

A WAVE OF CHANGE

The role of companies in building a water-secure world



FOREWORD

NORGES BANK INVESTMENT MANAGEMENT



Water scarcity and pollution can pose business risks, and the way water is managed by companies can influence their profits. But it can also affect the profits of other companies we invest in that are dependent on the same sources of water.



Norges Bank Investment Management manages the assets of the Norwegian Government Pension Fund Global, currently amounting to around US\$1.3 trillion. We work to safeguard and build financial wealth for future generations.

Responsible investment is a key priority for the fund as it supports the long-term economic performance of our investments, and reduces financial risks associated with the environmental and social practices of companies in our portfolio. Water scarcity and pollution can pose business risks, and the way water is managed by companies can influence their profits. But it can also affect the profits of other companies we invest in that are dependent on the same sources of water.

Every year we assess companies' water management efforts across indicators of governance, strategy, risk management, and disclosure of metrics and targets. We base these assessments on public disclosures, in many cases directly on responses to CDP's water security questionnaire. We, and other investors, rely on high quality corporate disclosures to inform our risk management, company engagements, voting and investment decisions. We recognize the important role CDP plays in ensuring consistency, comparability and a common repository of water data.

In 2020, our assessments covered 500 companies and we are glad to see an increasing number of these report through CDP. Almost 70 percent of the companies are now reporting their

overall water consumption – a strong increase since just last year. In this report CDP shows that the cost of mitigating water risks for companies is usually much lower than their potential financial impact. In our own assessments, we find that only half of the companies are integrating water-related issues into their financial planning. CDP's findings indicate that many more companies could benefit from assessing the financial implications of water risks.

The CDP water security team has continued to further the discussion on other topics in 2020, including on measuring water pollution through a workshop we co-hosted in September. We are proud to have been the lead sponsor of CDP's work tackling water security since 2009, and it is encouraging to see that the number of companies responding to the investor request has continued to increase to 1,936 this year.

We congratulate CDP on the release of the 2020 Global Water Report and encourage companies to consider the true costs of mitigating water risks – as inaction could turn out more costly.

Carine Smith Ihenacho

**Chief Governance and Compliance Officer
Norges Bank Investment Management**

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To read 2020 company responses in full, please go to <https://www.cdp.net/en/responses>

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KEY FINDINGS



Inaction costs 5x more than action

The cost of inaction is over five times the cost of action. Disclosures through CDP indicate that the potential financial impacts of water risks are far greater than the costs of addressing them.



Transforming business models

A water-secure world requires companies to rethink their strategies and transform their business models. CDP disclosures indicate that many companies are making this transformation; those doing so are those fully integrating water into their strategies and ensuring accountability for water targets at the highest level.



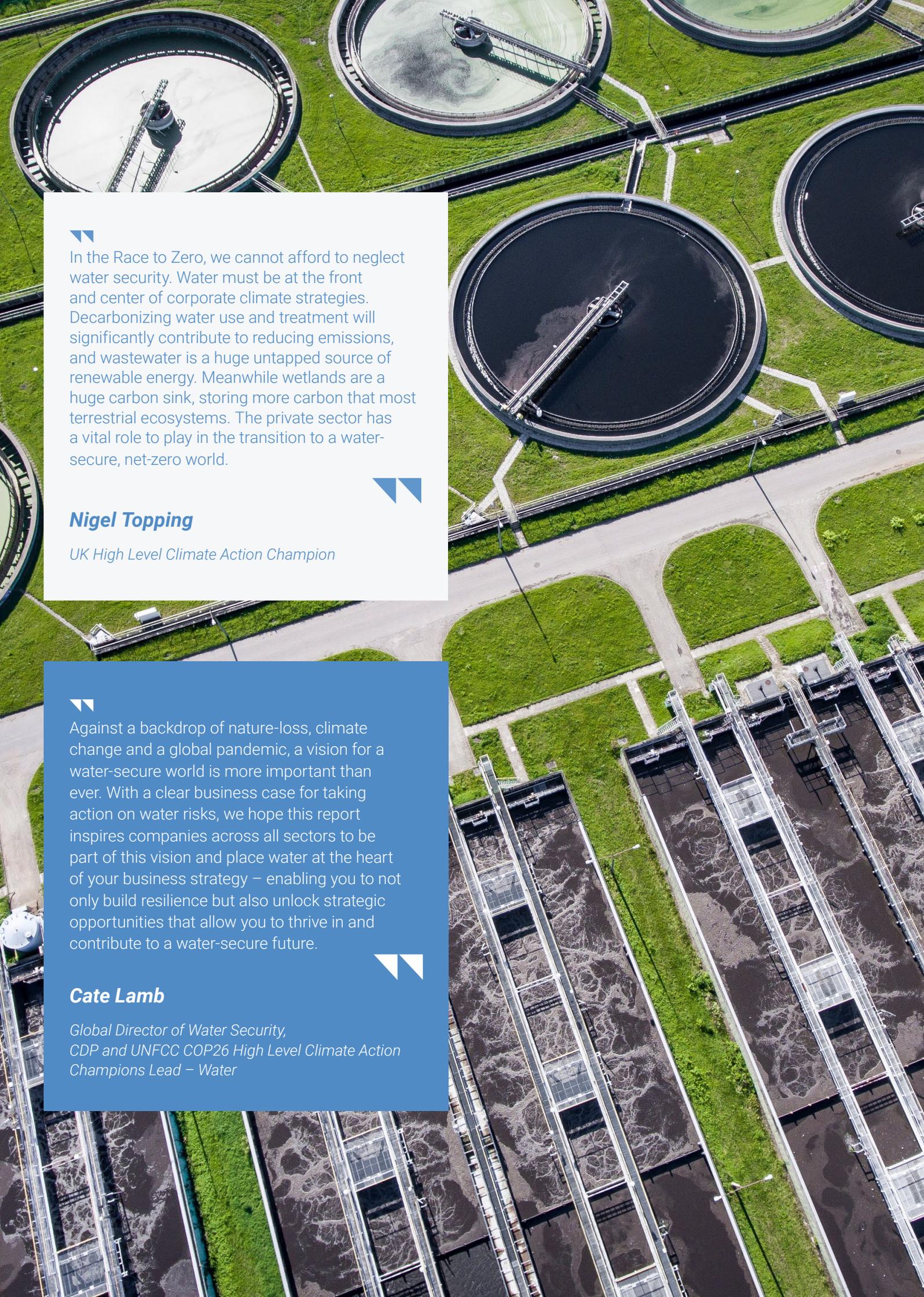
2/3 companies reducing or maintaining water withdrawals

Almost two-thirds of responding companies are now reducing or at least maintaining their water withdrawals. However, the very low percentage of companies making progress against pollution targets indicates that businesses still have a way to go to achieve a water-secure world.



20% increase in disclosure

Despite the pandemic, in 2020 we saw a 20% increase in corporate disclosure through CDP's water security questionnaire. This is testament to the fact that companies are both recognizing what is at stake with rapidly depleting water resources, and realizing the power of transparency in turning this around.



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In the Race to Zero, we cannot afford to neglect water security. Water must be at the front and center of corporate climate strategies. Decarbonizing water use and treatment will significantly contribute to reducing emissions, and wastewater is a huge untapped source of renewable energy. Meanwhile wetlands are a huge carbon sink, storing more carbon than most terrestrial ecosystems. The private sector has a vital role to play in the transition to a water-secure, net-zero world.

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Nigel Topping

UK High Level Climate Action Champion

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Against a backdrop of nature-loss, climate change and a global pandemic, a vision for a water-secure world is more important than ever. With a clear business case for taking action on water risks, we hope this report inspires companies across all sectors to be part of this vision and place water at the heart of your business strategy – enabling you to not only build resilience but also unlock strategic opportunities that allow you to thrive in and contribute to a water-secure future.

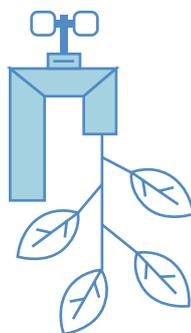
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Cate Lamb

*Global Director of Water Security,
CDP and UNFCCC COP26 High Level Climate Action
Champions Lead – Water*

A 2050 VISION FOR A WATER-SECURE, NET-ZERO WORLD

It is 2050. Citizens, industry and nature all have the water they need for a thriving, sustainable economy. Humans have universal and equitable access to water supplies and sanitation, eliminating water-related diseases and preventing pandemics. Rivers and lakes are free of pollution and freshwater biodiversity has rebounded.



Businesses across the globe are thriving and are positively contributing to the water security and resilience of the river basins where they operate.

We have built this new world through a water use revolution and a transformation in the production of food, energy and materials. This has enabled business to drastically reduce water withdrawals and eliminate hazardous chemicals from products and processes.

There has been a shift away from petroleum-based plastics and fuels, and the worldwide roll out of regenerative farming practices has drastically reduced the impacts of agricultural production and improved the livelihoods and resilience in rural communities. Businesses are collaborating with stakeholders to protect and restore freshwater ecosystems and provide resilient water infrastructure.

The water sector's 10% contribution¹ to global carbon emissions has reduced to zero through the wise use of water by businesses, the decarbonization of water and wastewater management, and investment in nature-based solutions.

In 2021, what must happen to achieve this vision and what role do companies play?

¹ <https://www.everydrop-counts.org/imglib/pdf/Water%20Climate%20Report%202020.pdf>

The state of play in 2021

The current state of the world's water:

- ▶ Water shortages are affecting more than 3 billion people. The amount of freshwater available per person has plunged by a fifth over two decades².
- ▶ Every year nearly 300,000 children under five die of diarrhea linked to dirty water and poor sanitation³.
- ▶ Projections indicate that if we don't keep global warming below 1.5 degrees Celsius there will be severe consequences on the availability of sufficient and clean water for basic human needs and for the production of food and energy⁴.
- ▶ There has been an 84% decline in freshwater species population sizes since 1970, compared to a 68% decline across all species⁵.
- ▶ We are losing wetlands three times faster than natural forests. Up to 87% of global wetlands have been lost since 1700⁶.
- ▶ Current rates of groundwater withdrawal are outstripping groundwater recharge, leading to a decline of groundwater storage, an essential buffer against the impacts of climate change⁷.



The private sector can turn this situation around. This report highlights the crucial role of the private sector in building the water-secure, net-zero world that we all need. It aims to inspire companies across all types of industries and geographies to take the action required to achieve this vision. The report demonstrates that acting to address water issues will cost less than the potential impacts of not acting. It showcases innovative business solutions and opportunities that have the potential to catalyze transformation and explores the enablers of transformation, including corporate disclosure.

The data: This report presents new analysis from the 2,934 companies that reported information about their water risks, impacts and associated responses and strategies through CDP's water security questionnaire in 2020.

² <http://www.fao.org/documents/card/en/c/cb1447en>

³ https://www.unicef.org/media/media_92918.html

⁴ Recent climate scenario modelling by WWF indicates that by 2050, over half of the world's population will face high levels of water risk. https://wwfeu.awsassets.panda.org/downloads/wwf_wrf_brief_scenarios_hr.pdf

⁵ <https://livingplanet.panda.org/en-gb/>

⁶ <https://www.global-wetland-outlook.ramsar.org/>

⁷ <https://www.nature.com/articles/s41598-019-40155-y>

Pathway to a water-secure world

The findings of this report call for companies from all sectors and geographies to:



Develop bold, ambitious targets for reducing water withdrawals, increasing net-zero water reuse and eliminating the use and discharge of pollutants across value chains.



Align business strategy, long-term objectives and financial planning with the achievement of these ambitions.



Disclose targets and actions through CDP, demonstrating leadership and accountability to investors and driving ambition amongst peers. Encourage suppliers to do the same.



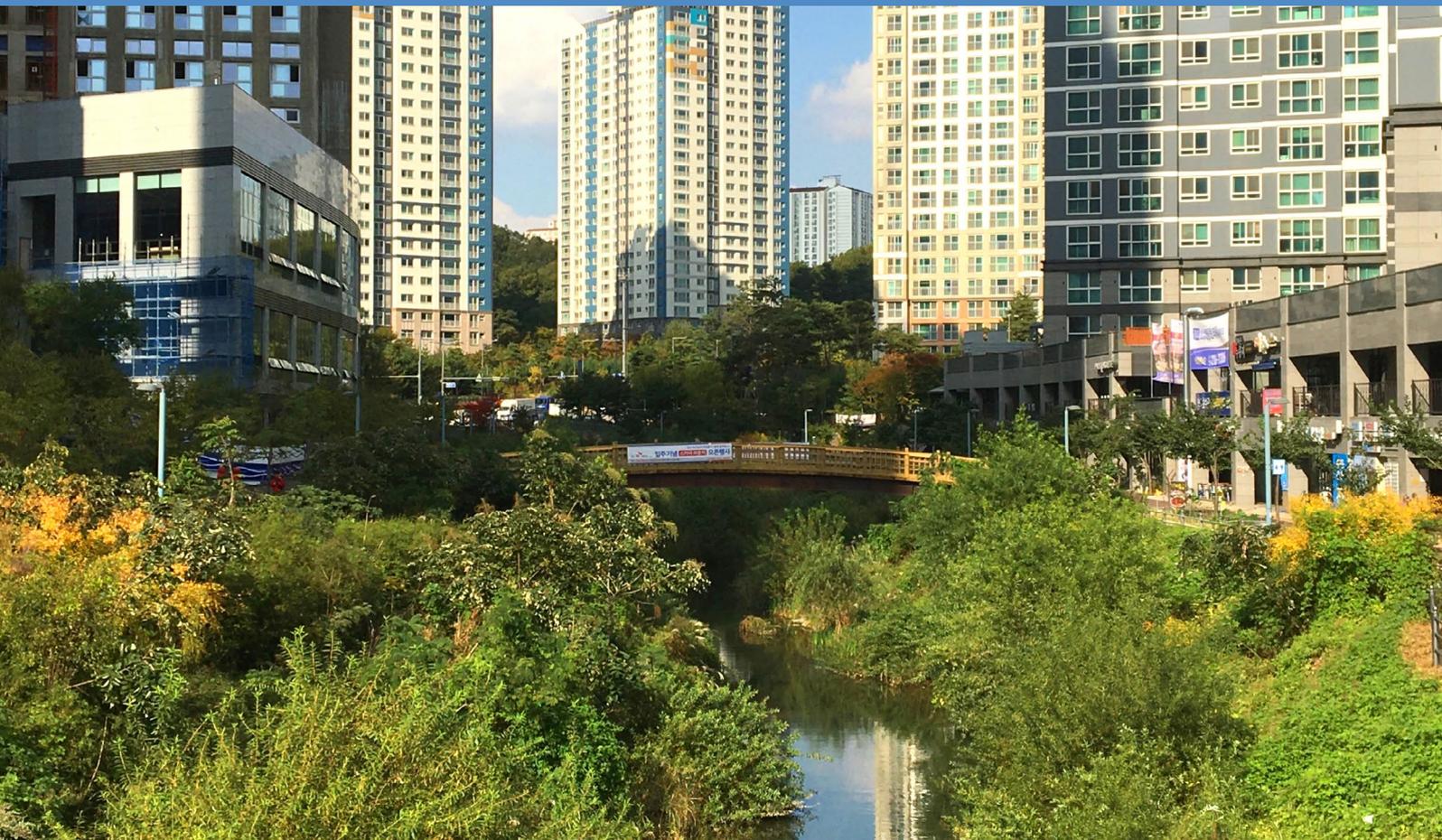
Formulate plans for achieving these ambitions; monitor and report progress; and frequently revisit assumptions to iterate and innovate.



