offering farmer trainings and promotes water-saving cultivation systems. For EXAMPLE, with the Digital Farming approach and our expanding Smallholder Farming Initiative we promote innovations, e.g. helping farmers to enhance their water efficiency in countries such as India and Ghana. Examples of Digital Farming solutions are spraying tools and auto-steering or GPS-controlled tractors. In July 2017, Bayer and the Israeli company Netafim Ltd. joined forces to enhance the application of crop protection products through drip irrigation systems. The new approach called DripByDrip will enable farmers to water their fields and apply crop protection products in a more targeted way.</p> <p>Monsanto has collaborated in the public-private partnership AquaTEK™, which trains farmers to make smart decisions in terms of irrigation based on soil moisture information from sensors and satellite data. Monsanto also acquired the agriculture software company HydroBio, which uses satellite imagery, soil data and hyper-local weather data to deliver irrigation insights for farmers to help improve irrigation water-use efficiency and maximize yields.</p>	>6 years	High	Yes, a single figure estimate	9,500,000,000			<p>FINANCIAL IMPLICATIONS apply to Crop Science as a whole with sales of EUR 19.3 billion in 2018 (on a pro-forma basis), of which crop protection has a major impact with €9.5 billion. For Crop Science, we expect sales growth of ~4% (Fx & portf. adj.) for FY 2019. Our offerings of products/services helping farmers to use water more efficiently are contributing to this growth.</p>

W5. Facility-level water accounting

(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 name (optional)	Country/Region	River basin	Latitude	Longitude	Total water withdrawals (megaliters/year) at this facility	Comparison of withdrawals with previous reporting year	Total water discharges (megaliters/year) at this facility	Comparison of discharges with previous reporting year	Total water consumption (megaliters/year) at this facility	Comparison of consumption with previous reporting year	Please explain
Facility 1	Berkeley	United States of America	Sacramento River- San Joaquin River	37.85873	-122.29058	323	Much lower	200	Much lower	200	Much lower	In 2018, water withdrawals, discharge and consumption were much lower due to more efficient use of water, improved measurement technology and lower production volume.
Facility 2	Filer	United States of America	Columbia River	42.57234	-114.6108	267	Higher	1	Higher	267	Higher	In 2018, water withdrawals, consumption and discharges increased. The deviations from last year values still lie within the range which we consider as usual due to variations in production.
Facility 3	Haleiwa	United States of America	Other, please specify: No river basin assigned	21.605605	-158.08276	199	Higher	0.2	Higher	199	Higher	In 2018, water withdrawals, consumption and discharges increased. The deviations from last year values still lie within the range which we consider as usual due to variations in production.
Facility 4	Ica	Peru	Other, please specify: GHAAS Basin3150	-14.0681	-75.741904	618	Lower	62	Lower	618	Lower	In 2018, water withdrawals, consumption and discharges decreased. The deviations from last year values still lie within the range which we consider as usual due to variations in production.

Facility 5	Juana Diaz	Puerto Rico	Other, please specify: GHAAS Basin1835	18.00301	-66.505889	309	Much lower	4	Much lower	309	Much lower	In 2018, water withdrawals, consumption and discharges were much lower due to improved reporting methodology.
Facility 6	Kihei	United States of America	Other, please specify: No river basin assigned	20.76443	-156.44501	456	Much lower	5	Much lower	456	Much lower	In 2018, water withdrawals, consumption and discharges were much lower due to lower production volumes, good rainfall and implemented conservation tillage practices.
Facility 7	Kunia	United States of America	Other, please specify: No river basin assigned	21.45182	-158.06286	908	Much lower	1	Much lower	908	Much lower	In 2018, water withdrawals, consumption and discharges were much lower due to lower production volumes, more efficient usage of irrigation water and maintenance of equipment.
Facility 8	Molokai	United States of America	Other, please specify: No river basin assigned	21.14311	-157.05966	570	Much lower	1	Much lower	570	Much lower	In 2018, water withdrawals, consumption and discharges were much lower due to lower production volumes and good rainfall.
Facility 9	Soda Springs + Quarry	United States of America	Other, please specify: GHAAS Basin251	42.68667	-111.585	2,718	Much lower	12	Much lower	687	Much lower	In 2018, water withdrawals, consumption and discharges were much lower due to improved measurement technology.
Facility 10	Soda Springs Mine	United States of America	Other, please specify: GHAAS Basin251	42.68667	-111.585	252	Higher	1	Higher	252	Higher	In 2018, water withdrawals, consumption and discharges increased. The deviations from last year values still lie within the range which we consider as usual due to variations in production.

