

# CDP Water Disclosure Global Report 2011

Raising corporate awareness of global water issues

On behalf of 354 investors with assets of US\$43 trillion



Report written for  
Carbon Disclosure Project by

**Deloitte.**

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## CDP Water Disclosure 2011

354 financial institutions with assets of US\$43 trillion were signatories to CDP Water Disclosure 2011 information request dated February 1, 2011

Aberdeen Asset Managers	Corporation (bcIMC)	FIDURA Capital Consult GmbH
ABRAPP - Associação Brasileira das Entidades Fechadas de Previdência Complementar	BT Investment Management	FIM Asset Management Ltd
Active Earth Investment Management	CAAT Pension Plan	First Affirmative Financial Network, LLC
Acuity Investment Management	Cadiz Holdings Limited	Firststrand Limited
Addenda Capital Inc.	Caisse de dépôt et placement du Québec	Five Oceans Asset Management Pty Limited
Advanced Investment Partners	Caisse des Dépôts	Florida State Board of Administration (SBA)
Advantage Asset Managers (Pty) Ltd	Caixa Econômica Federal	Folksam
AEGON Magyarország Befektetési Alapkezelő Zrt.	California Public Employees' Retirement System	Fondacion CSN
Alberta Investment Management Corporation (AIMCo)	California State Teachers' Retirement System	Fondiarria-SAI
Alberta Teachers Retirement Fund	California State Treasurer	Fonds de Réserve pour les Retraites – FRR
Alcyone Finance	Calvert Asset Management Company, Inc	FRANKFURT-TRUST Investment-Gesellschaft mbH
Allianz Global Investors Kapitalanlagegesellschaft mbH	Canada Pension Plan Investment Board	Fukoku Capital Management Inc
Allianz Group	Canadian Labour Congress Staff Pension Fund	FUNCEF - Fundação dos Economiários Federais
AmpegaGerling Investment GmbH	Capital Innovations, LLC	Fundação AMPLA de Seguridade Social - Brasiletros
Amundi AM	CARE Super Pty Ltd	Fundação Atlântico de Seguridade Social
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ARIA (Australian Reward Investment Alliance)	Central Finance Board of the Methodist Church	Generali Deutschland Holding AG
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ASB Community Trust	Christian Super	GLS Gemeinschaftsbank eG
ASM Administradora de Recursos S.A.	Christopher Reynolds Foundation	GOOD GROWTH INSTITUT für globale Vermögensentwicklung mbH
ASN Bank	Clean Yield Group, Inc.	Governance for Owners
Assicurazioni Generali Spa	Cleantech Invest AG	Government Employees Pension Fund ("GEPF"), Republic of South Africa
Australian Central Credit Union incorporating Savings & Loans Credit Union	ClearBridge Advisors	Green Century Capital Management
Australian Ethical Investment Limited	CM-CIC Asset Management	Groupe Investissement Responsable Inc.
AustralianSuper	Colonial First State Global Asset Management	GROUPE OFI AM
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Aviva Investors	Compton Foundation, Inc.	Hang Seng Bank
AXA Group	Concordia Versicherungsgruppe	Harrington Investments, Inc
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Barclays	Deutsche Bank AG	Ilmarinen Mutual Pension Insurance Company
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BayernInvest Kapitalanlagegesellschaft mbH	Domini Social Investments LLC	Instituto Infraero de Seguridade Social - INFRAPREV
BBC Pension Trust Ltd	Dongbu Insurance	Instituto Sebrae De Seguridade Social - SEBRAEPREV
BBVA	Earth Capital Partners LLP	Investec Asset Management
Blumenthal Foundation	Ecclesiastical Investment Management	Irish Life Investment Managers
BNP Paribas Investment Partners	Ecofi Investissements - Groupe Credit Cooperatif	JPMorgan Chase & Co.
Boston Common Asset Management, LLC	Elan Capital Partners	Jupiter Asset Management
BP Investment Management Limited	Element Investment Managers	KB Kookmin Bank
British Columbia Investment Management	Environment Agency Active Pension fund	KDB Asset Management Co., Ltd.
	Epworth Investment Management	KEPLER-FONDS Kapitalanlagegesellschaft m. b. H.
	Essex Investment Management Company, LLC	KfW Bankengruppe
	ESSSuper	KlimalVEST
	Ethos Foundation	
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Living Planet Fund Management Company S.A.	PETROS - The Fundação Petrobras de Seguridade Social	Syntrus Achmea Asset Management
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Local Super	Phillips, Hager & North Investment Management Ltd.	Telluride Association
Lombard Odier Darier Hentsch & Cie	Pictet Asset Management SA	Terra Forvaltning AS
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Nedbank Limited	Santa Fé Portfolios Ltda	Unitarian Universalist Association
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Nikko Asset Management Co., Ltd.	Shinhan BNP Paribas Investment Trust Management Co., Ltd	WARBURG - HENDERSON Kapitalanlagegesellschaft für Immobilien mbH
Nissay Asset Management Corporation	Shinkin Asset Management Co., Ltd	WARBURG INVEST KAPITALANLAGEGESELLSCHAFT MBH
NORD/LB Kapitalanlagegesellschaft AG	Siemens Kapitalanlagegesellschaft mbH	West Yorkshire Pension Fund
Nordea Investment Management	Signet Capital Management Ltd	WestLB Mellon Asset Management (WMAM)
Norfolk Pension Fund	Smith Pierce, LLC	Winslow Management, A Brown Advisory Investment Group
Norges Bank Investment Management (NBIM)	SNS Asset Management	Woori Bank
North Carolina Retirement System	Social(k)	YES BANK Limited
Northern Ireland Local Government Officers' Superannuation Committee (NILGOSC)	Solaris Investment Management Limited	York University Pension Fund
NEI Investments	Sompo Japan Insurance Inc.	Youville Provident Fund Inc.
Oddo & Cie	Sopher Investment Management	Zegora Investment Management
OEKO Capital Lebensversicherung AG	SPF Beheer bv	Zevin Asset Management
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Ontario Teachers' Pension Plan	Standard Life Investments	

# CEO Foreword

As this report goes to print, floods are disrupting millions of lives in Thailand and Cambodia, inundating thousands of local businesses and wiping more than 1.5% off Thailand's GDP. Meanwhile Texas is suffering from a drought that has already lasted 12 months and by August 2011 had cost over \$5.2 billion in agricultural losses according to Texas A&M University. Yet the impact of these events goes beyond the local devastation. The Thailand floods have caused disruption to the global supply of computer and automotive components, while events in Texas have led to food and agriculture losses and a reduction in export opportunities. These events are a powerful reminder of the strategic importance that water has for global business.

The advantage of understanding water's importance is certainly tangible for the world's clothing companies. Many struggled this year as floods and droughts in the world's major cotton growing regions coupled with a surge in demand from Asia drove prices on the New York Cotton Exchange from 86 to 230 cents per pound in the year to March 2011. By understanding water risk in their supply chain, companies can prepare for it and manage it. That is why H&M is participating in global initiatives to educate cotton farmers on better farming practices and why PPR's subsidiary Puma has set water use reduction targets that go beyond its operations to include its suppliers' water use as well.

This year has seen a marked increase in the number of the world's largest companies reporting on their water usage, on the risks that water presents, and on their responses to that risk: of the companies in the Global 500 that were sent the second CDP Water Disclosure information request, 60% responded, up from 50% in 2010. As this report, written by Deloitte, explains, responses from these companies indicate that water is impacting global business now, and yet water is not nearly as high on the corporate agenda as climate change.

The 2030 Water Resources Group predicts that the demand for water will outstrip supply by 40% by 2030 and that closing this gap could cost as much as \$50 to \$60 billion a year for twenty years. As growing demand for water from industrialisation and population growth is compounded by climate change and growing uncertainty of supply, the global economy will be reoriented towards businesses that take active stewardship of water resources and build resilience to shortages and floods. The companies that succeed will be those that consider water with the strategic importance it deserves and take steps to transform their business now.

CDP Water Disclosure's goal is to aid that transformation by encouraging meaningful and systematic reporting on water globally so that investors and other stakeholders can understand how companies are building water into their core business strategies, and so that leading practices can be shared. The 354 institutional investors which requested information from their portfolio companies through us this year are the vanguard of this transformation. CDP Water Disclosure is delighted to be working together with these investors, our lead sponsors **Deloitte, Molson Coors** and **Norges Bank Investment Management** and our project sponsor **Irbaris**.