Build governance structures that drive finance and resources to these ambitions; give accountability and incentives to board-level and C-suite personnel for achieving them.



Collaborate with suppliers to incentivize and support high standards of water stewardship, cascading action through the value chain. Collaborate with communities and other local stakeholders to address shared water challenges.



GROWING TRANSPARENCY: THE FOUNDATION FOR TRANSFORMATION

Corporate transparency on water security is a fundamental step in the transition to a water-secure, net-zero world. By regularly disclosing comparable, consistent and quantifiable information, businesses can identify water risks across their value chains and bring that risk into corporate decision-making. By identifying responses to these risks, companies can develop forward-looking targets and resilient business strategies.

Crucially, this information flows to stakeholders – including investors. More transparency provides more certainty for investors. How a company is addressing water risks and accounting for water security issues in its growth strategies and governance is vital information for investors. If this data is hidden from view, it is difficult, if not impossible, for investors to evaluate a company's investment performance.

In 2020 we saw a 20% increase in corporate disclosure through CDP's water security questionnaire. 5,537 companies were requested to disclose data by their investors or their business customers; 2,934 companies disclosed, up from 2,433 in 2019. The uptick in responses has been particularly strong in the materials, retail and transportation sectors. For materials, this is in a large part due to a re-classification of chemical companies in 2020, from the manufacturing to the materials sector.

This increase in disclosure is especially encouraging given the loss of revenue and uncertainty that companies are facing in the wake of the COVID-19 pandemic. It is testament to the fact that companies are both recognizing what is at stake with rapidly depleting water resources, and realizing the power of transparency in turning this around.

There is increasing evidence of disclosure and transparency leading to action. Recent analysis by Banque de France showed that investors subject to climate disclosure requirements reduced their financing of fossil fuel companies by 40% compared to investors in the control group⁸.

To maintain momentum, investors should insist that companies start or continue to disclose through CDP to ensure the availability of robust, comparable and actionable data. Companies already disclosing should in turn encourage their suppliers to disclose, as well as supporting high water stewardship standards across supply chains.

CDP's 2020 water disclosures in numbers



2,934

companies representing a quarter of global market capitalization, disclosed water security risks, impacts and actions through CDP.



515

investors with US\$106 trillion in assets requested 1,868 large companies to disclose their impacts on water security through CDP in 2020 and take action to reduce them.



51

major buyers requested 4,108 suppliers to disclose on water through CDP's work on supply chains⁹.



77

CDP motivates companies to take ambitious action on water security in 77 countries, from Japan to Kenya and Guatemala to Romania.

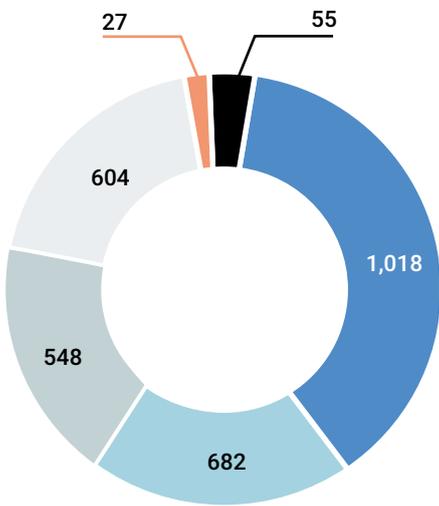
⁸ <https://publications.banque-france.fr/en/showing-cleaner-hands-mandatory-climate-related-disclosure-financial-institutions-and-financing>

⁹ Details of supplier disclosures can be found in our supply chain 2020 report, "Transparency to Transformation" <https://www.cdp.net/en/research/global-reports/transparency-to-transformation>

CDP investor signatories to the water information request 2010-2021



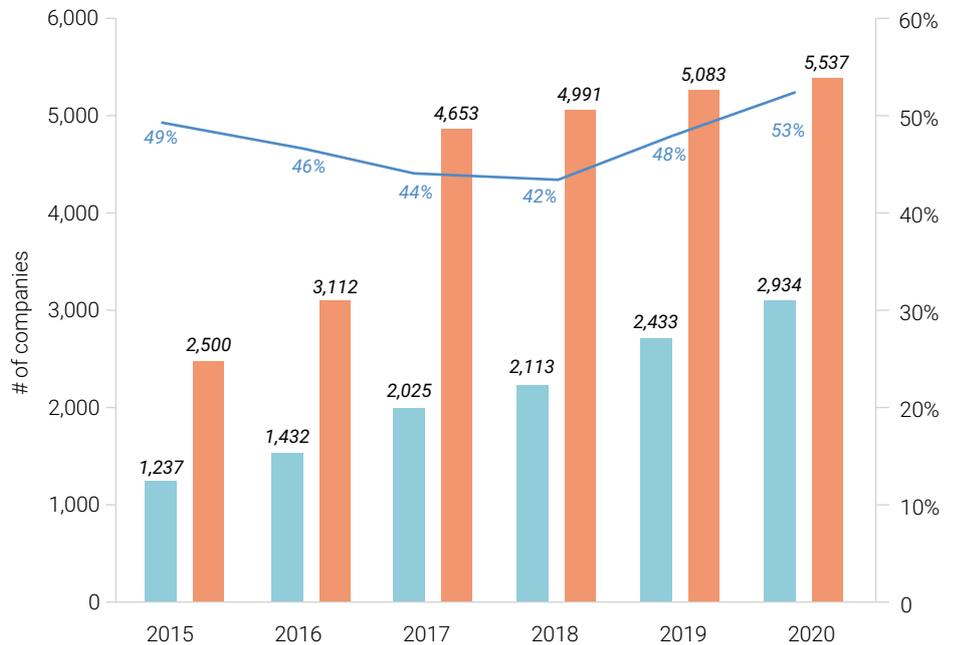
Disclosure per region in 2020



of companies disclosing

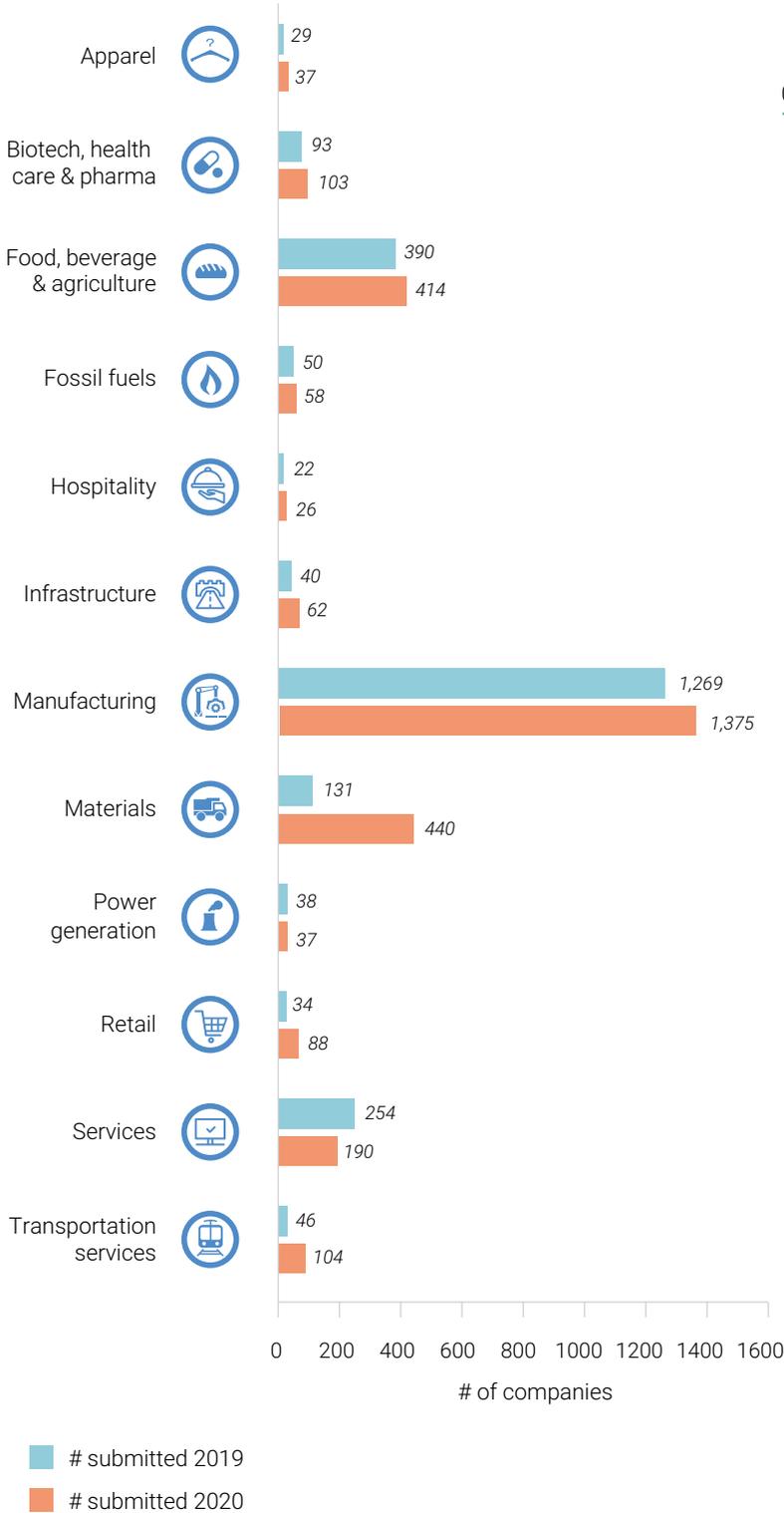
- Africa
- Latin America
- Asia
- North America
- Europe
- Oceania

Disclosure response rate 2015-2020

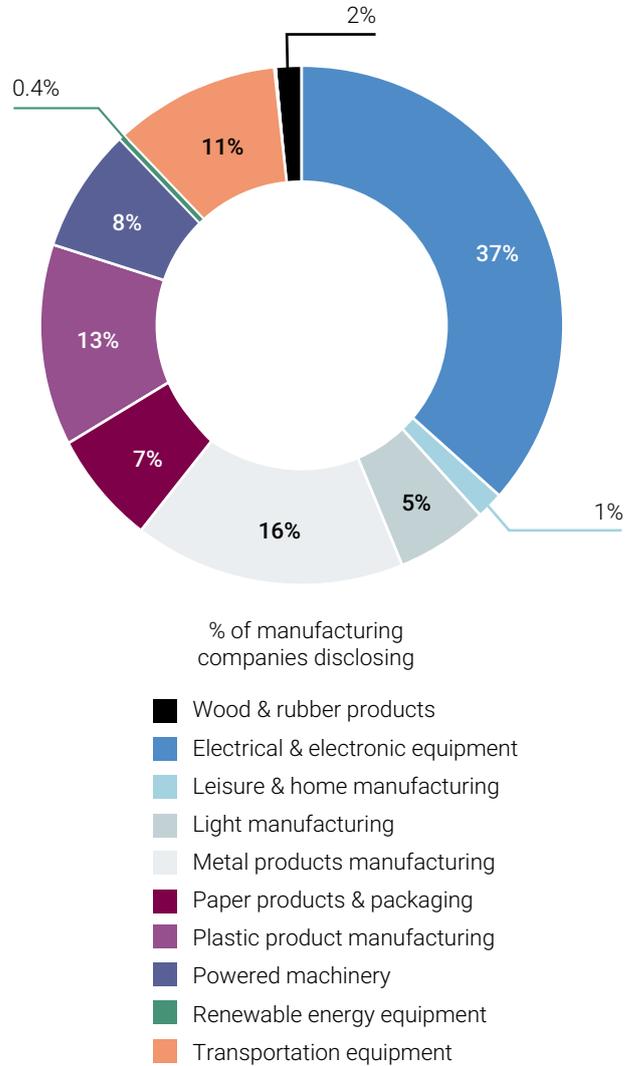


- Companies responding
- Companies requested
- Response rate in %

Disclosures per sector 2019-2020



Breakdown for manufacturing sector disclosure in 2020



THE COST OF ACTION IS LESS THAN THE COST OF INACTION

Companies in sectors such as food, apparel, energy, chemicals, pharmaceuticals, and mining account for 70% of the world's water use¹⁰ and therefore have a vital role to play in the transformation to a water-secure world.