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

Facility reference number	Facility name	Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Brackish surface water/seawater	Groundwater (renewable)	Groundwater (non-renewable)	Produced/entrained water	Third party sources	Comment
Facility 1	Berkeley	0	0	0	0	0	323	
Facility 2	Filer	264	0	3	0	0	0	
Facility 3	Haleiwa	199	0	0	0	0	0	
Facility 4	Ica	0	0	618	0	0	0	
Facility 5	Juana Diaz	214	0	91	0	0	4	
Facility 6	Kihei	0	0	1	0	0	455	
Facility 7	Kunia	0	0	907	0	0	1	
Facility 8	Molokai	0	0	0	0	0	570	
Facility 9	Soda Springs + Quarry	0	0	2,716	0	0	2	
Facility 10	Soda Springs Mine	15	0	237	0	0	0	

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

Facility reference number	Facility name	Fresh surface water	Brackish surface water/Seawater	Groundwater	Third party destinations	
Facility 1	Berkeley	0	0	0	200	
Facility 2	Filer	0	0	0	1	
Facility 3	Haleiwa	0	0	0	0.2	
Facility 4	Ica	0	0	0	62	
Facility 5	Juana Diaz	0	0	0	4	
Facility 6	Kihei	0	0	0	5	
Facility 7	Kunia	0	0	0	1	
Facility 8	Molokai	0	0	0	1	
Facility 9	Soda Springs + Quarry	0	0	0	12	
Facility 10	Soda Springs Mine	0	0	0	1	

(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 name	% recycled or reused	Comparison with previous reporting year	Please explain
Facility 1	Berkeley	1-10%	Much higher	In 2018, more recycled water was used in the cooling tower. In addition, the measurement technology was improved.
Facility 2	Filer	None	About the same	We do not recycle or reuse water at this site.
Facility 3	Haleiwa	None	About the same	We do not recycle or reuse water at this site.
Facility 4	Ica	None	About the same	We do not recycle or reuse water at this site.
Facility 5	Juana Diaz	None	About the same	We do not recycle or reuse water at this site.
Facility 6	Kihei	None	About the same	We do not recycle or reuse water at this site.
Facility 7	Kunia	None	About the same	We do not recycle or reuse water at this site.
Facility 8	Molokai	None	About the same	We do not recycle or reuse water at this site.
Facility 9	Soda Springs + Quarry	None	About the same	We do not recycle or reuse water at this site.
Facility 10	Soda Springs Mine	None	About the same	We do not recycle or reuse water at this site.

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

Water aspect	% verified	What standard and methodology was used?
Water withdrawals – total volumes	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water withdrawals – volume by source	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water withdrawals – quality	Not verified	Information on the quality of water withdrawals is not included in the Bayer Integrated Annual Report 2018 and thus not verified by the auditor Deloitte as part of their limited assurance.
Water discharges – total volumes	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water discharges – volume by destination	Not verified	Information on the volume by destination of water discharges is not included in the Bayer Integrated Annual Report 2018 and thus not verified by the auditor Deloitte as part of their limited assurance.
Water discharges – volume by treatment method	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water discharge quality – quality by standard effluent parameters	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water discharge quality – temperature	Not verified	Information on the temperature of water discharge quality is not included in the Bayer Integrated Annual Report 2018 and thus not verified by the auditor Deloitte as part of their limited assurance.
Water consumption – total volume	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.
Water recycled/reused	76-100	Standard: ISAE 3000; Methodology: The auditor Deloitte has verified water data as part of the limited assurance for the Bayer Integrated Annual Report 2018, incl. the following procedures: recording of systems and processes for collection, analysis, validation and aggregation of data and their documentation on a sample basis; site visits; analytical procedures. Scope: Global: Water data is measured at site level and monitored annually at global level in our central Bayer Site Information System.