**Paul Simpson**  
CEO  
Carbon Disclosure Project

# Contents

<b>2011 CDP Water Disclosure Signatories</b>	<b>2</b>
<b>Foreword</b>	<b>4</b>
<b>Executive Summary</b>	<b>6</b>
<b>Report Commentary</b>	<b>7</b>
<b>Global 500 Overview</b>	<b>8</b>
<b>Geographic Overview</b>	<b>16</b>
<b>Australia 100 and South Africa 100 Overview</b>	<b>20</b>
<b>Sector snapshots</b>	
Consumer Discretionary	26
Consumer Staples	28
Energy	30
Health Care	32
Industrials	34
Information Technology	36
Materials	38
Utilities	40
<b>Appendix I: Table of Response Status and Sector by Company</b>	<b>42</b>
<b>Appendix II: Report Methodology</b>	<b>50</b>
<b>Appendix III: Global 500 Companies by Country</b>	<b>51</b>
<b>Appendix IV: Summary of Key Indicators</b>	<b>52</b>

# Executive Summary

## Introduction

In 2011 some of the worst droughts in decades have hit regions in China, East Africa, the Middle East and the United States. Destructive flooding currently inundates Thailand and earlier this year the prolonged drought in Queensland, Australia was alleviated by 1-in-100 year floods. In this changing global environment, it is essential for global businesses to address the importance of water as a critical resource if the global economy is to become resilient to the water-related impacts from which it is already suffering.

Selected companies from the FTSE Global Equity Index Series (Global 500) and this year for the first time, from the Australian Securities Exchange (Australia 100) and the Johannesburg Stock Exchange (South Africa 100) were invited to respond to the second annual CDP Water Disclosure information request because they operate in sectors which are water-intensive or exposed to water-related risks. This year the response rate amongst the Global 500 increased to 60% from 50% in 2010, representing 190 out of 315 companies which were sent the questionnaire. Response rates from the Australia 100 (41%, 22 out of 54) and South Africa 100 (46%, 26 out of 56) were strong for their first year.

## Key findings - Global 500

### **The majority of responding companies have identified water as a substantial risk to their business**

59% (113) of respondents report exposure to water-related risk and over one third of respondents have already suffered recent water-related business impacts, with associated financial costs as high as US\$200 million. 64% of all risks in direct operations and 66% in the supply chain are reported to have the potential to impact business either now or within five years.

### **Almost two thirds of companies have identified water-related opportunities and most opportunities are reported as near-term**

63% (119) of respondents identify opportunities including cost reductions associated with increased water efficiency, revenue from new water-related products or services, and improved brand value. 79% of the opportunities reported are expected to impact business within the next five years.

### **Water-related issues receive less attention than climate change at the board level**

57% (109) of Global 500 respondents report board-level oversight of water-related policies, strategies or plans. In contrast, 94% (371) of Global 500 respondents to the Investor CDP information request report board-level oversight of climate change<sup>1</sup>. Why water-related issues are given lower priority than climate change issues is unclear, especially as the majority of reported risks and opportunities are near-term.

### **Respondents' ability to provide water-related usage data has improved**

The proportion of respondents reporting water withdrawals (95%, 181) and recycling/reuse data (58%, 111) has increased since 2010. The ability to measure and report water accounting metrics is essential for better management of water resources and demonstrates an increased awareness of water issues among respondents since 2010.

### **Energy companies report high levels of risk and low levels of board-level oversight**

The Energy sector has the lowest response rate (47%, 25 respondents) of all sectors and the lowest number of respondents that report board-level oversight of water-related policies, strategies or plans (36%, 9). A low level of board oversight is surprising since 72% (18) of Energy respondents report exposure to water-related risk compared to an average of 59% (113) across all respondents.

## **Australia 100 and South Africa 100**

### **Respondents have higher levels of reported risk than the Global 500**

Water issues should be high on the agenda for Australian and South African companies given that 50% (11) of respondents in the Australia 100 and 58% (15) of respondents in the South Africa 100 have experienced detrimental water-related business impacts in the past five years. A lower percentage of respondents in both the Australia 100 and South Africa 100 report having a water policy, strategy, or plan than in the Global 500, but the number of companies reporting water accounting data from these countries suggests that companies are taking steps to improve their management of water issues.

<sup>1</sup> CDP Global 500 Report 2011: Accelerating Low Carbon Growth

# Report Commentary

## A new paradigm in water management

Water is a strategic resource for most global businesses.

The reasons are straightforward. A growing population and increasing economic activity coupled with declining water quality in many regions has resulted in increased competition for water in the public and private sectors. While the term “water scarcity” is frequently heard, we are more specifically experiencing greater competition for water. The amount of fresh and accessible water is static; we do not create new water or “use up” existing supplies. Instead we are placing greater demands on an irreplaceable natural resource.

The response to this increased competition is multifold. Most importantly, the true value of water is increasingly being recognized. From a business perspective, the value of water resides in business continuity (having an appropriate quantity and quality of water), license to operate, and brand value. This recognition of value translates into growth in the number of companies mapping risk within watersheds, measuring usage in direct operations and the supply chain, establishing water-related targets and goals, deploying technologies to increase water reuse and recycling, engaging with a wide range of stakeholders, and increasing disclosure of water management efforts.

Water scarcity is fundamentally about understanding water risk and resultant business risk (operational, regulatory, and reputational), but understanding risk is only the beginning of a successful water stewardship effort. Stewardship requires engagement with stakeholders to collaboratively manage water as a shared resource; it is not possible to address the challenges posed by water scarcity alone. The need to engage with other peers and other sectors, non-governmental organizations (NGOs), communities, and governments to develop broad watershed-level approaches to managing water is essential.

Water scarcity is also driving innovation. We are witnessing the creation of a new paradigm for water management that includes initiatives such as improved water data acquisition and analytics, precision agriculture, improved water efficiency, addressing water losses from pipeline leakage, energy efficient water treatment technologies, and a move to extract energy and nutrients from wastewater.

This report reflects these changes in how businesses are managing risk and creating business opportunities. The CDP Water Disclosure information request is an important effort, along with other global initiatives, in transforming how we manage one of our most essential natural resources.

We are proud to be part of CDP’s effort to increase awareness of the importance of addressing water scarcity and resulting business risks and opportunities. We recognize the efforts of those companies that responded to the information request, to the investor organizations which are signatories to CDP Water Disclosure, and to our colleagues from Molson Coors, Norges Bank Investment Management (NBIM), and Irbaris who have shaped a successful 2011 CDP Water Disclosure program.

### **Will Sarni**

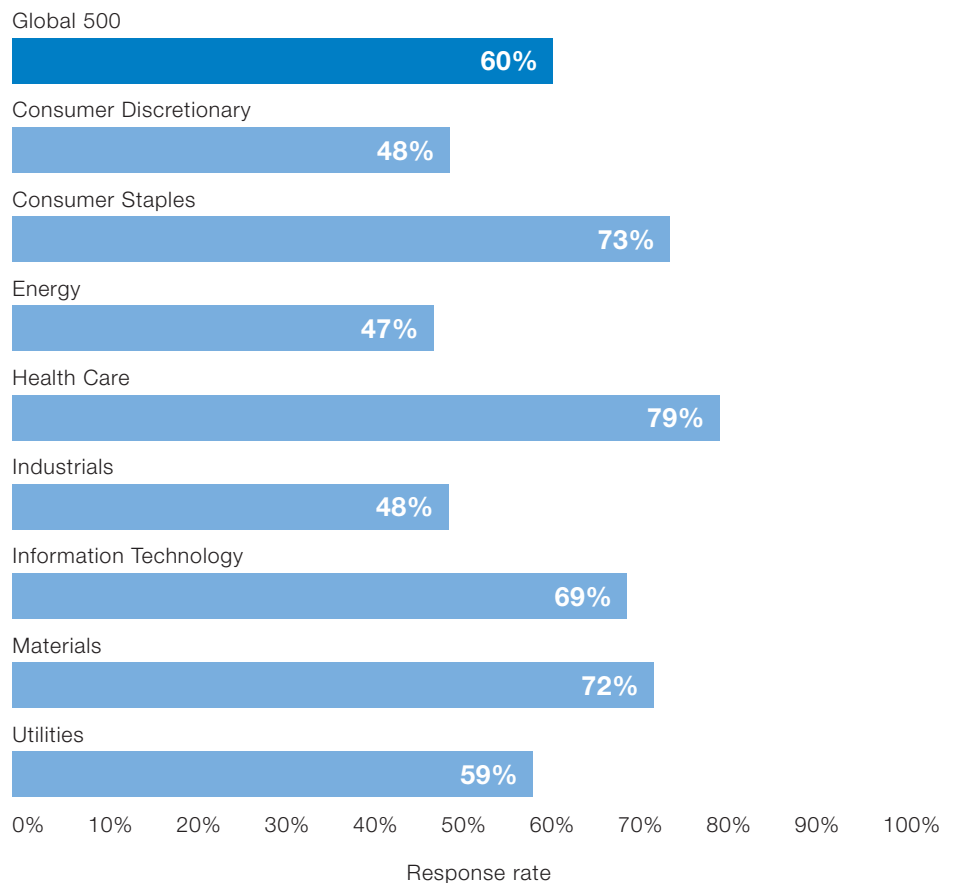
*Director and Practice Leader, Enterprise Water Strategy  
Deloitte Consulting LLP*

# Global 500 Overview

“Using water more efficiently will enable us to do business in areas that may not be viable for other businesses and make us the partner of choice for local communities and governments who insist on responsible water use.”