With dwindling water resources against a backdrop of climate change and the destruction of nature, companies need to invest to address these risks, minimize their impacts and build resilience to mounting water-related risks such as water scarcity, flooding and chronic pollution.

The moral case for investment is clear. Our analysis proves that the business case for this investment is also clear. The information on water risk that companies disclosed through CDP's water

questionnaire indicate that globally, the potential financial impact of water risks to businesses is **over five times higher than the cost of addressing them.**

In 2020, the total potential financial impact of reported water risks was up to **US\$301 billion**; while responders reported that the money required to mitigate those risks was only **US\$55 billion**¹¹. The potential financial impact reported is equivalent to the entire GDP of Pakistan¹².

This holds true at an individual company level. The potential financial impact of water risks outweighed the cost of acting on those risks for more than three quarters of companies reporting on both figures. **Mitigating water risks makes business sense.**

The cost of inaction could be over



¹⁰ <https://www.iea.org/reports/water-energy-nexus>

¹¹ These figures were calculated from the 357 companies that report both the potential financial impact of water risks, and the cost of responding to those water risks. See appendix for more details on methodology.

¹² <https://www.worldometers.info/gdp/gdp-by-country/>

Examples of risks and responses from different regions

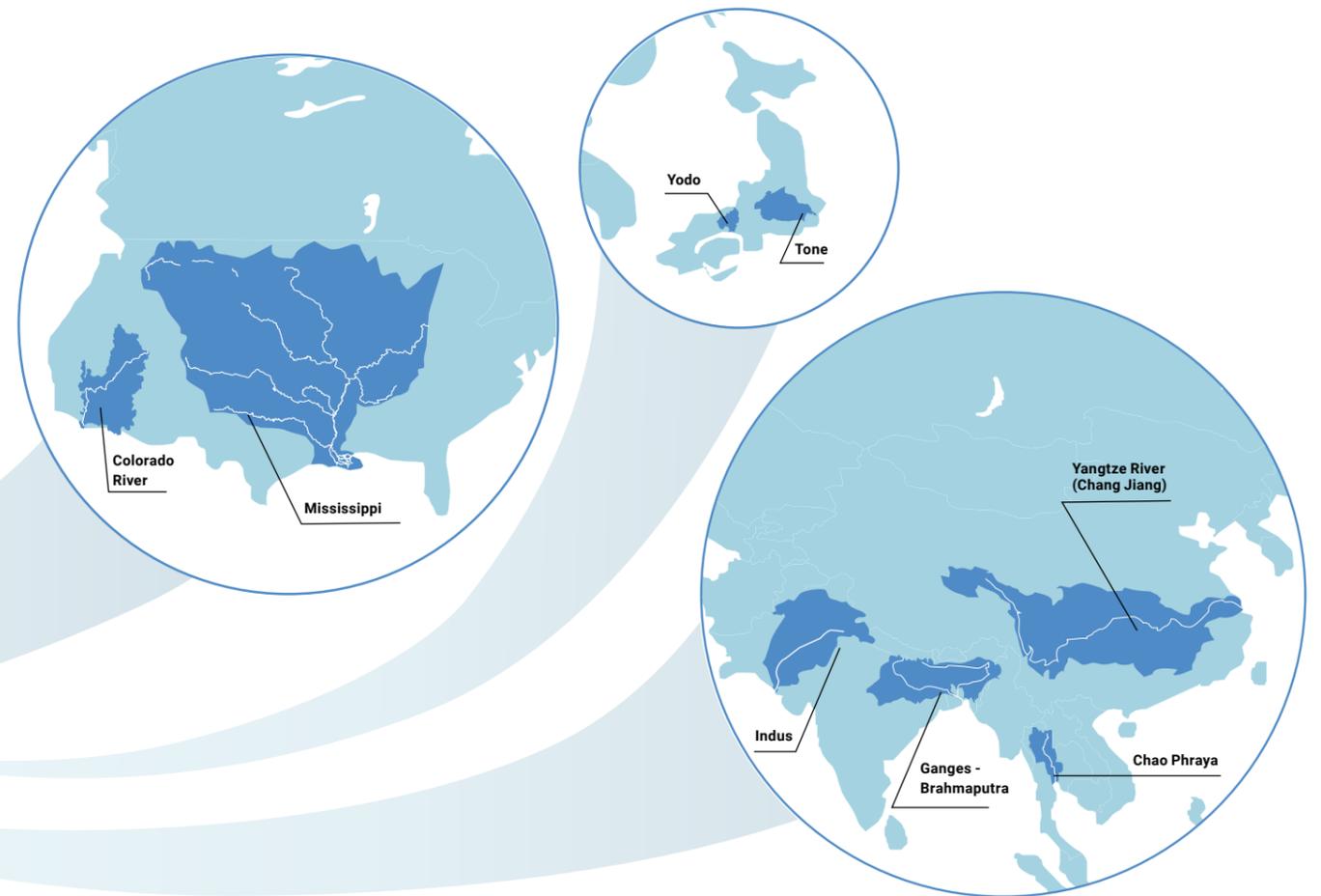
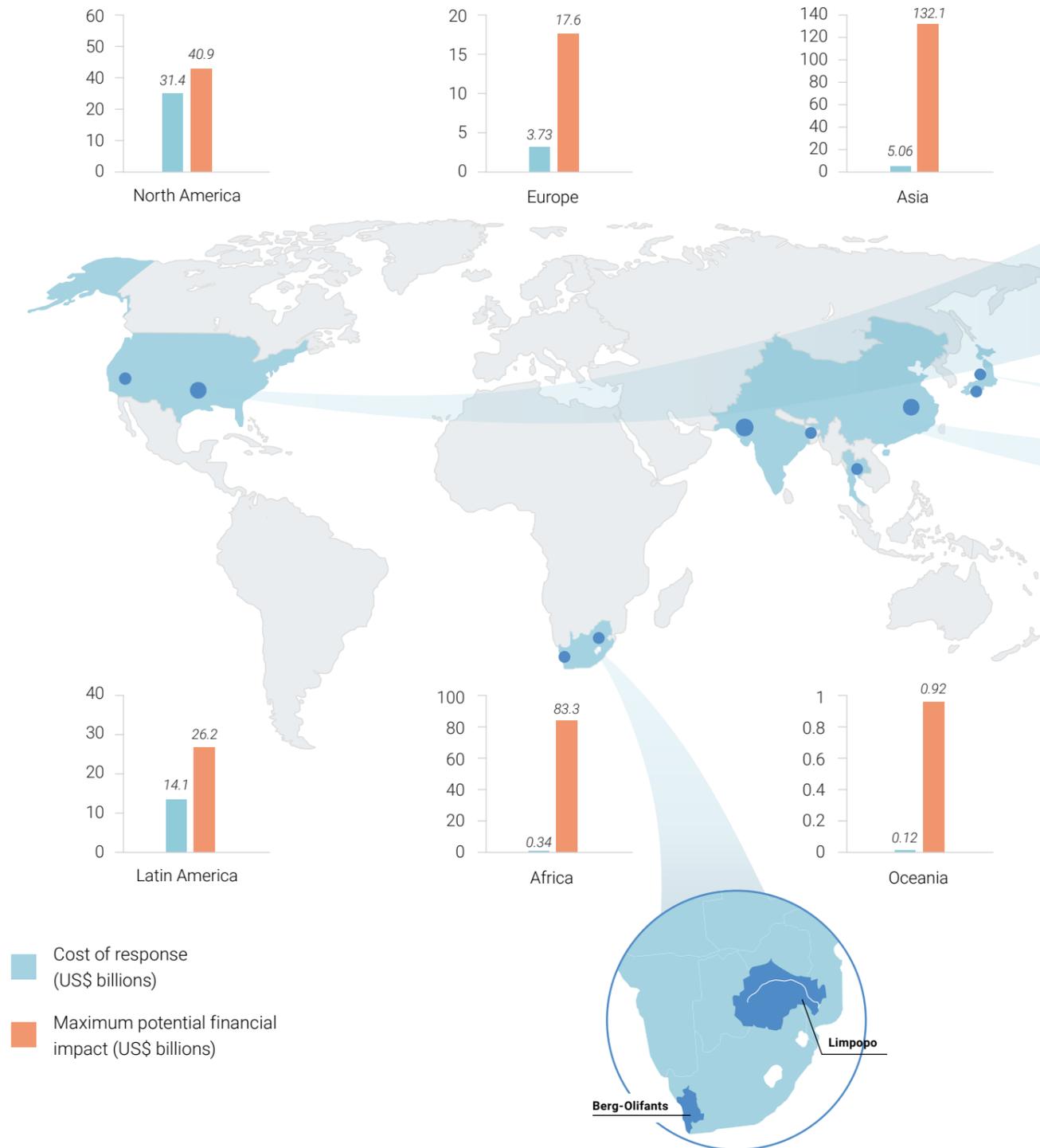
 Company <i>Bloomberg ticker</i>	 Country	 Risk (Likelihood, timeframe)	 Potential impact	 Potential financial impact – maximum (US\$ million)	 Potential financial impact - % EBITDA ¹³	 Risk response	 Cost of response (US\$ million)
Samsung Electronics Electronic component manufacturing <i>005930 KS</i>	Republic of Korea	Increased water stress (Likely, 1-3 years)	Increased operating costs	3,434	1.1%	Increasing water reuse through installation of ultrapure water treatment system and reuse of cooling liquid	549
Metsä Board Corporation Paper products manufacturing <i>METSB FH</i>	Sweden	Seasonal and inter-annual variability in water supply (Likely, 1-3 years)	Reduced revenues from lower sales/output	218	9.1%	Efficiency actions to reduce water and energy use per tonne of paper produced; repairing a leaking dam which will benefit the wider community	31
Canon Inc Electrical equipment manufacturing <i>7751 JP</i>	Thailand	Flooding (Very likely, 4-6 years)	Increased operating costs	412	3.4%	Establishing production at multiple sites; building a new plant at a site less susceptible to flooding	134
Anglo American Coal extraction <i>AAL LN</i>	Chile	Leaching pollutants to groundwater (Likely, current up to one year)	Fines/ penalties and increased operating costs	35	0.3%	Installation of a collection system to collect and recycle the acid mine water	30
ENDESA Thermal power generation <i>ELE SM</i>	Spain	Increased water stress (Likely, more than 6 years)	Reduction or disruption in production	72	0.9%	Increasing operational efficiency through digitization; reuse of water; utilization of seawater	44
Danone Food processing <i>BN FP</i>	USA	Increasing consumer concern about environmental footprint (More likely than not, more than 6 years)	Reduced demand for products	280	0.3%	Promotion of soil conservation practices amongst suppliers to increase biodiversity and water retention in soils, reduce carbon footprint and protect watersheds	16

¹³ Based on EBITDA figures in company annual reports.

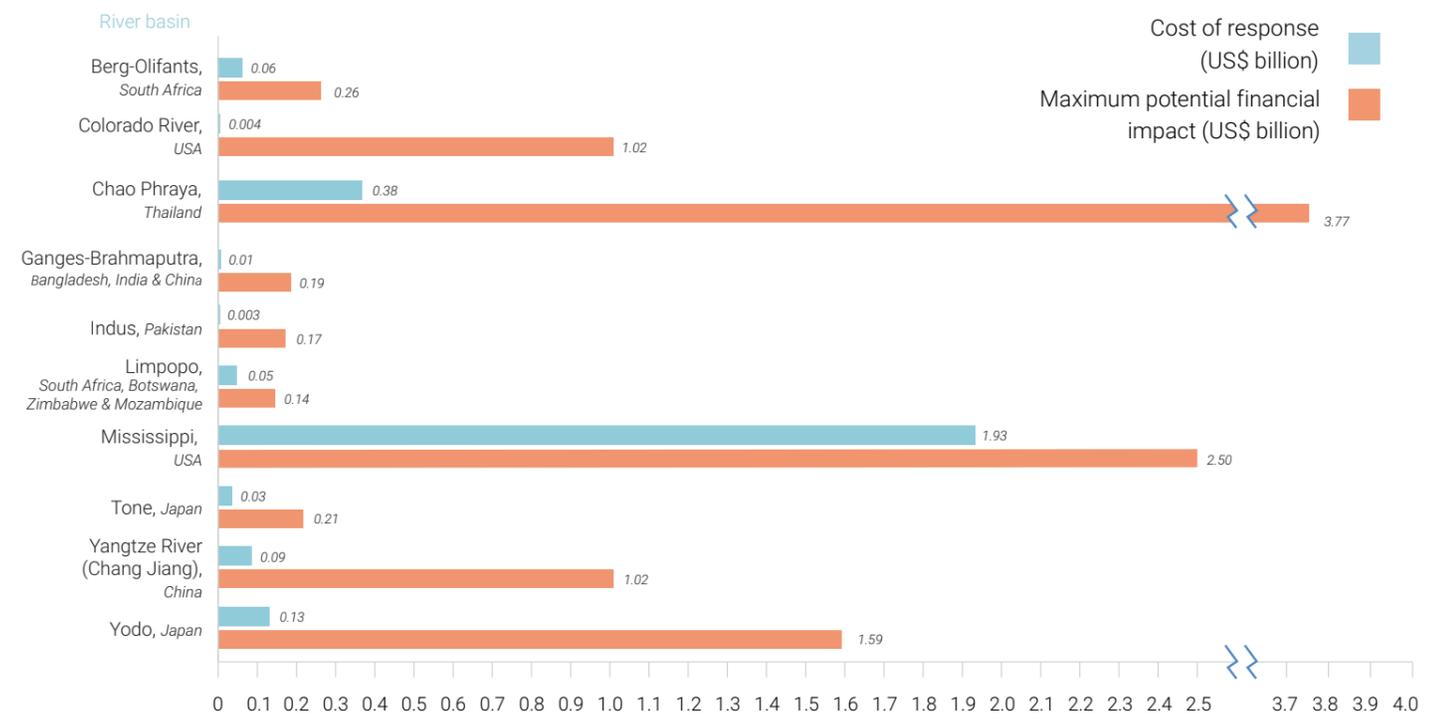
Regional perspective

Our analysis shows that within all regions and in the ten most risk-prone river basins¹⁴, we see the same trend – the cost of action is less than the cost of inaction.