W6. Governance

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

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

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

Scope	Content	Please explain
Company-wide	<ul style="list-style-type: none"> ● Description of business dependency on water ● Description of business impact on water ● 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 ● Other, please specify: Water efficiency in agriculture 	<p>(i) Rationale: The Bayer Water Position is COMPANY-WIDE BECAUSE water is a GLOBAL topic and one of our MAIN ENVIRONMENTAL ASPECTS. Bayer provides innovative solutions to global challenges. The availability of fresh water represents such a challenge. Also, water is essential for us as a manufacturing company. THIS IS WHY our Water Position covers the content highlighted company-wide securing our license to operate.</p> <p>(ii) Overview: Our Water Position includes a description of our BUSINESS DEPENDENCY ON WATER outlining that water is a major rate-limiting factor for agriculture and the importance of fresh water for our energy- and water-intensive operations (also recognizing their LINKAGE). The position includes our commitment to reduce our BUSINESS IMPACT ON WATER by improving WATER-RELATED PERFORMANCE IN DIRECT OPERATIONS AND BEYOND e.g. with our own WATER USE REDUCTION and SUPPLIER targets, our commitment to drive site-specific projects for water reuse/recycling/reduction or waste water treatment and our commitment to develop INNOVATIVE PRODUCTS AND TECHNOLOGIES for the market, e.g. for improved waste water treatment. WATER STEWARDSHIP and water efficiency in AGRICULTURE is included in our commitment to ensure the supply of food through water-efficient products and farming techniques. We also include customer EDUCATION e.g. skills building for farmers as part of our product stewardship responsibilities. BEYOND COMPLIANCE, we also support water-related community projects. The position outlines our focus on the HUMAN RIGHT TO WATER AND SANITATION: we use our local presence to provide access to clean water and sanitation to our employees and the communities in which we operate. It outlines our focus on AWARENESS AND SKILLS BUILDING, e.g. by working with farmers and supporting education and science. The position further outlines our commitment to align with PUBLIC POLICY INITIATIVES e.g. multi-lateral partnerships.</p>

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

Yes

(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
Chief Sustainability Officer (CSO)	<p>RELATION TO WATER: The highest level of responsibility for water-related issues lies with the member of the Board of Management responsible for Human Resources, Technology and Sustainability. As CSO he is responsible for the Group-wide Sustainability Program incl. water-related targets and measures.</p> <p>RATIONALE: The position was selected to ensure that water-related risks and opportunities are identified AT GROUP-LEVEL and water-related targets and measures are driven Group-wide. As the same Board member is RESPONSIBLE FOR TECHNOLOGY, WATER SAFETY AND EFFICIENCY INITIATIVES CAN GO HAND IN HAND.</p> <p>The CSO is the superior of the Head of Corporate Health, Safety, Sustainability. Relevant topics in the field of sustainability incl. water-related topics are discussed during their regular meetings. The implementation of our water-related targets is a key element of the annual performance objectives of both.</p>

(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
Scheduled - some meetings	<ul style="list-style-type: none"> ● 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 ● Reviewing and guiding major plans of action ● Reviewing and guiding risk management policies ● Reviewing and guiding strategy ● Reviewing and guiding corporate responsibility strategy ● Reviewing innovation/R&D priorities ● Setting performance objectives 	<p>i) WHO BRIEFS ON WHAT: Water-related strategic decisions are brought up in board discussions by the Head of Corporate Health, Safety, Sustainability (CHS) or the CSO as needed. The CHS Head informs the board about environmental KPIs incl. water-related KPIs and target achievement in the context of the annual Board meeting dedicated to the approval of our Annual Report (AR). The CSO and the CFO are informed several times by the AR taskforce during the reporting cycle from Aug to Feb. The Head of CHS monthly reports HSE KPIs to the CSO.</p> <p>ii) CONTRIBUTION TO BOARD OVERSIGHT: The governance mechanisms selected contribute to an informed view of the Board on water-related issues and ensure a coherent and Group-wide response, if needed. Examples: Through the reporting of water-related KPIs, the Board can ensure a Group-wide response in case of any deviations of water parameters from the required values. Through the integration of water-related issues in major investment decisions, the regular review of water-related risks, and the integration of water-related issues in the review of strategic decisions or R+D priorities, the Board can ensure e.g. an adequate inclusion of water risks and opportunities in our business, sustainability or risk management strategy. E.g. all capital expenditures above €10 million undergo an ecological assessment; CAPEX above €20 million go into the Board. An example was the decision to sign the WASH Pledge as part of our Sustainability strategy.</p>