## Anglo American

**Figure 1: Response rate by sector**



### **An increasing number of the world's largest companies are disclosing water-related information**

The response rate to CDP Water Disclosure's second annual questionnaire increased from 50% in 2010 to 60% in 2011 (Figure 1). 315 companies from the Global 500 were invited to respond because they are considered to be in either water-intensive sectors or those sensitive to water issues in their supply chain. 190 of these companies responded, of which 59 were first time respondents. The increase in disclosure is matched by an increasing awareness of water as a strategic business issue.

### **The majority of responding companies have identified water as a substantial risk to their business**

59% (113) of all respondents report exposure to water-related risk that has the potential to cause significant business impacts (Figure 5). The need for these respondents to manage water-related risk effectively is immediate: risks with the potential to have an impact now or within five years account for 64% of all risks reported in direct operations and 66% in the supply chain (Figure 3). The most commonly reported risks in direct operations (Figure 2) include increased water stress or scarcity, which is identified by 41% (78) of

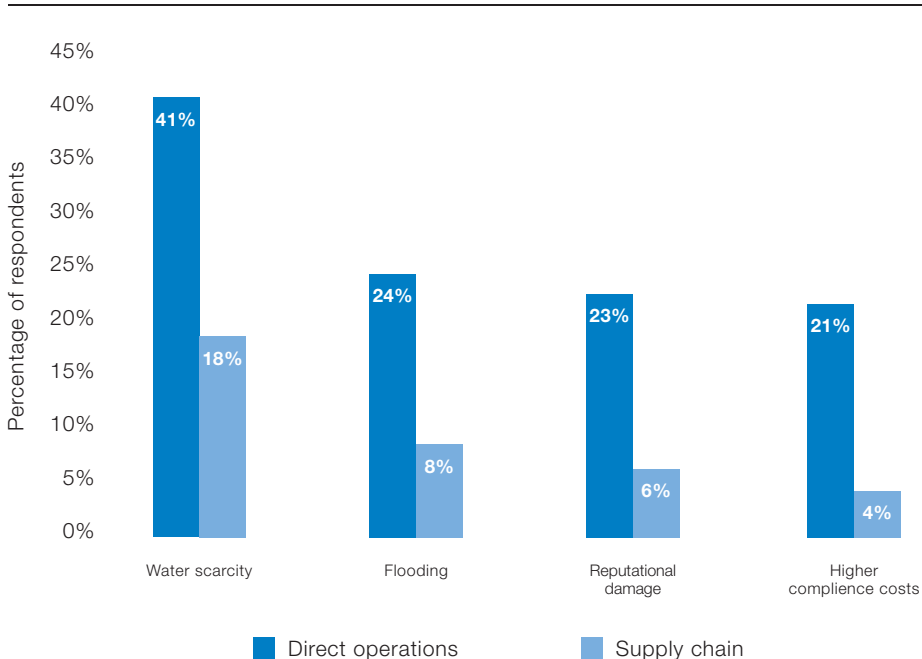


respondents, flooding (24%, 45), reputational damage (23%, 43), and regulation of discharges leading to higher compliance costs (21%, 40). Similar trends are seen in the supply chain.

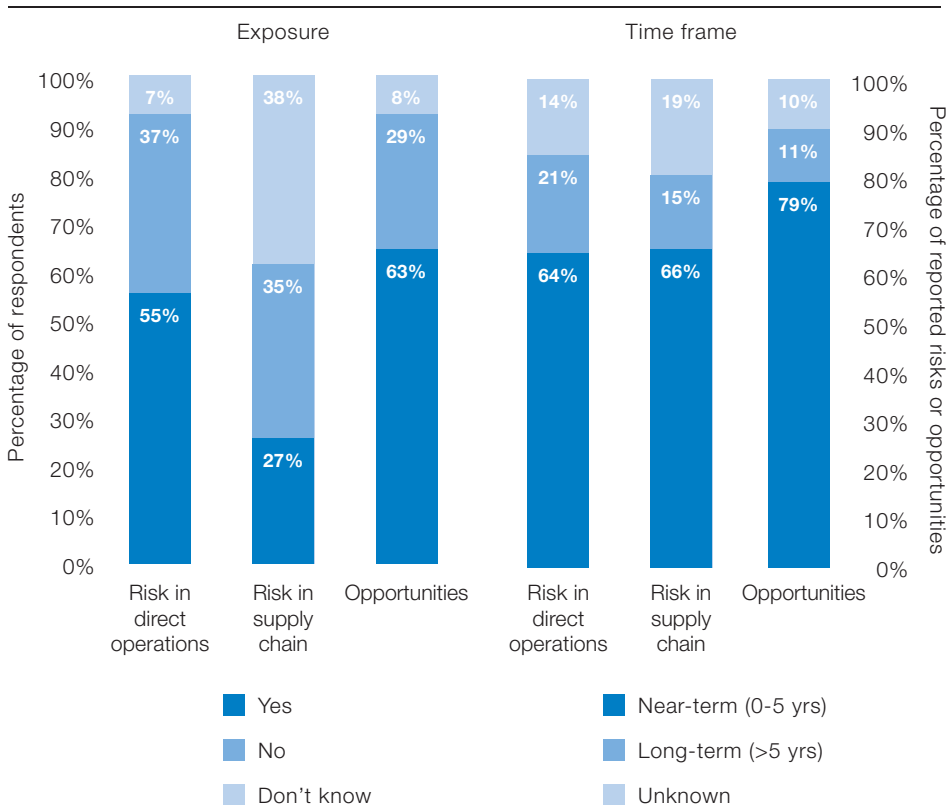
Water-related risk is especially apparent when considering that 38% (73) of responding companies have experienced water-related business impacts within the last five years.<sup>2</sup> As shown in Figure 4, a relatively high percentage of respondents experienced these impacts in the Materials (68%, 23), Utilities (53%, 8) and Energy (48%, 12) sectors. Disruption to operations from severe weather events (e.g. flooding) and water shortages are most frequently reported by respondents. **The Southern**

**Company** reported US\$200 million in costs associated with electricity required to compensate for reduced hydroelectricity production during drought. According to The Southern Company, the company has strengthened its resilience to drought through a diverse energy portfolio, storage ponds at key facilities and by working closely with government agencies to plan contingencies for drought conditions. A US\$2 million loss due to production curtailment from seasonal drought was reported by **Kimberly-Clark** at one of its facilities in Malaysia, where it has now installed effluent recycling and other technologies to ensure more secure water supplies in the future.