Potential financial impact of water risk and cost of response – per region



Potential financial impact of water risk and cost of response – per river basin



14 Those river basins where most risks are reported.

Sector perspective

In most sectors, the cost of action is less than the cost of inaction.

The exceptions are power generation and infrastructure. This reflects large investments that energy companies are making to transition their energy portfolios.

The reported costs of responding to risks in these two sectors are dominated by large capital expenditure on new energy sources – for example

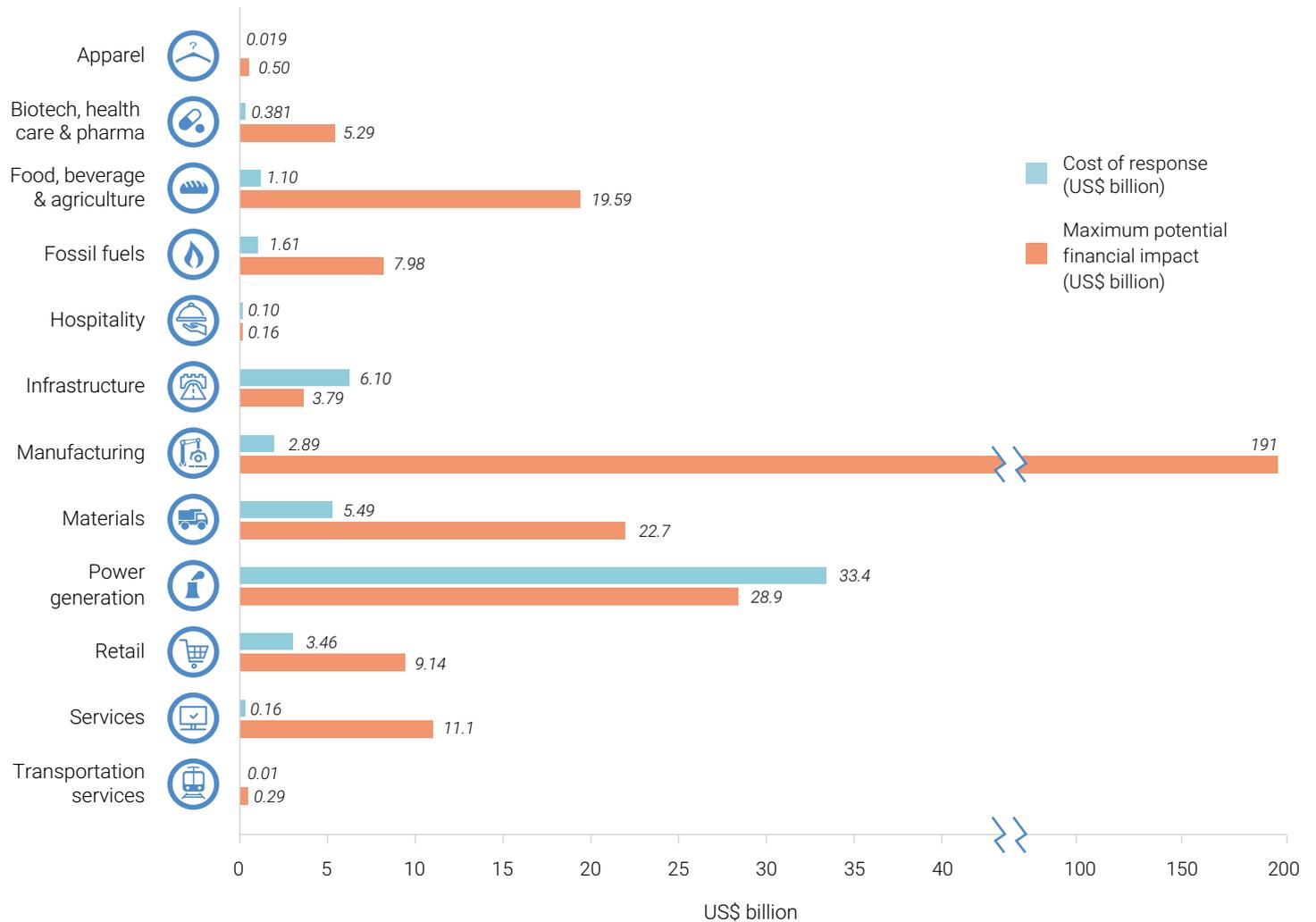
by **Duke Energy Corporation, American Electric Power Company and EDP – Energias de Portugal.**

These businesses are transitioning away from polluting fossil fuels and hydropower – the latter being increasingly exposed to water scarcity as climate change bites. The figures reported are company-wide investments for energy diversification in many cases reflecting the costs of decarbonization; it is no surprise

that these costs surpass the potential financial impact of reduced power generation due to water risks in specific locations.

At least US\$9.6 billion out of the total US\$33.4 billion water-related investment reported by power generation companies and at least US\$3.8 billion of the total US\$6.1 billion water-related investment reported by infrastructure companies is being spent in this way¹⁵.

Potential financial impact of water risk and cost of response – per sector¹⁶



¹⁵ These figures were calculated for just those companies reporting both value at risk and cost of response, and spending > US\$400 million on risk response.

¹⁶ The maximum potential financial impact in manufacturing is high in part due to the large number of respondents compared to other sectors and two significant financial impacts (> \$50 billion) reported: one linked to flooding, another linked to reputational risk associated with pollution.

Examples of investment of energy companies in diversification of energy sources, including renewables

 Company <i>Bloomberg ticker</i>	 Country	 Risk	 Potential impact	 Potential financial impact – max (US\$ million)	 Potential financial impact - % EBITDA¹⁷	 Risk response	 Cost of response (US\$ million)
American Electrical Power Company <i>AEP US</i>	USA	Regulators considering restrictions on shale gas drilling due to pollution concerns	Constraint to growth	Not disclosed	39%	Diversifying energy sources – including to lower-cost renewables – to increase system reliability and reduce price volatility	2,100 (planned investment in renewables between 2020 and 2024)
Duke Energy <i>DUK US</i>	USA	Drought. Regulations associated with shale gas	Generation disruption. Constraint to growth	21.9	28%	Investing in new energy sources including battery storage, renewables and natural gas combined cycle; collaborating on watershed and drought planning	3,100 (global CAPEX for investing in new energy sources)
EDP <i>EDP PL</i>	Portugal & Spain	Increased water scarcity	Decreased hydro-productivity and reduced output	44.8 per year	26%	Diversification of energy portfolio to include more wind and solar; geographical diversification	1,162 (global cost of energy diversification per year)



While investment in addressing water risks is an indicator of the importance a company places on the issues, where that investment is directed highlights whether a company is serious about genuinely reducing its water-related impacts, boosting resilience and increasing brand value.

17 Based on EBITDA figures in annual reports.



IS CORPORATE ACTION TO DATE SUFFICIENT?

Where and what are companies investing in to address water risks?

Not all water-related investments are equally effective in improving water security.

An oil and gas company investing in water-efficient toilets while failing to address leaking oil distribution lines will do little to stem the risk of pollution. A food company investing in improving water efficiency in its processing plants but not promoting regenerative agricultural practices throughout its supply chain will miss opportunities to move from incremental to transformational change. Companies can bolster resilience and increase brand value by ensuring that investment is directed towards the parts of their business

that are posing the greatest water-related impacts and exposed to the greatest water risk.

The effectiveness of a company's response to water risks is also determined by what is being invested in. Companies should prioritize investments that bring more fundamental, longer-term progress on water security – such as identifying new market opportunities and improving supplier performance. Meanwhile approaches that integrate water security and net-zero objectives – such as wastewater reuse and nature-based solutions – bring further benefits to the business as well as to the wider community.



Across CDP water disclosures in 2020, the two most frequently reported responses to water risk by companies across all regions and sectors are:

- ▶ Adopting water efficiency, conservation, reuse and recycling measures (27% of risk responses)
- ▶ Developing flood emergency plans (8% of risk responses)

While these risk responses are most frequent, they are not where most of the expenditure on risk goes. Looking across sectors, the risk responses where companies are investing the most money are:

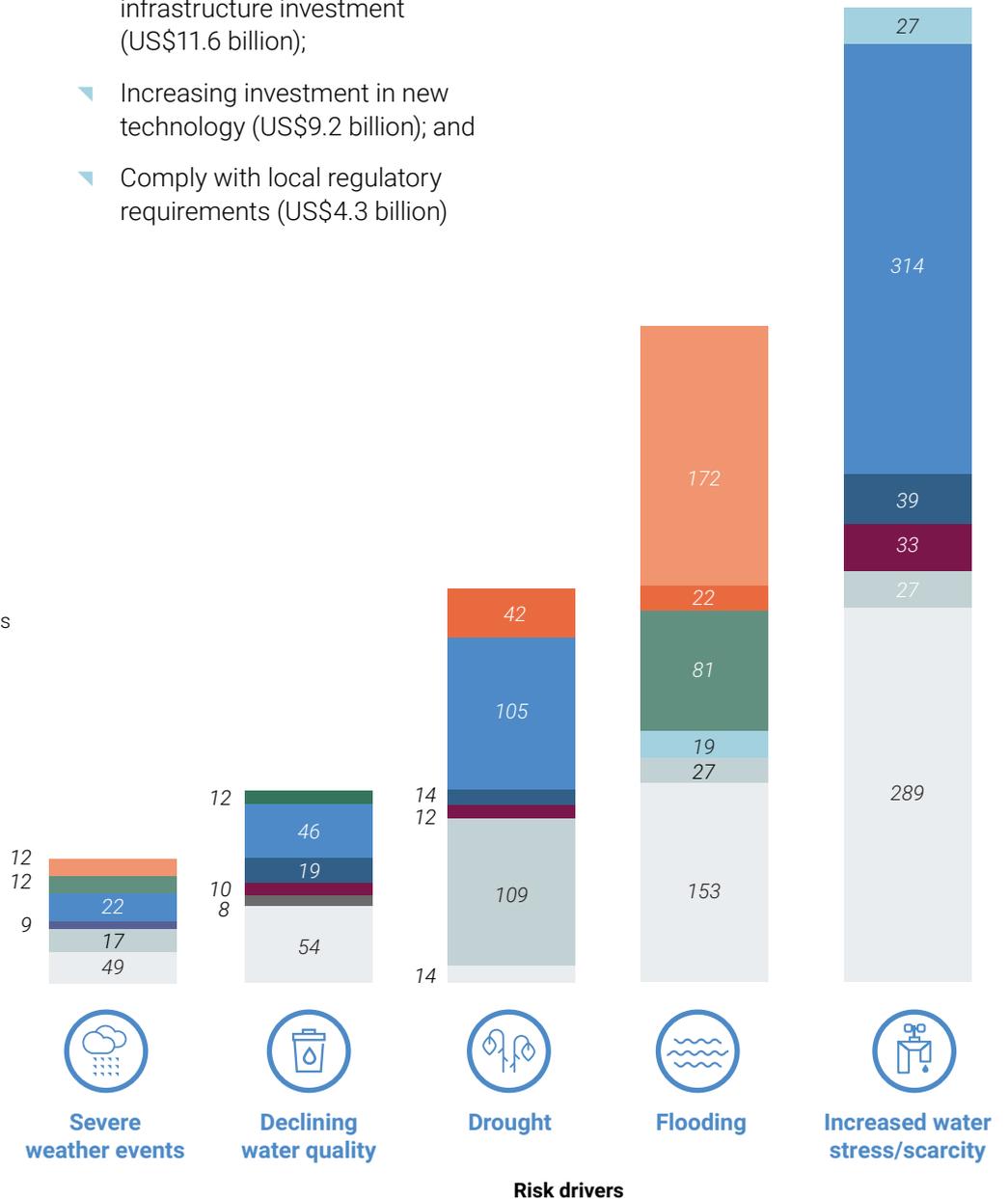
- ▶ Increasing capital expenditure (US\$19.7 billion);
- ▶ Improving pollution abatement and control (US\$13.2 billion);
- ▶ Increasing or reviewing infrastructure investment (US\$11.6 billion);
- ▶ Increasing investment in new technology (US\$9.2 billion); and
- ▶ Comply with local regulatory requirements (US\$4.3 billion)

It is encouraging that investment in technological solutions features in the top five risk responses in terms of expenditure, indicating that companies are adopting new ways of operating. However, only a small fraction of companies are developing new products and markets in response to water risk, suggesting that opportunities for transforming business models are not being seized.