(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)	Responsibility	Frequency of reporting to the board on water-related issues	Please explain
Chief Sustainability Officer (CSO)	Both assessing and managing water-related risks and opportunities	More frequently than quarterly	<p>POSITION: The CSO reports to the CEO and is the superior of the Head of Corporate Health, Safety and Sustainability (CHS). The CSO also sponsors the Sustainable Development Committee (SDC) as the highest management-level decision making body with responsibility for water.</p> <p>REPORTING NATURE: The SDC, meeting quarterly, endorses water-related targets, which are then approved by the CSO and Board. Target achievement is reported ANNUALLY to the Board in a REGULAR BOARD MEETING. In REGULAR JOUR FIXES, the CSO and CHS Head discuss operational topics in the field of sustainability, incl. water issues. Additionally, as important matters arise, they are brought up in board discussions.</p> <p>DUTIES: The CSO is responsible for the Group-wide Sustainability Program incl. water-related targets and measures, whose current status is discussed by the CSO during regular meetings with the CHS Head. The SDC, under CSO sponsorship, proposes water-related initiatives, management systems and corporate policies.</p>

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

- Yes, trade associations
- Yes, funding research organizations

(W6.5a) 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?

PROCESS: Bayer’s organizational processes are designed to ensure a common approach for all direct and indirect engagement activities across divisions and geographies. An important instrument for ensuring the alignment of our engagement activities with our overall water commitments is Bayer’s Public and Governmental Affairs Committee (PGA Committee). The PGA Committee is Bayer’s political think tank and political liaison that helps the company to maintain its social license to operate. It coordinates the political work (incl. work on water-related issues) for Bayer AG and meets regularly. The PGA Committee is chaired by the Head of Public and Governmental Affairs and sponsored by Bayer’s CEO. Furthermore, it consists of top managers from the Corporate Center and the divisions. Experts from the Corporate Sustainability & Business Stewardship department are invited as needed to contribute with their expertise-based advocacy work to the discussions involving water-related issues. The involvement of these representatives in the PGA Committee ensures the consideration of our overall water policy in Bayer’s political activities and the alignment of the activities with our strategy.

ACTION FOR INCONSISTENCIES: This process ensures that there are no inconsistencies in our corporate advocacy actions. If the Corporate Sustainability & Business Stewardship department discovers inconsistency in local advocacy actions, the department would raise them with the country head.

(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)

W7. Business strategy

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

Aspect of strategic business plan	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	11-15	<p>i) ISSUES INTEGRATED: Through the establishment of sustainability goals we included water-related topics into our long-term non-financial business objectives (e.g. in supplier management or resource efficiency). For instance, we set the target to establish a water management at all sites in water-scarce regions focusing on issues such as wastewater standards and water efficiency.</p> <p>ii) HOW ISSUES ARE INTEGRATED: Within its Corporate Health, Safety and Sustainability Roadmap, Bayer sets specific goals to operationalize its objectives, including goals to assess and mitigate the risk of soil/ground water contamination at all sites worldwide, and standards for wastewater emissions. This way, sustainability is integrated into our long-term business objectives, leading to projects with sustainability and business relevance. The development of non-financial goals CHANGED the awareness of the importance of sustainability within the company for securing Bayer's license to operate. The Supplier Code of Conduct also addresses a responsible water management by Bayer's suppliers. By evaluating our suppliers we minimize potential risks in our supply chain and show our suppliers the importance of water in general, but also for Bayer in particular.</p>
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	11-15	<p>i) ISSUES: Water resource considerations such as the development of drought-tolerant plant varieties are factored into new product development and therewith have an IMPACT on our strategy for achieving long-term business objectives. Water-related issues to achieve our Water Position include e.g. KPIs on water emissions or projects, which provide access to clean water and sanitation to the communities in which we operate impacting our acceptance in the community.</p> <p>ii) HOW ISSUES ARE INTEGRATED: By including water resource considerations into our innovation strategy they influence our product development and improvements in resource efficiency. The OUTCOME is the rollout of new products and services and thus the realization of new sales potentials. E.g., Bayer developed and offers hybrid rice seeds that withstand abiotic and biotic stress like drought and salinity. This helps increasing yields significantly and consequently improving livelihoods in countries like Vietnam that are struck by weather-related calamities. Bayer is also engaged in developing dry seeded rice, a new cropping system that reduces water requirements where water availability is becoming limiting. The introduction of water KPIs has allowed us to implement improvement mechanisms, e.g. leading to cost saving opportunities due to improved resource efficiency. For our employees we signed the WBCSD WASH Pledge, ensuring access to safe water, sanitation and hygiene for all employees in all premises under our control.</p>
Financial planning	Yes, water-related issues are integrated	11-15	<p>i) ISSUES: Water issues integrated into financial planning, e.g. investment decisions, especially include water use and emissions into water.</p> <p>ii) HOW ISSUES ARE INTEGRATED: Water resource considerations are factored into location planning for new operations IMPACTING our investment decisions. According to Bayer's Ecological Assessment of new Investments Guideline, all</p>