**Figure 2: Types of water-related risk reported in direct operations and supply chain<sup>1</sup>**



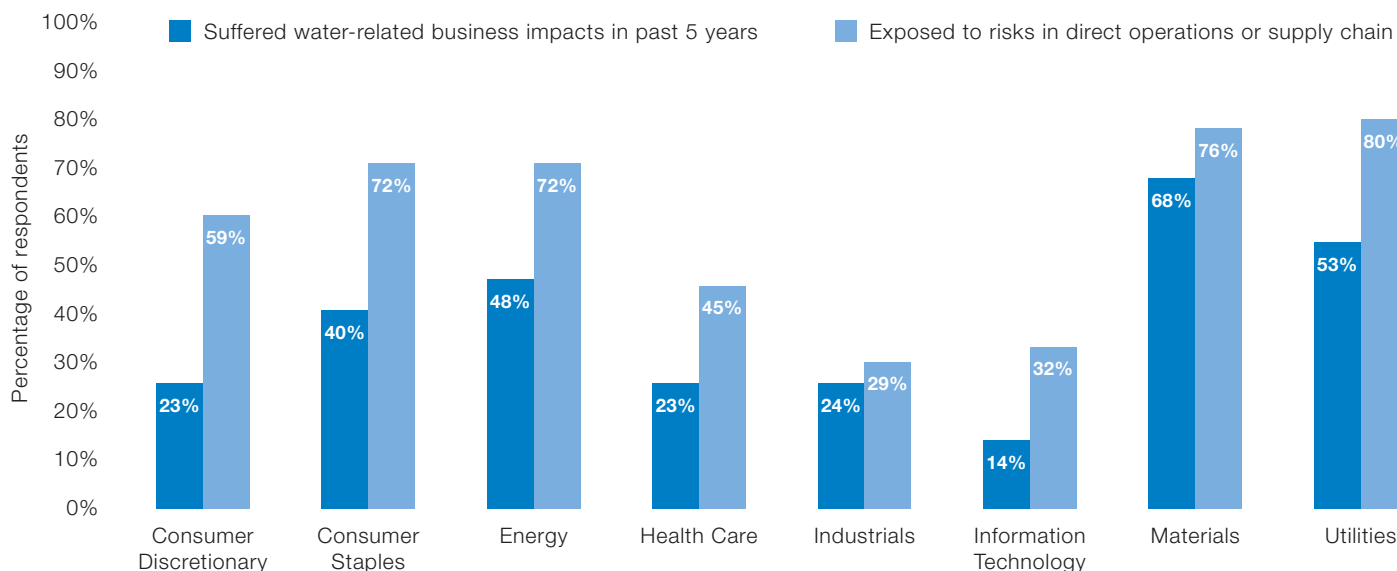
**Figure 3: Water-related risk and opportunity: reported exposure and time frame**



<sup>1</sup> Risks reported are the top four risks identified by companies in both direct operations and the supply chain.

<sup>2</sup> Some responses to this question were unclear. To calculate the number of companies experiencing detrimental impacts, individual responses were judged independently of company “yes” and “no” answers. See Appendix II for a description of the full report methodology.

Figure 4: Reported exposure to water-related business impacts and risks



**Awareness of risk in the supply chain is lower than awareness of risk in direct operations**

More companies report risk in direct operations (55%, 105) than in the supply chain (27%, 52) and companies' ability to identify risk in the supply chain is also lower: 38% (72) cannot state whether their supply chain is exposed to water-related risk, compared to only 7% (14) for direct operations. 41% (9) of respondents in the Consumer Discretionary sector cannot state whether their supply chain is exposed to water-related risk, despite the fact that it is dominated by companies in industries that are particularly exposed to supply chain risk such as retailers, hotels and resorts, and automobile manufacturers.

31% (58) of respondents are able to identify key water-intensive inputs (such as iron ore, sodium nitrate, sulfur, coal, natural gas, liquefied petroleum gas, jet fuel, electricity, corn for ethanol production, and

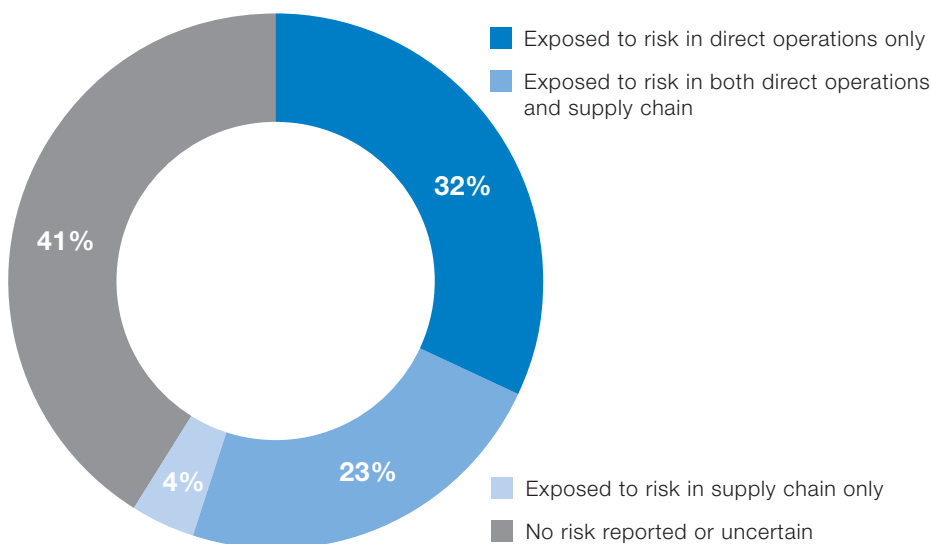
soy) sourced from regions subject to water-related risk. Of the 71 key water-intensive inputs identified by respondents, 18% are more than 50% sourced from these regions. Among sectors, Materials reports the largest percentage (56%) of key inputs that are primarily sourced from regions at risk.

Relatively few companies are managing risks in their supply chain compared to direct operations. 82% (156) of respondents report taking action to manage water resources in direct operations, while 41% (78) report taking action in supply chain and watershed management. Only 26% (50) of companies are actively monitoring water-related risks in their supply chain by requiring key suppliers to report water use, risks, and management plans. Building this level of supplier reporting into business practice is vital for companies that depend on their supply chains, since in many cases the largest proportion of a company's water use and associated risk can be in the supply chain. While 60%

(15) of respondents in the Consumer Staples sector, which includes food, beverage and tobacco industries, identified water-related risk in their supply chain, only 32% (8) of these companies require key suppliers to report water use, risks and management plans.

Those companies that identify risk in their supply chain can take practical steps to mitigate risk, as shown by certain companies. **H&M Hennes & Mauritz** is participating in the global Better Cotton Initiative to educate cotton farmers on better farming practices and thus promote resilience to drought in their supply chain. **PPR's** subsidiary Puma has set water use reduction targets that go beyond its operations to include its suppliers' water use as well.

**Figure 5: Reported exposure to water-related risk in direct operations and supply chain**



### Almost two thirds of companies have identified water-related opportunities, and most opportunities are near-term

Opportunities with the potential to generate a substantial change in revenue or business operation are reported by 63% (119) of respondents. Companies frequently report cost savings from increased water efficiency or from reductions of other inputs tied to water (e.g. energy, agricultural products). Many respondents report the potential to develop water-related products or services, and either avoid reputational risk or build brand value. 79% of opportunities are characterized as near-term (now or within five years), suggesting that water-related issues have immediate potential for creating value.

**Colgate Palmolive** reports an improved cleaning process at a manufacturing site in South Africa that saves 388,000 liters of water annually and allows the facility to

produce an additional two tons of product daily given reduced downtime. **Cisco Systems** worked with three of its printed circuit board assembly partners to implement a new soldering practice that rendered the water-intensive wash stage of the manufacturing process unnecessary. By 2010, this new practice had been implemented company-wide, saving Cisco Systems over US\$1 million each year with no adverse impact on product quality. **Procter & Gamble** re-launched a product this year that has helped strengthen brand presence. The PUR packet is a small packet that helps turn 10 liters of dirty water into clean, drinking water. Procter & Gamble's non-profit business model for the PUR packet has helped produce more than three billion liters of clean drinking water through global relief organizations including AmeriCares, CARE, International Federation of Red Cross and Red Crescent Societies, Population Services International, and World Vision.

“Water... is fast becoming one of the planet’s most stressed resources. Access to clean water has emerged as a critical issue affecting economic activity, development, and business around the world.”