Risk response breakdown for the top 5 risk drivers

of risk responses

- ▶ Develop flood emergency plans
- ▶ Develop drought emergency plans
- ▶ Amend the Business Continuity Plan
- ▶ Improve maintenance of infrastructure
- ▶ Increase geographic diversity of facilities
- ▶ Adopt water efficiency, water reuse, recycling & conservation practices
- ▶ Secure alternative water supply
- ▶ Increase investment in new technology
- ▶ Establish site-specific targets
- ▶ Increase capital expenditure
- ▶ Increase supplier diversification
- ▶ Other



Risk responses - expenditure and frequency per sector*

Risk responses	Apparel	Biotech, health care & pharma	Food, beverage & agriculture	Fossil fuels	Hospitality	Infrastructure	Manufacturing	Materials	Power generation	Retail	Services	Transportation services
Increase capital expenditure		US\$103 mn		US\$761 mn	US\$14 mn	US\$588 mn			US\$17,984 mn	US\$5 mn		US\$3 mn
Improve pollution abatement and control measures								US\$2,695 mn	US\$10,000 mn			
Increase/review infrastructure investment				US\$1,323 mn		US\$10,264 mn						
Increase investment in new technology	US\$7 mn					US\$3,422 mn		US\$743 mn		US\$3,436 mn		
Comply with local regulatory requirements								US\$1,288 mn	US\$2,925 mn			
Adopt water savings, reuse and efficiency practices.	US\$5 mn		US\$ 713 mn				US\$955 mn					
Increase supplier diversification												
Engagement with stakeholders				US\$343 mn							US\$49 mn	
Develop flood emergency plans					US\$70 mn		US\$647 mn					US\$9 mn
Secure alternative water supply												US\$12 mn
Improve maintenance of infrastructure		US\$206 mn					US\$643 mn					
Amend the Business Continuity Plan		US\$38 mn			US\$13 mn							
Promote sustainable agricultural practices			US\$445 mn									
Re-site facilities			US\$184 mn									
Improve supplier performance	US\$2 mn										US\$26 mn	
Increase insurance coverage										US\$3 mn		
Other											US\$50m	

*Expenditure: the top three expenditures per risk response are shown per sector. Frequency: for each risk response, the shading indicates the number reported as a percentage of all risk responses reported for that sector



Sector insights



Apparel: Textile manufacturing and raw material production within this sector's supply chain is particularly water intensive, so it is encouraging to see that improving supplier performance comes out as a top risk response in terms of frequency and expenditure. Expenditure is dominated by the significant investment in technology by one company to address regulatory risks associated with pollution.



Manufacturing: Adopting water saving/reuse measures and developing flood emergency plans are the two most frequently reported risk responses and where most investment goes, reflecting the exposure of manufacturing facilities to water scarcity and flooding. It is encouraging that investment in new technology features within the top five risk responses in terms of expenditure, but to fully address water risks this sector should scale up investments in product development and improve the performance of suppliers.



Materials: Securing alternative water supplies and developing flood emergency plans come out as top risks responses for this sector (after water saving/reuse measures). This reflects the high exposure of the sector's supply chain – industries such as mining, raw material production and metal processing – to floods and droughts. However, most of the expenditure is on pollution control and complying with regulatory requirements, indicating that pollution issues are also important to this sector. It is disappointing that more focus isn't being given to the development of new products; the materials sector is well-placed to lead water-smart product development that offer opportunities for transformation.



Power generation: Investment is concentrated on pollution control and responding to anticipated regulations around coal ash impoundments, shale gas fracking, and the temperature of discharged cooling water. Significant capital expenditure is going to diversifying into renewable energy sources and increasing the resilience of transmission networks.



Food, beverage and agriculture: Adopting water saving/reuse measures and the promotion of sustainable agricultural practices come out as top risk responses in terms of frequency and investment. Improving supplier performance is also a frequently reported risk response. This sector has widespread pollution and water scarcity impacts associated with its agricultural supply chain and therefore does well to focus risk response on its supply chain as well as on its direct operations.

Investing in nature?

Just five companies reported 'nature-based solutions' and nine reported 'supporting river restoration measures' as risk responses. However, many more companies (124) are setting targets or goals linked to nature-based approaches, up from 113 in 2019 – indicating that these approaches are a growing aspiration. Nature-based solutions such as treatment wetlands, natural stormwater drainage systems and forest restoration have the potential to offer affordable and scalable solutions to water risks, as well as contributing significantly to carbon emissions reductions and wider river basin resilience. The private sector plays a key role in adopting these solutions into their business strategies¹⁸ and expanding nature-based solutions as a risk response. With the rising expectation to factor nature-related risks into financial reporting and decision-making (for example, the emerging Task Force for Nature Related Disclosure¹⁹, and the World Economic Forum's Nature Risk Rising report)²⁰ the companies measuring and disclosing their efforts to adopt nature-based solutions will be ahead of the curve.

18 WBCSD, "Accelerating Business Solutions for Climate and Nature".

19 <https://www.edie.net/news/12/Banking-giants-team-up-for-Task-Force-for-Nature-related-Financial-disclosures/>

20 http://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf

Are these responses to water risk sufficient?

Are the efforts described above being implemented at sufficient scale for companies to reduce their dependency on freshwater and their polluting potential? Will they set us on a trajectory to a water secure-world?

Reducing freshwater withdrawals

Our analysis indicates that there is reason to be optimistic. Almost two thirds (1,343 out of 2,101 – 64%)²¹ of companies signalling a high dependency on water reported that their withdrawals were much lower, lower, or about the same compared with 2019. Of the companies withdrawing in part from water-stressed areas, 80% (614 out of 764) reported that withdrawals from these areas were much lower, lower or about the same.

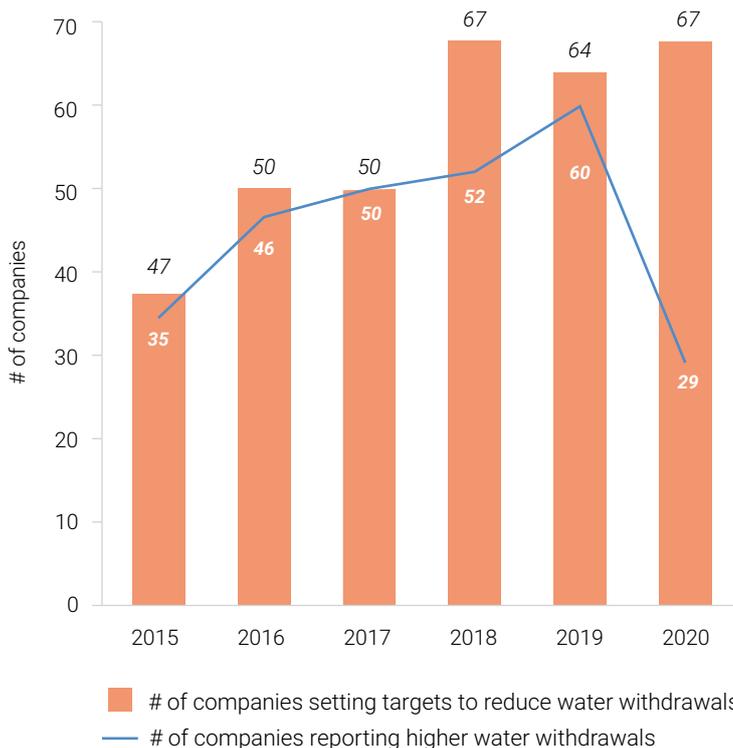
Looking at the trend in withdrawals since 2015, 2020 is the first year that we have seen a drop in the number of companies reporting increased withdrawals, perhaps reflecting the step up in companies setting withdrawal targets two years previously. It appears that water savings, reuse and efficiency measures are starting to drive reductions in absolute water withdrawals.

However, one-fifth (448 out of 2,101) of companies with a high dependency on water increased their withdrawals between 2019 and 2020. Those sectors with the highest percentage of companies reporting increases in withdrawals are infrastructure and fossil fuels.

In 2015 **Ford Motor Company** set a goal to use only recycled water in manufacturing processes by 2050. At the Cuautitlan plant in Mexico, Ford has invested US\$1.2 million in reverse osmosis and ultrafiltration, purchased grey water from other users, reused water for cooling towers and replaced asphalt with ecological concrete to facilitate aquifer recharge for the city. Between 2018 and 2019, Ford had lowered its company-wide withdrawal by 13%.

AstraZeneca has set an ongoing target of maintaining or reducing total water withdrawals at 2015 levels through to 2025, regardless of business growth (estimated to double over the same period). Through the company’s Natural Resources Fund, it has invested US\$10 million in water efficiency projects since 2015, resulting in an 18% reduction in total withdrawals to date, despite significant business expansion. This has enabled the company to seize efficiency savings, increase resilience and protect its license to operate.

Trend in water withdrawals and withdrawal targets 2015-2020*



■ # of companies setting targets to reduce water withdrawals
 — # of companies reporting higher water withdrawals

*from a consistently disclosing cohort of 174 companies between 2015 and 2020

²¹ This percentage is out of 2101 rather than the total 2934 responding companies because only those companies that report a high dependency on water are presented with this question, and we do not include those companies that are reporting for their first year of analysis. Those companies with a high dependency on water are those that respond "vital", "important" or "neutral" to question W1.1 "Rate the importance (current and future) of water quality and quantity to the success of your business". For further details please refer to the methodology in the appendix.



SDG 6.3

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.



Stagnating on pollution

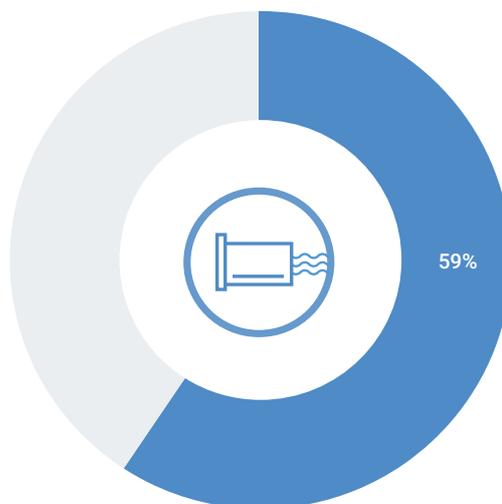
Corporate efforts to address water insecurity have largely been focused on water quantity, leaving the equally important issue of declining water quality underappreciated and underestimated. Analysis of the largest water quality global database by the World Bank warned of an “invisible crisis” that is threatening human and environmental wellbeing, while slashing the economic potential of heavily polluted areas²². With only 20% of the world’s wastewater currently treated²³, we are way off track to achieving Sustainable Development Goal (SDG) 6.3²⁴.

Industrial and agricultural production are significant contributors to the pollution problem. Metals, petrochemicals and other chemical compounds produced by industrial activities such as mining, oil exploration, textile manufacturing, food production and pharmaceuticals are harmful to the environment and human health. Some are carcinogenic, others cause microbial resistance, others lead to mental health disorders and birth defects.

Despite such impacts, our analysis suggests that many companies remain unaware of these issues, let alone take responsibility for addressing them. The proportion of responding companies that monitor the quality of their wastewater discharges sits at 59%; this is a basic action that all companies should be taking. Meanwhile just 4.4% of responding companies are setting and reporting progress against pollution targets.

Our 2019 Global Water Report *Cleaning up their Act*²⁵, highlighted an awakening from governments and consumers to act on pollution. While there are seeds of best practice, we have a long way to go before the effective elimination and management of corporate water pollution becomes mainstream. When it comes to pollution, businesses that transition to a water-secure, zero carbon future have a unique opportunity to innovate, increase brand value and stand out from the crowd. Companies will need to look beyond the “business-as-usual” responses and pursue plans to grow differently – including designing out pollutants from products and harnessing value from wastewater.

Monitoring wastewater discharges



■ % of respondents that monitor the quality of water discharges at more than 75% of facilities



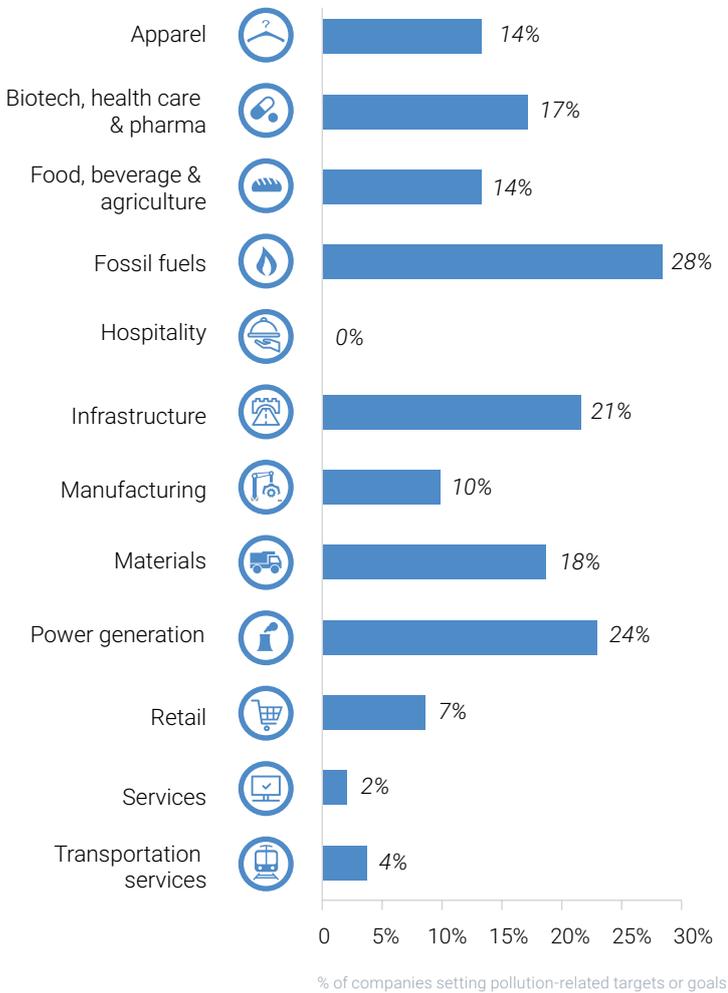
4.4%

Just 4.4% of companies are setting and reporting progress* against pollution reduction targets.