			<p>investments above €10 million must be evaluated with regard to their environmental impact. The assessment includes both a product and process evaluation. The process evaluation assesses the impacts of the new investment projects on organisms and the local environment which are specific to the location and the facility (e.g. water use and emissions into water). The OUTCOME is an improved risk assessment at site level to secure long-term investments.</p> <p>As mentioned above, water resource considerations are factored into new product development and have an IMPACT on the rollout of new products and services and therefore the realization of new sales potentials. For instance, Bayer developed and offers hybrid rice seeds that withstand abiotic and biotic stress like drought and salinity. This helps increasing yields significantly and consequently improving livelihoods in countries like Vietnam that are struck by weather-related calamities. Bayer is also engaged in developing dry seeded rice, a new cropping system that reduces water requirements where water availability is becoming limiting.</p>
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(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?

Water-related CAPEX (+/- % change)	Anticipated forward trend for CAPEX (+/- % change)	Water-related OPEX (+/- % change)	Anticipated forward trend for OPEX (+/- % change)	Please explain
0	0	0	0	Currently, we assume that our expenditures concerning environmental (incl. water)-related issues have stayed at a similar share over the last few years. According to Bayer’s Ecological Assessment of New Investments Guideline, all investments above €10 million must be evaluated with regard to their environmental impact. The assessment includes both a product and process evaluation. The process evaluation assesses the impacts of new investment projects on organisms and the local environment which are specific to the location and the facility (e.g. water use and emissions into water).

W7.3 Scenario analysis

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

Use of climate-related scenario analysis	Comment
Yes	

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

No

Water pricing

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

Does your company use an internal price on water?	Please explain
No, but we are currently exploring water valuation practices	<p>Bayer has analyzed the possibility to introduce an internal price of water as a possible tool to favor green investments. We came to the conclusion that an internal price on water is currently not meaningful for Bayer. Yet, we constantly revisit our analysis and conclusions in order to adapt to continuous developments and change.</p> <p>Rationale: Attributing financial value to the materiality of water risk is an emerging field. Upon make-or-buy assessments, internal water prices can bias the profitability of investments, thereby leading to unjustified outsourcing. In addition, due to specifics of our business, an internal price on water is not meaningful for Bayer and hence not a preferred tool to favor green investments.</p>

W8. Targets

(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
<ul style="list-style-type: none"> ● Company-wide targets and goals ● Business level/specific targets and/or goals ● Activity level specific targets and/or goals ● Site/facility specific targets and/or goals 	<ul style="list-style-type: none"> ● Targets are monitored at the corporate level ● Goals are monitored at the corporate level 	<p>In the context of setting its non-financial group targets, Bayer assesses its water performance in a holistic way since 2013. This includes, for example, the analysis of water parameters such as water use, quality and discharge, the identification of sites exposed to water risks using the World Resources Institute Aqueduct Tool as well as the analysis of site-specific water projects and accompanying initiatives in the local communities where we are active.</p> <p>As water is a local issue, we recognized the need to handle water targets at a local level. Our sites therefore set SITE-SPECIFIC TARGETS that fit to their individual water situation. Besides, as a result of our corporate analysis, we also set a GROUP-WIDE TARGET to establish a water management at 100% of sites in water-scarce areas by 2017. This ensured that all of these sites have implemented water management processes and develop site-specific measures and targets. Using a monitoring tool developed by Bayer, the corporate CHS function annually analyzes the site data at corporate level including a site-specific risk review and progress analysis.</p> <p>Besides, Legacy Monsanto, as part of our Crop Science business, set a broad-based irrigation water application efficiency target for their contract seed growers in the supply chain.</p> <p>During the non-financial target setting process we also analyzed possibilities to set ACTIVITY SPECIFIC TARGETS or goals. Following individual functional analyses, dedicated company-wide supplier targets and goals were set related to our supplier</p>