### IBM

### Water-related issues receive less attention than climate change at the board level

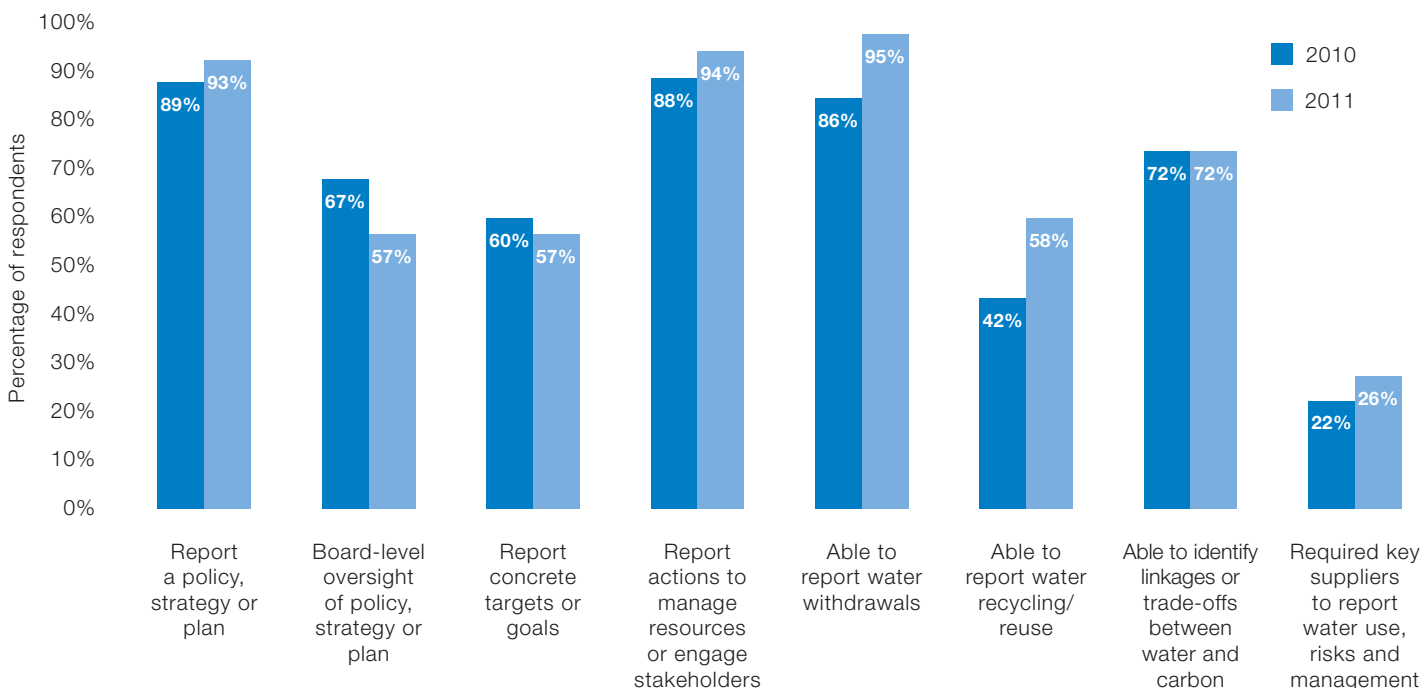
57% (109) of Global 500 respondents report board-level oversight of water-related policies, strategies or plans. In contrast, 94% (371) of Global 500 respondents to the Investor CDP information request report board-level oversight of climate change. Why water-related issues are given lower priority than climate change issues is unclear, especially as the majority of reported risks and opportunities are near-term. Despite the fact that a large number of companies report a policy, strategy or plan (93%, 176), water is often managed under general environmental or sustainability plans rather than under specific plans focused on water.

Measuring quantitative performance in addressing water related risks is integral to an effective water stewardship program and can indicate a more mature water governance structure. 81% (154) of respondents report having water-related targets and goals but only 57% (109) have set concrete, quantitative goals (compared to 60% in 2010).<sup>3</sup> Generally, quantitative targets/goals are focused on absolute reductions and water efficiency.

The percentage of respondents with board-level oversight of water-related plans has a strong correlation to the reporting maturity of respondents. 41% (24 of 59) of first time respondents have board-level oversight of water-related plans, compared to 65% (85 of 131) of previous respondents. Although

first time respondents are not necessarily new to addressing water risk, their responses can be perceived as less mature than those of previous respondents. First time respondents are also less able to identify operations in water-stressed regions, identify water-intensive inputs from these regions, and assess whether direct operations are at risk (Table 1). By providing a platform for peer comparison and a data set for long-term evaluation, disclosure is an important step for first time respondents and can help build awareness of water management internally.

Figure 6: Water management and governance



<sup>3</sup> To calculate the number of concrete targets and goals, individual responses were judged to exclude those with mention of qualitative goals or those without specific targets. See Appendix II for a description of the full report methodology.

## Molson Coors Brewing Company commentary

Peter Swinburn, President & CEO

This year's CDP Water Disclosure findings show nearly 60% of companies have water risk to their operations and most view it as a current or near-term risk. Water is a very real business and societal issue — one that challenges us globally but must be solved locally. With a global network of local breweries, our experience is in line with these findings. It is why water is a top priority in our corporate responsibility agenda.

Molson Coors has always believed that companies play a critical role in working with local water interests to ensure a sustainable watershed. Part of that responsibility is not only to provide transparent reporting ourselves but also promote disclosure by all water users. Transparency is one of six elements making up our global water strategy, a strategy managed by a cross-functional steering committee with oversight from executive leadership and our board of directors.

Transparent reporting has instilled in our company a discipline that benefits not only shareholders, but also our local communities. Our reporting commitments require that we have conversations around local water challenges that previously might not have been discussed. This candor and heightened awareness has extended to stakeholder forums in brewery watersheds across our markets. We are working to involve our supply chain through grower outreach in the UK and the US.

Without great water, we can't make great beer. And, water matters to the people who matter to us — our customers, consumers and communities. We look forward to continuing to work with CDP Water Disclosure and its reporting companies. It is only through sharing our challenges and best practices that companies can move towards a more secure water future.

## Norges Bank Investment Management (NBIM) commentary

Anne Kvam, Global Head of Ownership and manager of the Government Pension Fund Global

As a lead sponsor of CDP Water Disclosure, NBIM is pleased with the notable increase in companies that responded to this year's water disclosure questionnaire. The answers suggest that companies are placing more weight on water issues, which are both a risk and an opportunity for most of these businesses.

The results also suggest that company boards need to strengthen oversight of water issues. Another concern is the low awareness of water-related risks in their supply chains. In some sectors, risks are greater in the supply chain than in a company's direct operations.

As a long-term investor in about 8,000 companies worldwide, NBIM takes water management seriously. We expect companies to consider and report on the risks of increasingly scarce water supplies and water pollution. Failure to manage these risks may hurt their profits and, consequently, our investments.

The CDP Water Disclosure questionnaire provides critical information for managing water-related risks in our portfolio. We commend CDP Water Disclosure on its work and will continue to support this important initiative.

**Table 1: Trends among first time respondents**

Questionnaire Responses	First Time Respondents	Previous Respondents
Board-level oversight of water policy, strategy, or plan	41%	65%
Able to identify operations in water-stressed regions	78%	94%
Ability to identify key water-intensive inputs from regions with water-related risk	25%	33%
Exposed to risks in direct operations	Yes	54%
	No	40%
	Don't Know	5%

### Respondents' ability to provide water-related usage data has improved

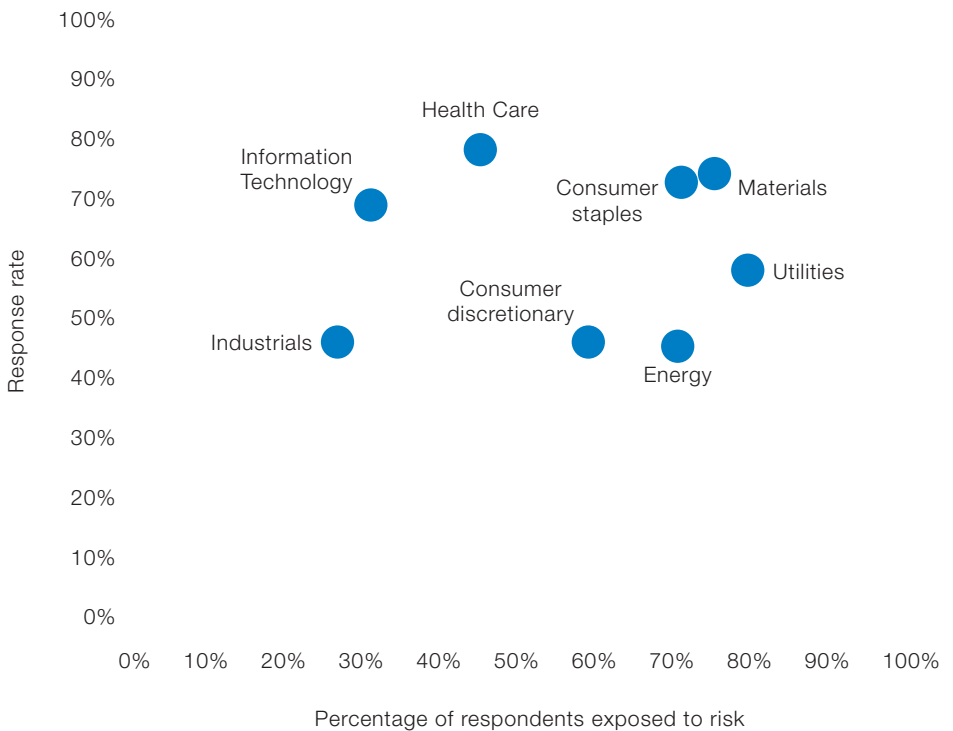
The proportion of companies able to report water withdrawals (95%, 181) has increased since 2010 (86%, 129), as has the ability to report water recycling/reuse data (58% or 111 compared to 42% or 63 in 2010). The ability to measure and report water data is essential for better management of water resources and demonstrates an increased awareness of water issues among respondents since 2010. 56% (106) of respondents verify the majority of water withdrawal data, while 34% (64) verify the majority of recycling/reuse data, suggesting a desire to rely on data accuracy in water management decisions and reporting. More companies also report action to manage water resources or engage stakeholders on water issues this year (94%, 179) compared to 2010 (88%, 132).