*** where progress is defined as achievement of more than 10% of the target**

22 <https://openknowledge.worldbank.org/handle/10986/32245>
 23 https://uneplive.unep.org/media/docs/assessments/unep_wwqa_report_web.pdf
 24 <https://sdgs.un.org/goals/goal6>
 25 https://6fefcbb86e61af1b2fc4-c70d8ead-6ced550b4d987d7c03fcd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/005/165/original/CDP_Global_Water_Report_2019.pdf?1591106445

Pollution targets per sector



In 2015, **PepsiCo Inc** set a target to ensure that 100% of operational wastewater meets their internal standards by 2025. These standards are more stringent than local regulatory standards. In 2019 PepsiCo invested over US\$21 million in water use efficiency and upgrade projects, for example through installing high efficiency recovery reverse osmosis systems, with water-related CAPEX anticipated to increase by 40% next year. In 2020 the company reported that 99% of wastewater operations currently meet PepsiCo’s high standards for protection of the environment.

In 2019 **PVH** committed to ensuring that all water discharged by their wet processing suppliers is free from hazardous chemicals by 2025. Through utilizing standardized industry tools such as the Sustainable Apparel Coalition’s Higg 3.0 Facility Environment Module²⁶ and ZDHC²⁷, PVH can track and advance the chemicals compliance of their suppliers. The company is investing in innovative technologies, such as the new wastewater treatment system created by SeaChange Technologies²⁸, with the hope to scale these up.



26 http://apparelcoalition.org/wp-content/uploads/2017/11/Higg-FEM-3.0-Assessment-Questions-Final_v6.pdf?utm_source=email&utm_medium=email

27 <https://www.roadmaptozero.com/input>

28 <https://seachangetechnologies.com/solution/>

STORIES OF TRANSFORMATION

Our vision of a water-secure world is one in which businesses, societies and economies are thriving in harmony with the natural world that sustains us; where business operations use less water and eliminate pollution across their direct operations, supply chains and in the use of their products.

This vision will require companies to rethink their strategies and transform their business models. Businesses must go beyond merely mitigating water risks; to reducing their impacts on the water environment and improving water security for all. Companies could achieve this, for example, by making more water available to others; by harnessing the potential of wastewater; or by collaborating with others to preserve shared water resources. Our analysis of corporate water disclosures made in 2020 demonstrates that many companies are already stepping up to this challenge.



Disruptive innovation

Several companies are aiming for zero water withdrawals in their processes (**Ford Motor Company, Anglo American**), zero wastewater discharge (**Nissan Motor Co., Ltd.**) or the elimination of hazardous chemicals from products and processes (**Kering, PVH**).

We are seeing examples of technologies that have the potential to massively reduce water consumption (such as **Anglo American's** dry tailing disposal techniques) and examples of products that are completely re-establishing our relationship with water (such as **Unilever's** "dry" personal care products).

Technologies exist that enable us to rethink wastewater – seeing it as a source of energy, heat, water, nutrients and valuable materials, rather than simply as waste. **GEA's** zero liquid discharge technology enables the recovery of valuable heavy metals, chemicals and compounds from wastewater and returns distilled water. **Suez** has developed a wastewater heat exchange solution that cuts greenhouse gas emissions by 50-70% compared with traditional thermal solutions. There are several examples of harnessing value from municipal wastewater – for example, the recovery of nutrients for fertilizer at Chicago's sewage treatment plant²⁹; creation of car biofuel from wastewater

in Andalucía³⁰; Amsterdam's new circular strategy which aims to recover phosphates from the city's sewage and reduce the use of synthetic fertilizers³¹. The technology is there for companies to do the same with their wastewater.

Some of these solutions can be termed "disruptive innovations", approaches that challenge or "disrupt" the usual way of doing business, and – if accepted and effectively scaled – will enable us to achieve the water-secure future that we urgently need.



Net-zero and water-secure

There are examples of approaches that are contributing to the twin aims of water security and net-zero carbon emissions. **Samsung** is employing techniques such as acid-alkali reuse, which reduce the carbon and water footprints of semi-conductors; the first time that semi-conductor products have achieved certification from the Carbon Trust³². **Formosa Taffeta's** implementation of "Right First Time" fabric dyeing technique uses artificial intelligence to forecast the most efficient dyeing "curve", significantly reducing water, energy and raw material consumption, as well as costs. **Mars'** introduction of wet-dry irrigation for rice cultivation is expected to reduce water consumption by 30%, increase farmers' incomes by 30% and reduce carbon emissions.

²⁹ <https://www.bv.com/projects/worlds-largest-nutrient-recovery-facility-produces-valuable-environmentally-friendly>

³⁰ <https://www.braveblue.world/blog/2019/5/20/visiting-the-algae-all-stars-in-spain-6xnse>

³¹ <https://unesdoc.unesco.org/ark:/48223/pf00000374715.locale=en>

³² <https://www.carbontrust.com/what-we-do/assurance-and-labelling>



Water-related opportunities could be up to

US\$711 BILLION



Enhancing value

The rewards from employing these innovations can be significant. Indeed, the maximum total value of water-related opportunities reported through CDP is **US\$711 billion**.

- ▶ **Unilever** expects US\$2.2-3.4 billion by 2025 in sales of its new water-smart personal care products.
- ▶ **Mars** estimates savings of US\$60-180 million through rolling out wet-dry rice farming as a result of avoiding supply shortages.
- ▶ **Anglo American** expects to make savings of over US\$15 million per mine through the reduction of evaporation alone.

When evaluating opportunities businesses should look beyond the savings made from reducing water use, lower energy

bills and avoided costs of production shutdowns and pollution incidents. Businesses need to be evaluating the longer-term value that can be realized through transformational action on water – for example, through new or potential markets in water-smart products, or enhanced brand value from good community relations.

171 water-related opportunities disclosed through CDP in 2020 were linked to new products, services or markets. 54 were linked to improved community relations or a strengthened social license to operate.

Effective action on water also generates wider social and ecological value, which in turn has positive impacts for businesses – for example through action to address shared river basin risks such as drought and flooding, and through the provision of infrastructure that services the wider community.





BASF

Chemistry for a sustainable future

BASF is a chemical company headquartered in Germany and has reported via CDP on water security since 2010. It achieved an A for water security in 2020.



Using CDP's water questionnaire as a framework has helped us improve our comprehensive water management strategy to mitigate water-related risks and capitalize on opportunities. The questions prompted us to identify stakeholder requirements to increase transparency of our internal system and water management practices at BASF.



Goal: Increasing the sales of sustainable "Accelerator" products (products with substantial sustainability contribution in the value chain).

Driver: Company purpose, higher growth rates and profitability of sustainable products.

Innovation: Two examples of Accelerator products:

▶ **Formic acid**, the starting material for alternative de-icing chemicals. These have higher biodegradability and lower chemical oxygen demand compared to conventional products, reducing wastewater treatment costs and environmental impact.

▶ **Rheomax® DR**, used for mineral thickening in the mining industry. It facilitates water recovery at the thickening stage and the recovered water can be reused in the process, minimizing freshwater consumption.

Potential financial benefit: Sustainable water-related products and solutions make up approximately US\$2.2 billion of sales. BASF is aiming to achieve sales of US\$24.6 billion of Accelerator products by 2025.

Scaling up: BASF introduced "Sustainable Solution Steering"³³ to increase its portfolio of sustainable products. Issues and drivers are identified across their customers' value chains, taking into consideration different regional and industry perspectives. BASF then assesses the sustainability contribution of its products within specific applications and regions.

Enablers: Through Sustainable Solution Steering, employees in various positions and functions (including R&D, marketing, sales, strategy, and product stewardship) are engaged in sustainability through a structured and consistent approach.

³³ Further information can be found [here](#)





L'ORÉAL

"Waterloop" factories

L'Oréal is a French personal care company headquartered in Clichy (France). It is the world's largest cosmetics company. L'Oréal has been disclosing through CDP since 2010 and achieved an A for water security in 2020.

Goal: Improve water efficiency and increase water re-use — thereby reducing L'Oréal's water footprint and contributing to preserving water in each geographic area of operation.

Driver: Increasing water scarcity — leading to rationing of municipal water supplies in some locations and a reduction or disruption in production capacity. The combined potential impact for two facilities in Mexico and Israel is US\$16.8 million.

Innovation: A factory achieves the internal "Waterloop" standard when all process water is reused or recycled in a loop on site. This use of wastewater negates the need to use a city or municipal water supply. After a few years successfully reclaiming high quality water for processing, L'Oréal pushed the system further to enable water to be reused as a raw material in its cosmetic formulas and to provide water, sanitation and hygiene services for employees.

Waterloop factories are also reducing carbon emissions. At three Waterloop factories over 98% of the energy needs are met by renewables.

Potential financial benefit: The cost of equipping facilities with the water recycling technology required is lower than the potential financial impact of water-related risks.

Scaling up: The first Waterloop factory was established in 2017 in Spain. By 2020, facilities in Italy, Belgium, Russia, Mexico had achieved Waterloop standards. By 2030, L'Oréal aims to roll out their Waterloop approach in all its factories. L'Oréal will prioritize the implementation of Waterloop factories in regions where water is a critical issue due to either water scarcity or poor water supply infrastructure.

Enablers: L'Oréal's internal business continuity plan (which covers crisis management and disaster recovery) identified water shortages as potentially causing temporary interruption for factories. The company adopted the Waterloop concept to optimize its industrial processes, reduce its dependency on water and achieve water reduction goals.

According to L'Oréal, CDP plays a crucial role in providing support and feedback on managing water risks and anticipating critical issues for society and businesses.



NISSAN MOTOR CO., LTD.

Independence from external water sources

Nissan Motor Co., Ltd is a Japanese multinational automobile manufacturer, who has been disclosing since 2016. It achieved an A for water security in 2020.

Goal: Zero wastewater and reducing withdrawals in manufacturing by 21% globally.

Driver: Increasing resilience to extreme weather events.

Innovation: Rainwater harvesting and wastewater recycling allows its India site to be independent of external water sources for 130 days.

Potential financial benefit: At one facility, savings of more than US\$4 million can be achieved on water bills through reducing water use.

Scaling up: Nissan has identified two plants in Mexico and one in India to focus efforts. These have been identified through considering a number of water risk criteria including the cost of water, regulations and the impact on society and biodiversity.

Enablers: Water-related issues, including water scarcity, are integrated into long-term business objectives. Nissan assessed the dependency of its business on ecosystem services and identified the key focus areas of energy, water resources and materials. Based on this work, water scarcity was included as one of four major issues in Nissan's Green Program, which helped the company set an ambitious water target.

CDP disclosure and scoring incentivizes Nissan's decision-making on environmental initiatives and motivates employees who are involved in environmental actions.

FROM TRANSPARENCY TO TRANSFORMATION

What is enabling these transformations to happen? What are the keys to success or accelerators that other companies can employ?

CDP's water security questionnaire asks companies to report against several indicators of effective water stewardship. In 2020 we saw a 20% rise in companies disclosing through the questionnaire, and a majority of responders performing on basic stewardship indicators such as monitoring water use, assessing and reporting on their water risks, and setting water targets. The companies demonstrating transformative action featured in the previous section are going further and outperforming many of their peers on more advanced performance indicators. These companies have put water at the heart of their business, fully integrating it into their objectives and strategies and setting up governance mechanisms to drive action on water at the highest level.



Almost all used climate-related scenario analysis to inform their strategy. For example, **Mars** uses the World Resources Institute (WRI)'s Aqeduct tool to assess projected water stress under the Intergovernmental Panel on Climate Change (IPCC) climate scenarios and uses the results to prioritize watersheds for action.



All of these companies have water issues integrated into their long-term business objectives, strategy and financial planning. For example, **Ford Motors** has a business objective to use potable water only for human consumption and eliminate water withdrawals for manufacturing. This is driving a focus on water reuse in facilities located in water-stressed areas.



Almost all use C-suite incentives tied to water use reduction, pollution reduction or supply chain engagement. At **Anglo American**, the remuneration of each business unit CEO is linked to performance against freshwater reduction targets.



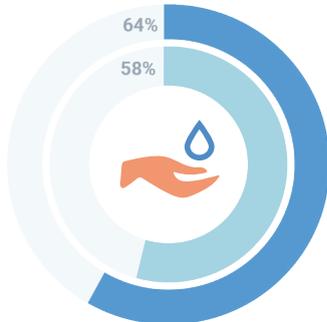
Several have highlighted the importance of disclosure through CDP in informing water stewardship strategies, capitalize on opportunities and incentivize action on water.

These insights are complemented by findings from a survey of 200 global executives by **ENGIE**³⁴ Impact to identify priorities and practices for accelerating sustainability transformation. The survey found that companies that saw early success in sustainability were those that invested in a stronger understanding of risk and had invested more in tools to identify and quantify opportunities. Articulating bold ambitions and building internal governance structures that align finance and resources to sustainability objectives were also found to be important in driving sustainability. In terms of innovation, good practice included undertaking full life-cycle assessments to trigger ideas and taking an iterative approach – through monitoring initial outcomes, revisiting assumptions and then adjusting.