		<p>engagement activities, focusing on improving their sustainability management including water.</p> <p>With the successful target attainment to have water management established at all sites in water-scarce areas by 2017 and facing the merger with Monsanto, Bayer conducted a stakeholder survey and materiality analysis in fall 2018 after the merger had been completed to inform the development of new corporate water-related goals with a time horizon until 2030 to align them with the UN Sustainable Development Goals. These targets will be finalized in 2019.</p>
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(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.

Target reference number	Category of target	Level	Primary motivation	Description of target	Quantitative metric	Base-line year	Start year	Target year	% achieved	Please explain
Target 1	Water use efficiency	Business activity	Reduced environmental impact	<p>Within Crop Science, the Monsanto legacy has set the target to increase irrigation water efficiency of global seed production by 25% by 2020 (baseline of 2010).</p> <p>We are committed to increasing irrigation water application efficiency across our global seed production process by 25 percent by 2020, compared to our 2010 baseline. This commitment, which includes our operations, as well as the contract farms that grow seed for our company's products, presents an opportunity to save an estimated 30 to 80 billion gallons of water each year, depending upon precipitation.</p>	% reduction in total water withdrawals	2010	2014	2020	92%	As of December 2018 Global Irrigation efficiency is 78% inclusive of Global Corn, Soybean, Cotton and Vegetable crops. We can attribute much of this progress to the use of advanced irrigation management techniques like satellite technology in Monsanto seed production locations in Argentina, Brazil, Chile, Hawaii, India, Mexico & South Africa. More than 77 billion gallons of water were managed through these innovative solutions.
Target 2	Supplier engagement	Company-wide	Water stewardship	<p>As pointed out in our Global Water Position, Bayer aims at protecting water resources and improving water-use-efficiency both within the company and beyond.</p> <p>As part of our supplier management we have set the global target to continue to evaluate 100% of potentially high-risk (legacy) Bayer suppliers with significant spend by 2020. This target was defined to improve sustainability practices in our supply chain, to support us to define improvement measures together with our suppliers but also to help Bayer minimize risks beyond its own operations. Throughout 2019 we start to integrate legacy Monsanto suppliers into our 4-step management process.</p>	Other, please specify: % high-risk suppliers evaluated	2013	2013	2020	100	By 2020, we aim to continue to evaluate all those (legacy) Bayer suppliers with a significant procurement spend (more than €1 million p.a.) that are regarded as potentially high-risk suppliers due to their combined country and category risk. Throughout 2019 we start to integrate legacy Monsanto suppliers into our 4-step management process. Our target attainment as of 2018 was 100% excluding the newly acquired agriculture business. In the case of new suppliers of this type, Bayer reserves the

				For Bayer, the minimization of reputational damage and costs as well as the risk of supply interruption play an important role and emphasizes the importance of this goal.						right to review their sustainability performance through an online assessment or an on-site audit.
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(W8.1b) Provide details of your corporate water goal(s) that are monitored at the corporate level and the progress made.