### Energy companies report high levels of risk and low levels of board-level oversight

The Energy sector has the lowest response rate (47%, 25 respondents) of all sectors and the lowest number of respondents that report board-level oversight of water-related policies, strategies or plans (36%, 9). Energy is also the only sector to have respondents report that no one has responsibility for water policies (8%, 2). A low level of board oversight is surprising since 72% (18) of Energy respondents report exposure to water-related risk compared to an average of 59% (113) across all respondents. Detrimental water-related impacts have also affected a greater proportion of respondents in this sector (48%, 12) compared to the Global 500 (38%, 73).

The Consumer Staples and Materials sectors also report high levels of risk, but these sectors have high response rates to the CDP Water Disclosure

**Figure 7: Reported exposure to water-related risk and response rate by sector**



information request (Figure 7) and have a higher percentage of respondents with board-level oversight of water policies, strategies or plans. Reported board level oversight in the Materials sector is the highest among all sectors (76%, 26).

The Health Care sector, despite reporting lower levels of risk exposure than the Global 500, has the highest response rate of all sectors (79%, 23).

The Materials, Utilities and Energy sectors report highest exposure to near-term risks in direct operations while the Consumer Staples, Consumer Discretionary and Materials sectors report the highest exposure in the supply chain (Figure 8).

### The relationship between water and carbon is widely understood

72% (137) of companies in the Global 500 are able to identify linkages or trade-offs between water use and carbon emissions. These companies understand that water conservation typically saves energy and carbon emissions given that electricity is required for treating, heating/cooling, and transporting water. **Woolworths Limited**, for example, invested in refrigeration and air conditioning systems at two distribution centers that utilize rainwater harvesting, saving both energy and water (16.4 million liters) in 2010.

Many respondents also acknowledge the trade-offs between water use and carbon emissions. Some projects to mitigate water scarcity may result in higher energy use while some energy

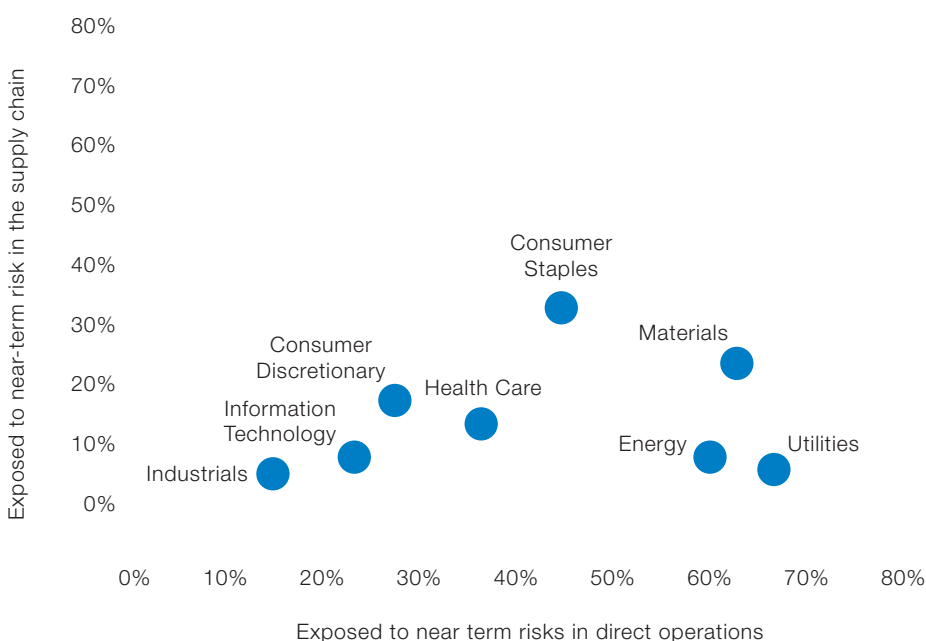
efficiency projects may result in higher water use (e.g. desalination provides additional water supply, but is also energy-intensive). **Nestlé**, for example, is aware of the increased water requirements of biofuels made from crops such as maize and wheat and therefore advocates against the use of these crops for fuel.

Leading practice strategies used by respondents to manage the linkages and trade-offs between water and energy include:

- Systems to track and reduce the environmental impacts and costs of new programs and products across the entire lifecycle,
- Evaluating the interdependence of various inputs and the opportunities for savings in multiple areas,
- Developing policies and programs which govern products and operations,
- Climate protection measures to counter water scarcity problems, and
- Engaging with key stakeholders (e.g. NGOs, suppliers, employees, and customers) to promote water and energy conservation and improve efficiency.

**Johnson Controls** has developed a combined heat and power plant in Baltimore, Maryland (US) that uses the remainders of treated wastewater as fuel and results in many benefits for the company and the local community. The plant will generate 2.4 megawatts of electricity annually, provide steam to offset process heating requirements, and produce hot water for boilers. The digester gas cogeneration facility at the site will also reduce emissions and the city's energy bill by US\$1.4 million each year while increasing energy security as gas is piped directly to its end use and provides a hedge against fluctuations in fuel and electricity prices.

**Figure 8: Reported exposure to near-term risk in direct operations and supply chain by sector**



## Irbaris LLP commentary

David Hampton, Managing Partner

Having been involved with CDP Water Disclosure since its inception, we are pleased to see this year's higher response rate which demonstrates the increasing recognition of water as an issue, as well as the importance of disclosure. The responses, however, show there is still much to be done to respond to the challenges and opportunities related to water.

The complex and location-specific nature of water issues for business can be an obstacle to addressing associated risks. Good risk assessment tools have been developed and much good work is being done to measure and communicate water risks. However, too many companies are caught up in the measurement process for their own sites rather than taking proactive steps to understand their exposure across their broader business system.

The lack of board-level engagement on water issues in many companies is also telling. Given the potential for water to have a critical impact on multiple aspects of a business, water needs to be managed at a strategic, corporate level. The recently published Ceres Aqua Gauge provides a tool to help investors assess, and companies develop, best practice in managing water risk across a business.

CDP has done an excellent job of catalysing awareness of the business importance of water issues with major companies and with investors and we wish CDP continuing success. Our hope is that the next few years of disclosure will see a rise in the number of companies taking proactive steps to manage the issues, rather than simply measuring the problem.