34 <https://www.engieimpact.com/insights/global-executive-survey-preview>

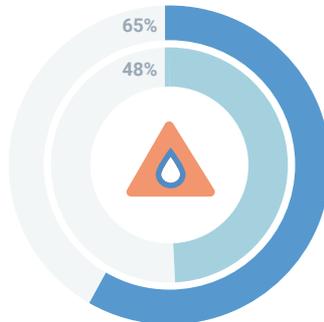
Key Performance Indicators (KPIs) on water security

Reducing withdrawals



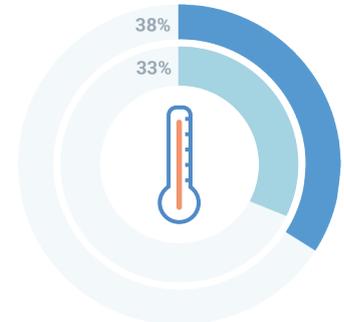
Companies lowering or maintaining their withdrawals

Water risk assessment



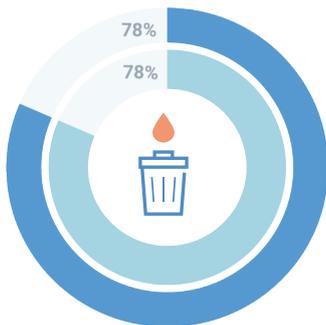
Respondents that factor water availability at a basin/catchment level into water risk assessments

Use of climate scenario analysis to inform strategy



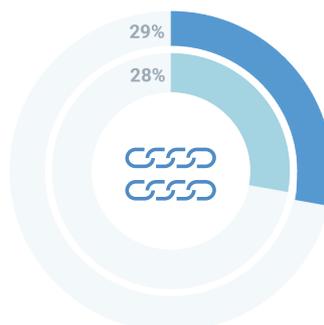
Respondents using climate-related scenario analysis to inform their business strategy

Monitoring withdrawals



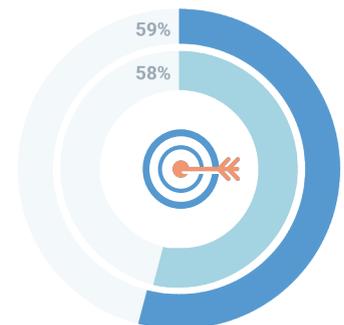
Respondents that monitor total water withdrawal volumes at more than 75% of facilities

Value chain engagement



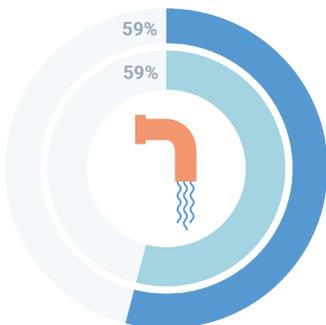
Respondents requiring 50% or more of their suppliers to report on their water use, risks and/or management information

Targets & goals



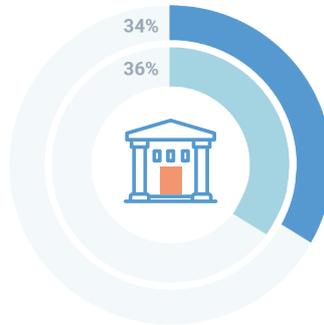
Respondents with targets and/or goals that are monitored at the corporate level

Monitoring wastewater discharges



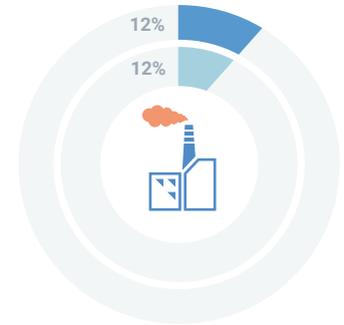
Respondents that monitor the quality of water discharges at more than 75% of facilities

Governance & strategy



Respondents that integrate water-related issues into long-term business objectives, their strategy for achieving these objectives and into financial planning

Pollution targets



Respondents setting pollution-related targets/goals
 4.4% in 2020 – the proportion of companies that report progress against pollution reduction targets

2020
 2019

23% in 2020 – Respondents that link C-suite incentives to the achievement of water targets

CONCLUSION



Companies that transform their business and work to safeguard valuable water resources have the potential to achieve both short and long-term cost savings, sustainable revenue generation and a more resilient future.



The private sector is vital to achieving the water-secure world that we all need. Against a backdrop of nature-loss, climate change and a global pandemic – all crises through which water flows – there is much more that companies can and should do.

To succeed, companies in almost every sector must find new ways of doing business, ways that decouple production and consumption from the depletion of water resources. Incremental changes, acting a little more efficiently or a little more collaboratively, will not cut it. Companies that transform their business and work to safeguard valuable water resources have the potential to achieve both short and long-term cost savings, sustainable revenue generation and a more resilient future.

The business case is clear and there are encouraging signs that companies are beginning to act. In 2020 more companies than ever disclosed through CDP's water questionnaire. Responses indicate that the cost of addressing water risks is far less than the financial impact that they could bring. Water accounting data disclosed indicates we have turned a corner, and almost two-thirds of responding companies are now reducing or at least maintaining their water withdrawals. However, the low percentage of companies monitoring their discharges and making progress against pollution targets indicates that businesses still have a way to go.

A water-secure world where business, people and places thrive will require companies to re-think their strategies and transform their business models. Our analysis indicates that many companies are rising to this challenge and rethinking their business models to respond to water-related risks. There are several examples of companies aiming for zero withdrawals and zero wastewater discharges, examples of strategies that work towards the twin aims of water-security and going net-zero, and examples of "positive disruptors" – innovations that are re-establishing our relationship with water.

The companies that are making these transformations are those that are putting water at the heart of their business, fully integrating it into their strategies and ensuring accountability for water targets at the highest level.

Our analysis suggests that there is value in our actions and costs to our inaction. Delivering an inclusive, sustainable and responsible economy is one of the defining challenges of the 21st century. The corporate water leadership showcased in our report, if adopted at scale, will position us well to meet it. We invite all investors and companies to join this effort. We have all of the tools we need, it's time to get to work.

Cate Lamb

Global Director of Water Security, CDP and UNFCC COP26 High Level Climate Action Champions Lead – Water

APPENDIX

Report methodology

Overview

In 2020, 5537 companies were asked to provide data about their efforts to manage and govern freshwater resources through CDP. 1,936 of these were asked by their investors, while 4,108 were asked by their purchasing companies as part of CDP's Supply Chain program. Note that some companies can be requested by both their investors and as part of the CDP's Supply Chain program. In total, 2,934 companies responded to the Water Security Questionnaire. These companies are the focus of this report.

For the purposes of this report, respondents to CDP's 2020 water questionnaire are divided into twelve sectors, defined by CDP's Activity Classification System, which categorizes companies by the diverse activities from which they derive revenue, and associates these activities with how they impact on water security.

Disclosure analysis (p9-11)

Response rates are based on responses received from companies that were sent CDP's 2020 water security questionnaire. Companies that responded voluntarily, and companies that respond through their parent company are included in these calculations.

Disclosure response rates 2015 – 2020

- Based on CDP's historic data on disclosure numbers.
- The total number of companies requested and responding for each year between 2015 and 2020 is presented.

Disclosure per region 2020

- Calculated the total number of companies that submitted in each region in 2020 based on their response status on CDP system.

Disclosure per sector 2019 & 2020

- Calculated the number of companies submitting a response to the water questionnaire in 2019 and 2020 per sector. Provided a breakdown of the manufacturing sector, expressed as a percentage of the total number of manufacturing companies disclosing.
- Note that some companies changed their sector classification between 2019 and 2020.

Financial analysis of risks & responses (p12–16)

- Combined datasets of W4.2 and W4.2a to cover risks within both direct operations and the value chain. (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; 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).
- Converted all estimates of potential financial impact and cost of response to US dollars.
- There are some inconsistencies in the way companies report financial information about risks; these inconsistencies were removed from the analysis or highlighted where possible:
 - Not all companies disclose both the potential financial impact of risk and the cost of response. We have only included those companies that report both in this analysis to ensure a fair comparison.
 - In some cases, the cost of response disclosed is the cost of acting on multiple water risks reported by the company. Sometimes this cost is then duplicated for each water risk reported by the company. We have sought to remove these duplications in cost of response from the analysis.
 - In other cases, the cost of response reflects an investment program or change in business strategy which is addressing numerous risks (beyond the reported water risk). This has inflated the cost of response in some cases above what might be expected for a particular water risk in a particular location. A key example is the diversification of energy companies into renewables, as highlighted in the report.
 - In a few cases, companies disclose a financial impact already experienced by the company rather than a potential financial impact. We have sought to remove large instances of such misreporting from the analysis (those above US\$300 million)

Comparison of potential financial impact with cost of response – per sector, region and river basin:

- ▶ All risk likelihood levels and timeframes were included in the analysis.
- ▶ The analysis is based on the 357 companies that report both the potential financial impact of water risks and the cost of responding to those water risks.
- ▶ Per sector: financial figures for “Potential financial impact figure” - single estimate, “Potential financial impact figure – minimum”, and “Potential financial impact figure – maximum” were summed for each sector.
- ▶ The maximum potential financial impact per sector was calculated by adding the total for the single estimate to the total for the maximum estimate.
- ▶ The total cost of response per sector was calculated by summing figures under “cost of response” for each sector.
- ▶ Similar calculations were performed per region and per river basin.

Percentage of companies with potential financial impact greater than the cost of response:

This analysis was performed on the 357 companies that report both the potential financial impact of water risks and the cost of responding to those water risks:

- i. Summed the maximum potential financial impact per company
- ii. Summed the cost of risk response per company
- iii. Counted the number of companies where (i) > (ii), and calculated this as a percentage out of 357.

Response to Risks (p20-21)

- ▶ All risk responses were included in this analysis, apart from those outliers identified in the financial analysis of risks (above).
- ▶ Converted all estimates of cost of response to US dollars.
- ▶ The analysis focused on disclosures under “primary response to risk” and “cost of response” in questions

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

- ▶ Those primary risk responses recorded as “other, please specify” were re-assigned where possible to other primary risk responses.

Predominant risk responses:

- ▶ Counted the number of companies recording each primary risk response.
- ▶ Summed the expenditure figures under “cost of response” for each primary risk response.

Risk responses – expenditure and frequency per sector (matrix):

- ▶ Frequency: the number of each risk response recorded was counted for each sector. These were converted into percentages of the total number of risk responses recorded per sector to create the matrix shading.
- ▶ Expenditure: the “cost of response” for each risk response was summed for each sector. For each sector, the top three risk responses in terms of expenditure are displayed in the matrix.

Nature-based solutions (p22)

Targets and goals linked to nature-based approaches:

- ▶ Counted the number of companies that provided details of targets linked to nature-based approaches in response to question W8.1a *Provide details of your targets that are monitored at the corporate level, and the progress made.* Relevant targets were identified by searching for specific terms and responses under “category of target” – for example “watershed remediation and habitation restoration, ecosystem preservation”.
- ▶ Counted the number of companies that provided details of goals linked to nature-based approaches in response to question W8.1b *Provide details of your water goal(s) that are monitored at the corporate level and the progress made.* Relevant goals were identified by searching for specific terms and responses to under “goals”.
- ▶ Conducted a distinct count of the number of companies with a target and/or goal linked to nature-based approaches.

Water withdrawals (p23)

Percentage of companies reducing or maintaining water withdrawals:

- Counted the number of companies that selected “total withdrawals” under question 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?* and then selected “lower”, “much lower” or “about the same” for the “Comparison with previous reporting year”.
- Percentage calculated out of those companies presented with question W1.2b minus the number responding to this question for the first time. This is 2101 companies. Companies presented with W1.2b are those that respond “vital”, “important” or “neutral” to question W1.1 *Rate the importance (current and future) of water quality and quantity to the success of your business.*

Percentage of companies reducing or maintaining water withdrawals in water-stressed areas:

- Counted companies that selected “yes” to the question W1.2d *Indicate whether water is withdrawn from areas with water stress and provide the proportion*, and then selected “lower”, “much lower” or “about the same” for the “Comparison with previous reporting year”.
- Percentage calculated out of those companies that selected “yes” to question W1.2d minus the number reporting this data for the first time.

Trend in water withdrawals and withdrawal targets 2015-2020:

- This analysis was conducted on a cohort of companies consistently responding to questions W1.2b and W8.1a each year from 2015 to 2020.
- Number of companies reporting higher withdrawals: For each year between 2015 and 2020, counted the number of companies that selected “higher” or “much higher” under “comparison with previous reporting year” for question 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?*

- Number of companies setting targets to reduce water withdrawals: For each year between 2015 to 2020, counted the number of companies (distinct count) selecting “absolute reduction of water withdrawals”, “water withdrawals” or another target category relevant to withdrawal reductions under “category of target” for question W8.1a *Provide details of your water targets that are monitored at the corporate level, and the progress made.*

Pollution actions (p24-25)

Percentage of companies monitoring the quality of wastewater discharges:

- Identified “water aspects” relevant for monitoring the quality of discharges under question W1.2 *Across all your operations, what proportion of the following water aspects are regularly measured and monitored?* – i.e. “water discharge quality – temperature” and “water discharge quality – standard effluent parameter”.
- Counted the number of companies selecting these “water aspects” AND monitoring them at 75% or more of their sites/facilities/operations.
- Percentage calculated as a proportion of the number of companies presented with question W1.2. Companies presented with W1.2 are those that respond “vital”, “important” or “neutral” to question W1.1 *Companies presented with W1.2b are those that respond “vital”, “important” or “neutral” to question W1.1.*

Pollution targets - percentage of companies making progress against pollution reduction targets:

- Counted the number of companies that selected “pollution reduction” under “category of targets” in response to question W8.1a *Provide details of your targets that are monitored at the corporate level, and the progress made*. Then counted those reporting 10% or more progress against these targets under “% of target achieved”.
- Percentage calculated as a proportion of all companies that submitted a response to the water security questionnaire.

Key performance indicators on water security (p31)

Water withdrawals – see p.35.

Monitoring wastewater discharges – see above.

Monitoring withdrawals - percentage of companies monitoring withdrawals at 75% of their facilities or more:

- ▶ Distinct count of the number of companies that select the following in response to: W1.2 *Across all your operations, what proportion of the following water aspects are regularly measured and monitored?:*
 - ▶ “total withdrawal volumes” in the “water aspect” column; and
 - ▶ “76-99%” or “100%” in column “% sites/facilities/operations”
- ▶ Percentage calculated as a proportion of the number of companies presented with W1.2. Companies presented with W1.2 are those that respond “vital,” “important” or “neutral” to question W1.1 *Rate the importance (current and future) of water quality and water quantity to the success of your business.*

Value chain engagement – percentage of companies actively engaging with their value chain (suppliers, customers or other value chain partners) on water-related issues:

- ▶ Distinct count of the number of companies selecting “51-75%” or “76-100%” in column ‘% of suppliers by number’ in response to 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?*
- ▶ This question depends on conditional logic and is only presented to respondents if they select “Yes, our suppliers” in response to W1.4. This question is also only presented to respondents submitting to the Full Tier version of the questionnaire. The percentage is therefore calculated as proportion of Full Tier respondents who were presented with this question.