Goal	Level	Motivation	Description of goal	Baseline year	Start year	End year	Progress
Other, please specify: Water pollution prevention	Company-wide	Risk mitigation	<p>To underline the commitments in Bayer's GLOBAL Water Position, Bayer defined COMPANY-WIDE pollution prevention objectives: 1) We aim at setting global emission standards for wastewater and 2) at establishing one concept for the evaluation of Active Ingredients in manufacturing wastewater.</p> <p>RELEVANCE FOR WATER SECURITY AND IMPORTANCE FOR BAYER: With total discharges of 18,280mega liters in 2018, water quality is very important for us and to achieve water security.</p> <p>IMPLEMENTATION: We aim to fulfill our company-wide goal by implementing local targets in accordance with the specific requirements of each division. E.g., the topic is very relevant in India due to the zero liquid discharge strategy of the government. Thus, our site has set local goals e.g. to improve the quality of effluent by reducing usage of acids and alkalis in the production process by 200 tons against 2017.</p> <p>We applied alternative means of disposing of product-containing wastewater such as incineration, distillation or chemical treatment.</p> <p>Bayer experts are working on the Pharmaceuticals in the Environment topic and are collaborating with other companies and organizations in external projects in this field, e.g. the Eco-Pharmaco-Stewardship initiative of European pharmaceutical associations. We have adopted the initiative's methods for the risk assessment of pharmaceutical traces in production wastewater as part of the concept.</p>	2013	2013	2019	<p>i) INDICATORS: We track the progress in terms of concept development along predefined MILESTONES. We also set up global limit values for both goals: 1) We establish limit values ON EMISSION PARAMETERS, e.g. on nitrogen, TOC (total organic carbon) or phosphorous concentrations. 2) We measure the PERCENTAGE OF ACTIVE INGREDIENTS (AI) THAT HAVE PASSED THE RISK ASSESSMENT as key indicator to track the progress of the concept development. During the risk assessments we measure the AI CONCENTRATION LEVELS to decide on threshold values.</p> <p>ii) The THRESHOLD FOR SUCCESS is the successful establishment and company-wide implementation of the limit values related to emissions standards and AI concentration levels.</p> <p>iii) PROGRESS: We have finalized the concept development and the company-wide procedure to implement the concept. Furthermore, all sites except for the newly acquired agricultural business have conducted the AI risk assessment to decide on a threshold level. The next step for the newly acquired agricultural business sites is to conduct the AI risk assessment to decide on a threshold level as well. Regarding our local target to reduce the usage of acids and alkalis in the production process of our Indian site by 200 tons against 2017, we already achieved a reduction of 178 tons in 2018.</p>
Engagement with suppliers to help them improve water stewardship	Company-wide	Water Stewardship	<p>RELEVANCE: We have set the global goal to develop and establish a new sustainability standard for our supply base. According to Bayer's GLOBAL Water Position, Bayer aims at protecting water resources and improving water-use-efficiency both within the company AND BEYOND. With the Supplier Code of Conduct, Bayer aims at ensuring a sustainable supply chain management company-wide, including the responsible</p>	2013	2013	2018	<p>INDICATORS TO ASSESS PROGRESS: Implementation status.</p> <p>Amongst others, it was the goal to standardize sustainability evaluations within the same industry, to foster exchange and to set clear expectations regarding sustainability in order to establish according sustainability practices at our suppliers. This has been successfully achieved which has been shown by the CIPS award to TfS and the display of PSCI through</p>

			<p>use of resources incl. water.</p> <p>WHY IT IS IMPORTANT: Together with the two supplier management targets, this goal was defined to strengthen our mutual understanding of how sustainability should be practiced in day-to-day business and to embed our sustainability expectations along the supply chain, to support us to develop improvement measures together with our suppliers but also help Bayer minimize risks. The idea was to also raise the industry standard and develop the supply base to take it to a next level.</p> <p>IMPLEMENTATION: A new industry standard could only be achieved through considerable efforts of industry initiatives, which is why Bayer closely collaborates with several industry initiatives. Together with the industry initiatives Together for Sustainability (TfS) and the Pharmaceutical Supply Chain Initiative (PSCI), Bayer develops and continues to implement a program to assess, audit and improve sustainability practices within the global supply chains of the chemical industry. TfS aims to grow into a global standard for sustainable supply chains in the chemical industry.</p>				<p>the UN.</p> <p>THRESHOLD FOR SUCCESS AND PROGRESS: This is not a goal which we can quantify, thus there are no quantitative indicators / thresholds in place. Being part of the TfS and PSCI initiative means being part of a community of industry leaders active in the field of sustainability. Together with them, Bayer is working on the objective to raise awareness on sustainability standards by initiating continuous improvements across sourcing markets and geographical areas, as well as promoting best practices. The sustainability standard for our suppliers is to be driven forward in tandem with relevant industry initiatives. We are currently working with Together for Sustainability (TfS) and the Pharmaceutical Supply Chain Initiative (PSCI).</p>
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W9. Linkages and trade-offs

(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) Describe the linkages or tradeoffs and the related management policy or action.