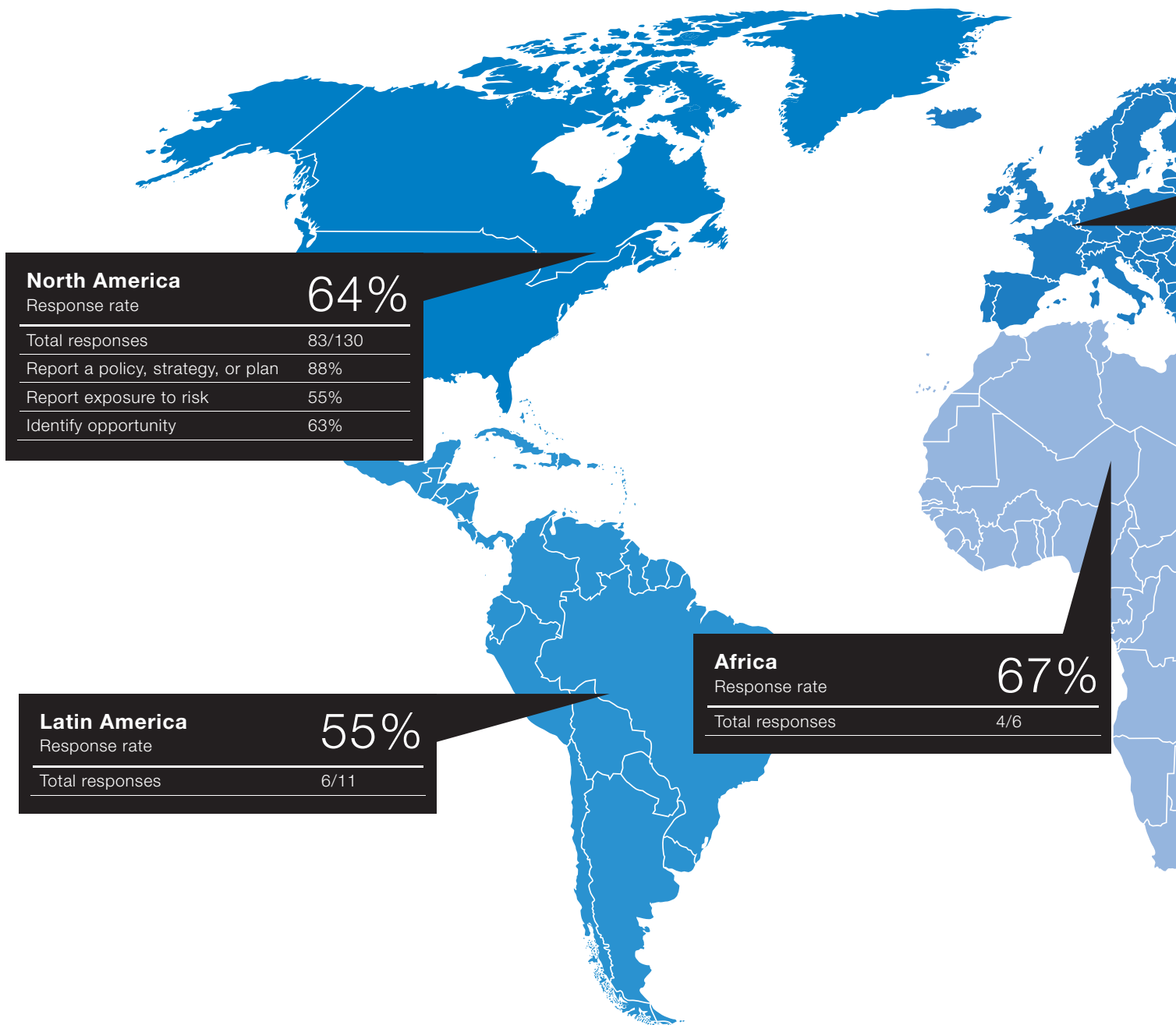
# Geographic Overview

**Water disclosure is expanding globally, with European companies showing the highest response rates**

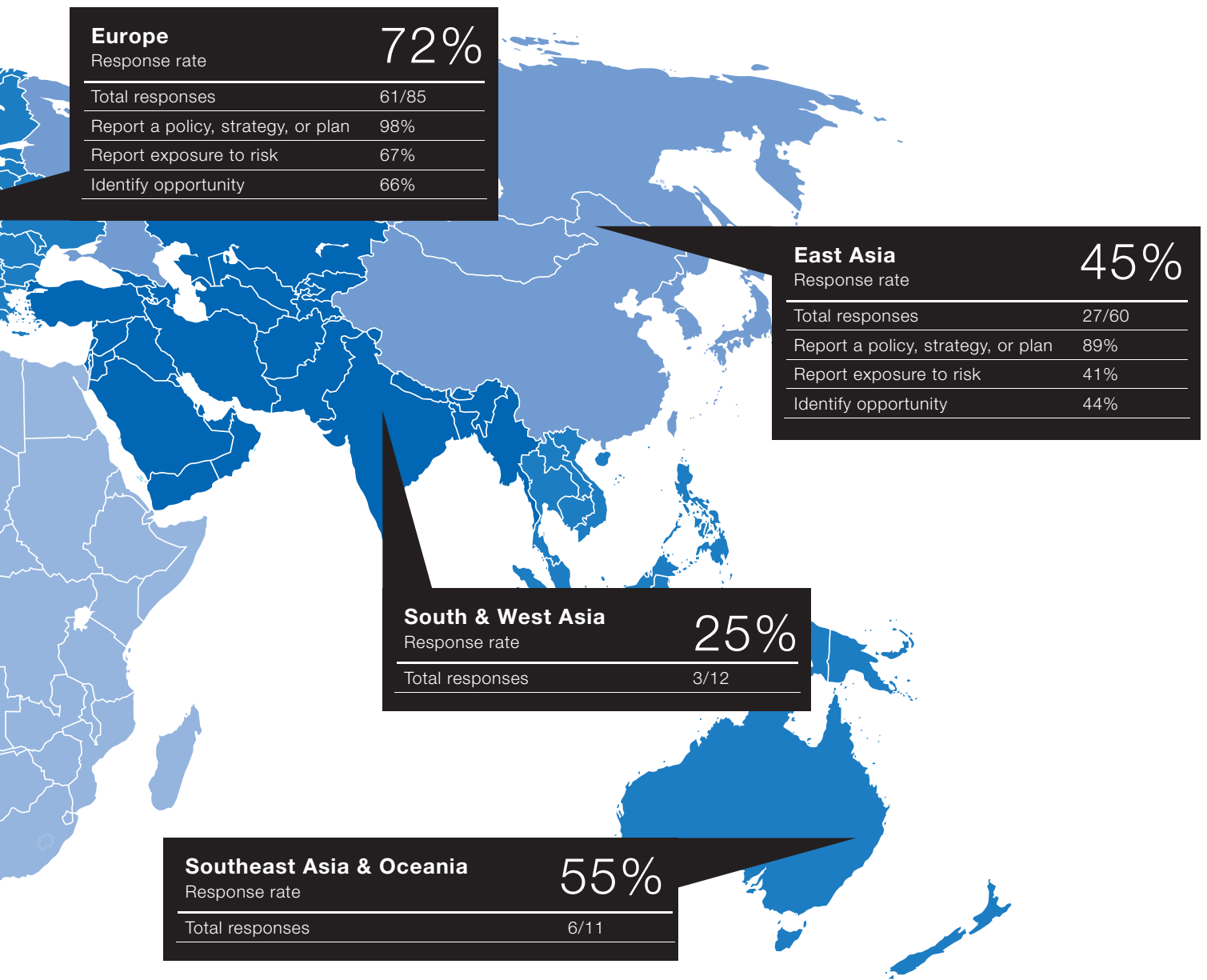
Companies from a greater number of countries reported in 2011, with responses received from 29 of 35 countries, compared to 25 of 34 countries in 2010. Based on the location of company headquarters, regions with the most respondents include North America (83),

Europe (61), and East Asia (27) (Figure 9). The countries with the most respondents are the United States (73), Japan (17), the United Kingdom (15), and France (13) (Table 2).

**Figure 9: Key metrics by geographical region** <sup>1 2</sup>







1 Regions include North America (Canada, USA), Latin America (Bermuda, Brazil, Chile, Colombia, Mexico, Peru), Europe (Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom), Africa (South Africa, Zimbabwe), East Asia (Greater China, Japan, Russia, South Korea), South and West Asia (India, Israel), and Southeast Asia and Oceania (Australia, Indonesia, Malaysia, Singapore, Thailand).

2 Key metrics are excluded for regions with fewer than 10 respondents, except for number of responses and response rate.

Europe has the highest regional response rate (72%, 61 of 85), and Germany is the only country with more than 10 companies where all invited companies responded. A more stringent regulatory landscape in Europe may contribute to a greater degree of engagement on water.

The response rates from India (20%, 2 of 10) and Greater China (29%, 5 of 17) are low, suggesting that companies from these emerging economies are generally less engaged despite significant regional water-related issues.<sup>3</sup>

European companies have the highest response rates and awareness of risks and opportunities. 98% (60) of European respondents have a water policy, strategy, or plan in place, and 93% (57) are able to identify operations in water-stressed regions, which indicates a greater business awareness of water-related issues than other regions. European (66%, 40) and North American (63%, 52) respondents are also more likely to identify opportunities than East Asian respondents (44%, 12).