Risk Assessment - percentage of companies that factor water availability at a basin/catchment level into water risk assessments:

- ▶ Distinct count of the number of companies that select the following in response to W3.3b *Which of the following contextual issues are considered in your organization’s water-related risk assessments?:*
 - ▶ “Water availability at a basin/catchment level” in the “Contextual issue” column; and
 - ▶ “Relevant, always included,” “Relevant, sometimes included” or “Not relevant, included” in the “Relevance & inclusion” column.
- ▶ This question is also only presented to respondents submitting to the Full Tier version of the questionnaire. The percentage is therefore calculated as proportion of submitting Full Tier respondents.

Governance & Strategy - percentage of companies that integrate water aspects into their long-term strategic business plan:

- ▶ Distinct count of companies that select “yes, water-related issues are integrated” for all three of the following aspects in response to question W7.1 *Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?:* long-term objectives, strategy for achieving long-term objectives, and financial planning.
- ▶ The percentage is calculated as a proportion of all companies that have submitted a response to the water security questionnaire.

Governance & Strategy - percentage of companies that provide C-suite incentives for the management of water issues:

- ▶ Distinct count number of companies that select “yes” in response to the question W6.4 *Do you provide incentives to C-suite employees or board members for the management of water-related issues?*
- ▶ The percentage is calculated as a proportion of all companies that have submitted a response to the water security questionnaire.

Targets & Goals – percentage of companies setting targets and/or goals that are monitored at the corporate level:

- ▶ Distinct count of companies that select either “Goals are monitored at the corporate level” or “Targets are monitored at the corporate level” in the column “Monitoring at corporate level” in response to question W8.1 *Describe your approach to setting and monitoring water-related targets and/or goals.*
- ▶ The percentage is calculated as a proportion of all companies that have submitted a response to the water security questionnaire.

Pollution targets and goals - percentage of companies with targets/goals relevant to pollution:

- ▶ Distinct count of companies that provide pollution-related target(s) in response to question W8.1a *Provide details of your targets that are monitored at the corporate level, and the progress made.* Pollution-related targets were identified by searching for specific terms and responses under “category of targets”.
- ▶ Distinct count of companies that provide pollution-related goal(s) in response to question W8.1b *Provide details of your water goal(s) that are monitored at the corporate level and the progress made.* Pollution-related goals were identified by searching for specific terms and responses to under “goals”.
- ▶ Conducted a distinct count of the number of companies with a pollution-related target and/or goal.
- ▶ Percentage calculated as a proportion of all companies that submitted a response to the water security questionnaire.

Climate scenario analysis – percentage of respondents using climate-related scenario analysis to inform their business strategy:

- ▶ Distinct count of companies that select “yes” in response to question W7.3 *Does your organization use climate-related scenario analysis to inform its business strategy?*
- ▶ The percentage is calculated as a proportion of all companies that have submitted a response to the water security questionnaire.

Opportunities (p22)

Maximum value of water-related opportunities

- ▶ Analyzed responses to W4.3a *Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.*
- ▶ Converted all potential impact figures to US\$.
- ▶ Summed responses under each of “Potential financial impact figure”, “Potential financial impact figure – minimum”, and “Potential financial impact figure – maximum”.
- ▶ The maximum total value of opportunities calculated by summing the total potential financial figure (maximum) and the total financial impact figure.

APPENDIX II

Key Performance Indicators (KPIs) by sector

KPI	Apparel	Biotech, Health Care & Pharma	Food, Beverage & Agriculture	Fossil Fuels	Hospitality	Infrastructure	Manufacturing	Materials	Mineral Extraction	Retail	Services	Transportation Services	Total
Disclosure													
Number of companies requested for water information by investors and supply chain members	61	199	584	167	45	194	1871	744	90	224	387	159	5536
Number of companies responding to investor and supply chain request for water information	37	103	414	58	26	62	1375	440	37	88	190	104	2934
Number of companies responding to investor request for water information	18	74	105	49	22	51	279	200	36	51	40	6	931
Response rate (%) - investor and supply chain	61%	52%	71%	35%	58%	32%	73%	59%	41%	39%	49%	65%	53%
Public responses	22	67	183	45	19	42	636	242	31	51	92	38	1468
Private responses	15	36	231	13	7	20	739	198	6	37	98	66	1466
CDP supply chain program disclosure													
Number of companies requested for water information by supply chain members	25	70	460	29	13	53	1676	451	13	82	347	145	4175
Number of companies responding to customer/supply chain request for water information	21	51	364	17	11	24	1287	339	10	49	162	99	2434
Water dependence													
Respondents reporting that sufficient amounts of good quality freshwater available for use is 'vital' or 'important' for their direct operations	49%	85%	85%	74%	92%	81%	60%	79%	100%	52%	42%	46%	67%
Respondents reporting that sufficient amounts of good quality freshwater available for use is 'vital' or 'important' for their indirect operations	59%	71%	78%	47%	73%	71%	50%	62%	54%	60%	39%	42%	57%
Water accounting													
Respondents that monitor total water withdrawal volumes at more than 75% of facilities	91%	87%	76%	98%	79%	87%	75%	87%	100%	75%	59%	43%	78%
Respondents that monitor total water consumption volumes at more than 75% of facilities	73%	80%	78%	90%	67%	83%	63%	81%	95%	74%	54%	44%	70%
Respondents that monitor total water discharge volumes at more than 75% of facilities	77%	73%	64%	90%	63%	69%	59%	76%	97%	54%	46%	26%	63%
Respondents that monitor water recycling/reuse at more than 75% of facilities	32%	37%	31%	74%	21%	46%	31%	49%	65%	32%	25%	20%	35%
Respondents that meter and monitor the quality of water discharges at more than 75% of facilities	77%	69%	68%	76%	29%	67%	54%	72%	92%	39%	32%	25%	59%
Respondents reporting withdrawals from water-stressed areas	41%	56%	38%	56%	54%	59%	31%	46%	54%	60%	28%	10%	38%
Value chain engagement													
Respondents engaging their value chain on water-related issues	100%	85%	90%	94%	100%	86%	86%	80%	88%	90%	90%	57%	87%
Respondents with financial supply chain incentives	0%	5%	11%	0%	14%	5%	4%	3%	7%	7%	4%	0%	5%
Respondents requiring 50% or more of their suppliers to report on their water use, risks and/or management information	67%	18%	29%	28%	50%	39%	27%	32%	28%	29%	32%	22%	29%
Business impacts													
Respondents that have experienced detrimental water-related business impacts in the reporting year	5%	8%	13%	14%	35%	34%	6%	13%	22%	16%	6%	6%	10%
Total financial value of impacts (US\$)	\$1,100,000	\$627,987,416	\$247,033,170	\$306,213,662	\$81,431,324	\$444,954,915	\$1,753,923,998	\$11,726,043,608	\$1,367,445,858	\$21,416,070	\$7,404,362	\$80,680,354	\$16,665,634,737
Respondents subject to penalties, fines and/or enforcement orders	8%	9%	10%	24%	4%	23%	4%	10%	14%	7%	1%	3%	7%
Total value of reported penalties, fines and/or enforcement orders (US\$)	\$22,714	\$173,604	\$2,153,438	\$35,096,483	\$11,435	\$368,451	\$390,421	\$86,272,518	\$96,916	\$61,728	\$4,219	\$297,924	\$124,949,852
Water risk assessment													
Respondents that undertake a water-related risk assessment	68%	83%	68%	88%	85%	82%	62%	74%	100%	56%	41%	31%	64%
Respondents that undertake a water risk assessment with a specified frequency	68%	79%	64%	84%	73%	77%	58%	68%	97%	51%	38%	26%	60%
Respondents that factor water availability at a basin/catchment level into water risk assessments	68%	80%	74%	87%	95%	90%	57%	73%	100%	61%	53%	34%	65%
Respondents that factor suppliers into water risk assessments	60%	78%	62%	77%	90%	73%	49%	57%	79%	55%	44%	32%	56%

KPI	Apparel	Biotech, Health Care & Pharma	Food, Beverage & Agriculture	Fossil Fuels	Hospitality	Infrastructure	Manufacturing	Materials	Mineral Extraction	Retail	Services	Transportation Services	Total
Water risks													
Respondents exposed to substantive water risk in either direct operations or along the value chain	51%	47%	57%	66%	46%	66%	37%	55%	76%	41%	29%	18%	44%
Respondents exposed to substantive water risk in direct operations only	24%	24%	27%	45%	23%	26%	21%	30%	41%	14%	14%	7%	23%
Respondents exposed to substantive water risk in the value chain only	11%	0%	5%	3%	0%	3%	2%	1%	0%	9%	4%	1%	3%
Percentage of water risks reported that are physical	79%	81%	86%	68%	96%	75%	77%	80%	65%	76%	75%	68%	79%
Percentage of water risks reported that are regulatory	15%	13%	9%	25%	0%	18%	19%	15%	31%	8%	14%	11%	16%
Percentage of water risks reported that are reputational	6%	7%	5%	6%	4%	7%	3%	5%	5%	16%	7%	21%	5%
Percentage of water risks reported that are technological	0%	0%	1%	1%	0%	0%	1%	0%	0%	0%	4%	0%	1%
Respondents reporting >50% of facilities at risk	14%	12%	22%	28%	8%	19%	12%	20%	22%	11%	9%	6%	15%
Water opportunities													
Respondents that identify and are realizing water-related opportunities	57%	55%	51%	71%	54%	74%	35%	55%	89%	51%	27%	17%	43%
Percentage of water opportunities relating to efficiency	59%	48%	64%	52%	48%	31%	51%	40%	43%	45%	34%	33%	48%
Percentage of water opportunities relating to resilience	24%	24%	17%	13%	10%	17%	10%	9%	16%	9%	13%	17%	13%
Percentage of water opportunities relating to products and services	14%	14%	7%	11%	21%	31%	25%	35%	20%	31%	36%	20%	24%
Percentage of water opportunities relating to markets	3%	10%	7%	15%	17%	15%	10%	12%	18%	12%	14%	23%	11%
Governance & strategy													
Respondents with a documented water policy that is publicly available	51%	50%	35%	47%	58%	61%	37%	44%	70%	36%	22%	13%	38%
Respondents with board-level oversight of water issues	73%	81%	75%	88%	85%	85%	62%	78%	100%	69%	41%	39%	67%
Respondents that integrate water-related issues into long-term business objectives	59%	69%	58%	72%	73%	73%	36%	58%	89%	48%	26%	18%	46%
Respondents that integrate water-related issues into their strategy for achieving long-term objectives	59%	69%	56%	69%	65%	74%	35%	58%	86%	47%	26%	20%	45%
Respondents that integrate water-related issues into financial planning	54%	55%	50%	64%	54%	66%	31%	54%	86%	44%	22%	17%	40%
Respondents whose water-related CAPEX increased in the reporting year	32%	25%	35%	28%	24%	31%	28%	35%	29%	22%	18%	13%	29%
Respondents whose water-related OPEX increased in the reporting year	36%	31%	30%	32%	38%	29%	28%	32%	26%	22%	25%	17%	29%
Respondents using climate-related scenario analysis to inform business strategy	48%	49%	40%	74%	43%	69%	28%	45%	85%	41%	40%	30%	38%
Respondents identifying water-related outcomes from climate scenario analysis	32%	28%	32%	49%	29%	54%	15%	33%	65%	25%	23%	11%	24%
Respondents using an internal price on water	16%	15%	17%	26%	5%	12%	11%	18%	12%	8%	8%	4%	13%
Respondents that provide C-suite incentives	41%	31%	25%	45%	46%	47%	18%	31%	59%	25%	12%	9%	23%
Targets & goals													
Respondents with targets and/or goals that are monitored at the corporate level	70%	67%	63%	78%	81%	77%	56%	67%	81%	52%	36%	30%	59%
Respondents setting water intensity reduction targets	19%	1%	8%	9%	4%	5%	3%	8%	14%	5%	1%	1%	5%
Respondents setting supplier engagement targets	19%	10%	5%	5%	0%	5%	3%	3%	8%	14%	4%	3%	4%
Respondents setting Water, Sanitation & Hygiene (WASH) targets	5%	7%	6%	12%	15%	15%	6%	10%	8%	7%	9%	3%	7%
Respondents setting water consumption targets	19%	17%	14%	7%	12%	24%	16%	15%	22%	13%	11%	13%	15%
Respondents setting water withdrawal targets	14%	29%	13%	10%	31%	19%	14%	16%	14%	13%	8%	4%	14%
Pollution indicators													
Respondents setting pollution-related targets and/or goals	14%	17%	14%	28%	0%	21%	10%	18%	24%	7%	2%	4%	12%
Respondents identifying pollution-related risks	6%	17%	10%	10%	41%	11%	13%	15%	7%	5%	7%	16%	13%
Respondents subject to pollution-related penalties, fines and/or enforcement orders	3%	3%	2%	5%	0%	10%	1%	3%	3%	0%	1%	0%	2%
Nature-based solutions (NbS)													
Respondents with targets and/or goals on NbS	5%	3%	5%	7%	4%	19%	3%	5%	19%	5%	3%	2%	4%
Respondents deploying NbS related responses to water risks	0%	0%	2%	2%	0%	2%	0%	0%	0%	1%	0%	0%	0%

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