Linkage/ tradeoff	Type of linkage/ tradeoff	Description of linkage/trade-off	Policy or action
Tradeoff	Increased wastewater treatment	<p>i) DESCRIPTION: One trade-off relates to water treatment technologies such as incineration. The higher the concentration of substances in water, the more energy-intensive the treatment. Different requirements regarding wastewater thresholds apply at our sites. The main energy consumption occurs in zero liquid discharge cases e.g. in India. The sites have programs to reduce emissions in water. Generated industrial waste is pumped to the ETP for treatment through a ground pipeline. Process changes to eliminate waste water streams include e.g. reductions in acids and alkalis by optimizing molar ratios with a reduction of 178 tons in 2018.</p> <p>ii) QUANTIFICATION: Ca. 700 kWh energy are needed to incinerate 1 ton of wastewater, e.g. in India with the governments zero liquid discharge strategy.</p> <p>iii) CHANGE: Our energy consumption at one of our Indian sites increased by 15% since 2015. Apart from a general increase in production volume, this change can be attributed to wastewater treatment.</p>	<p>i) ACTION: To some extent, we cannot prevent the trade-off as we need to conform to wastewater quality standards and legal requirements such as in the case of the Indian zero liquid discharge strategy. In many cases these are met through the application of complex and energy-intensive wastewater treatment technologies such as incineration as the safest approach to protect human health and the environment. At some sites, we use ozone oxidation or LOPROX® processes as a treatment technology. This process innovation reduces the incineration of water and results in fewer CO2 emissions.</p> <p>ii) INTEGRATION INTO STRATEGY: Our highest priority is to comply with legal requirements. In the case of the zero liquid discharge strategy in India, this means that we cannot pursue any actions to tackle the trade-off. However, as stated in our Sustainable Development Policy, we are committed to continually improving our ecological performance in accordance with the Global Charter Responsible Care. In our Bayer Water Position we also set principles concerning the responsible and sustainable use of water. We therefore evaluate each trade-off case by case in order to identify efficient treatment technologies, wherever possible. Appropriate risk assessments that include an evaluation of the trade-off wherever possible, will also be integrated in our new environmental protection procedure, which is currently under development.</p>

W10 Verification

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

Yes

(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
W1. Current state	Total water withdrawals, usage and discharges for all environmentally relevant sites worldwide	ISAE3000	Total water withdrawals are described within Bayer's Integrated Annual Report 2018, which is verified by the auditor Deloitte. Thus, they are included in the verification process.
W1. Current state	Water-related supplier engagement activities	ISAE3000	Water-related supplier engagement activities are described within Bayer's Integrated Annual Report, which is verified by the auditor Deloitte. Thus, they are included in the verification process.
W1. Current state	Total recycled water for all environmentally relevant sites worldwide	ISAE3000	The total amount of recycled water is included in Bayer's Integrated Annual Report 2018, which is verified by the auditor Deloitte. Thus, it is included in the verification process.
W8. Targets	Water targets	ISAE3000	Water targets are included in Bayer's Integrated Annual Report, which is verified by the auditor Deloitte. Thus, they are included in the verification process.
W8. Targets	Monitoring of water targets	ISAE3000	The monitoring of water targets is included in Bayer's Integrated Annual Report, which is verified by the auditor Deloitte. Thus, they are included in the verification process.

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.

Further information for W2.2:

To identify and monitor water-related environmental or compliance issues, we reviewed answers provided by our sites for Bayer's Annual Report regarding the corresponding GRI indicators for environmental compliance as well as their answers in internal tools such as BaySIS, where we report compliance-related incidents such as "environmental incidents" and "transport incidents" with potential environmental impact. "Environmental incidents" are defined as incidents in the course of our business activities that result in the release of substances into the environment. Factors that determine whether there is a reporting obligation include, in particular, the nature and quantity of the substance, the amount of damage caused or any consequences for nearby residents. In accordance with our internal voluntary commitment, we report any leakage of substances with a high hazard potential from a quantity of 100 kg upward. "Transport incidents" include accidents that cause personal injury, significant damage to property, environmental impact through the release of substances, or leakage of hazardous materials. We record transport incidents using defined criteria. Assessment is based on the leaked load, graded according to the volume and hazardous material class, personal injury and blocked transportation routes. We take into account both our own chemical transport movements and those we

commission and pay third parties to perform on our behalf. Based on this review, no relevant compliance incident related to water was identified. We further discussed this result with our HSE managers who confirmed the finding above.

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

Job title	Corresponding job category
Bayer AG Board Member for Human Resources, Technology and Sustainability	Director on board

(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