On a country level, respondents from the United Kingdom and Germany report high levels of exposure to water-related risks in their direct operations or supply chain (73%, 11, in the United Kingdom; 75%, 6, in Germany), and the same percentage of respondents also identify water-related opportunities. They are correspondingly highly engaged, with 100% (15) of United Kingdom respondents and 88% (7) of Germany respondents reporting a water policy, strategy, or management plan, and 60% (9) and 63% (5), respectively, reporting concrete, quantitative targets or goals.

**Table 2: Response summary for countries with 10 or more respondents**

Responses	North America		Europe			East Asia
	Canada	United States	France	Germany <sup>4</sup>	United Kingdom	Japan
Public and non-public responses	10	73	13	11	15	17
Response rate	71%	63%	76%	100%	75%	61%
Water policy, strategy or plan in place	80%	89%	100%	88%	100%	88%
Concrete targets or goals in place	20%	60%	54%	63%	60%	47%
Able to identify operations in water-stressed regions	100%	85%	85%	100%	100%	82%
Exposed to risks in direct operations	80%	45%	62%	75%	73%	35%
Exposed to risks in supply chain	20%	21%	31%	50%	40%	18%
Exposed to risks in direct operations or supply chain	80%	52%	62%	75%	73%	35%
Identifying opportunity	70%	62%	54%	75%	73%	41%

<sup>3</sup> Greater China includes China, Hong Kong, and Taiwan.

<sup>4</sup> To preserve anonymity, three non-public responses from Germany are excluded from percentages, except for number of responses and response rate

## Water management across geographical regions

### North America

#### **EMC: identifying water-related opportunities.**

In its owned and operated facilities, EMC looks at energy, water and carbon emissions holistically. By driving efficiencies in its products and in its data center operations, EMC aims to reduce both electricity and water. Application of free air cooling technology in EMC's data centers and labs has allowed the company to reduce both power and water consumption. EMC has a plan to conduct a corporate water footprint analysis to understand quantitatively the linkages and trade-offs between water and carbon emissions, and to pursue strategies to minimize the company's overall impact on the environment.

### Europe

#### **Danone: building water management into site selection and operation.**

At Danone, choosing a new production site is subject to an assessment of the sustainability of water resources. Danone's assessment includes examination of water availability for quantitative/qualitative aspects; tap water access in quantity and quality; governmental programs for provision and development of sanitation; the local regulatory framework; the extent of water stress; and community and public relations issues related to water access. Continuous monitoring and free drinking water access for locals are part of continuous site operation policies. Other Danone divisions have begun mapping local water stress, a process that should be completed by 2012.

### East Asia

#### **Sony: groundwater recharge.**

Since 2003, Sony Semiconductor Kyushu Corporation Kumamoto Technology Center (Kumamoto TEC) has been working with the local community, environmental NGOs, farmers, and agricultural cooperatives to improve groundwater recharge, where water penetrates into the soil and ultimately returns to the aquifer. In fiscal year 2010, Kumamoto TEC recharged more than 2.04 million cubic meters of water, which is more than its annual consumption of water.

### Southeast Asia & Oceania

#### **Woolworths Limited and rainwater harvesting.**

Woolworths Limited implemented rainwater harvesting at two distribution centers that use water based cooling towers, saving 16.4 million liters of water in 2010. Suitability of cooling systems is assessed and designed to meet climatic regions where they will be most effective. Extensive work and investment has occurred in refrigeration and air conditioning, maximizing energy efficiency and low carbon technology and reducing any carbon cost of not using water-based systems. These investments have reduced carbon emissions by 500,000 metric tons in addition to water savings.

### Latin America

#### **VALE: water efficiency and recycling/reuse.**

VALE has intensified its efforts to increase process efficiency and to reuse water. As a result, in 2010, the water reuse and recirculation rate throughout VALE's operations

was approximately 79% of the water volume used in the processes. In 2010, VALE carried out water efficiency surveys in five areas which represent approximately 40% of the total water withdrawal volume in Brazil, and these studies will be extended to other units in 2011. The studies have identified process improvement opportunities to increase water efficiency.

### Africa

#### **Anglo Platinum: reducing water withdrawals and engaging communities.**

Anglo Platinum's water strategy aims to have "zero-potable water" use in their process operations (excluding domestic use demand). Through various initiatives including site process water recycling and recycling of sewage water from nearby communities, the company's potable water usage decreased by 12% in 2010 from 2008 levels. Anglo Platinum has also invested in upgrading municipal wastewater treatment facilities and supplying drinking water to certain schools and neighboring communities.

### South & West Asia

#### **ITC: protecting soil moisture in India.**

ITC participates in a soil and moisture conservation program by investing in water harvesting systems, efficient irrigation practices, agricultural science research, and by strengthening institutional structures and local watershed management groups. The program provides soil and soil moisture conservation to nearly 65,000 hectares in some of India's moisture-stressed areas.

# Australia 100 and South Africa 100 Overview

## Water management in Australia

Water is one of the most vulnerable resources in Australia. Over-allocation of water resources has been compounded by unpredictability in rainfall and a population growth of 1.7% per year.<sup>1</sup> In some river catchments, increasing urban and rural water demand has already exceeded sustainable levels of supply.

The country is particularly susceptible to climate change and long-term drought. Based on annual renewable water supply per person (1995) at the watershed level, significant portions of Australia are already experiencing extreme water scarcity, a situation

in which disruptive water shortages can frequently occur.<sup>2</sup> Based on projections for 2025, this level of extreme water scarcity is expected to intensify.

In response to the challenges of climate change and water availability, the Australian government developed Water for the Future, a long-term initiative built on four key priorities: taking action on climate change, using water wisely, securing water supplies, and supporting healthy rivers.<sup>3</sup> Strategic programs to address these priorities include improved water management arrangements, and a renewed commitment to deliver a range of water policy reforms in both rural and urban areas.

“Water is a critical component of the fibre cement manufacturing process and all of our plants recognize the importance of water conservation.”

**James Hardie Industries**

# 41%

Australia 100 Response rate: (22/54)

### Sectors within Australia 100:

**Consumer Discretionary:** 1 of 7; **Consumer Staples:** 3 of 5; **Energy:** 2 of 8; **Financials:** 3 of 5; **Health Care:** 1 of 1; **Industrials:** 0 of 4; **Information Technology:** 0 of 1; **Materials:** 12 of 19; **Utilities:** 0 of 4

### Responding industries:

**Beverages:** 1 of 2; **Biotechnology:** 1 of 1; **Chemicals:** 1 of 2; **Construction Materials:** 2 of 2; **Containers & Packaging:** 1 of 1; **Energy Equipment & Services:** 1 of 1; **Food & Staples Retailing:** 2 of 2; **Insurance:** 1 of 1; **Metals & Mining:** 8 of 14; **Oil, Gas & Consumable Fuels:** 1 of 7; **Real Estate Investment Trusts (REITs):** 2 of 3; **Textiles, Apparel & Luxury Goods:** 1 of 1

1 Intergovernmental Panel on Climate Change (IPCC), “IPCC Technical Paper VI: Climate Change and Water.” June 2008. (<http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf>)

2 World Business Council for Sustainable Development, “Global Water Tool 2011.” Version 2011.01. (<http://www.wbcsd.org/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=MTc1Mg&doOpen=1&ClickMenu=LeftMenu>)

3 Australian Government, Department of Sustainability, Environment, Water, Population, and Communities, “Water for the Future.” October 18, 2011. (<http://www.environment.gov.au/water/australia/index.html>)

4 Food and Agriculture Organization (FAO) of the United Nations, “AquaStat: Global Information System on Water and Agriculture.” 2011. (<http://www.fao.org/nr/water/aquastat/main/index.stm>)

## Water management in South Africa

South Africa's available freshwater resources are almost fully utilized and as a result, under stress. At current population growth and economic development projections, it is unlikely that the growth in demand for water resources will be sustainable. Water supply has the potential to become a major restriction to the future economic development of the country, in terms of both the amount and quality of water available. Provisional estimates are that South Africa will run out of surplus usable water by 2025 or soon thereafter.<sup>4</sup>

Globally, South Africa is ranked among the 20 most water scarce countries in the world.<sup>5</sup> The country receives average annual precipitation

of 495 millimeters per year, compared to the global average of 860 millimeters per year.<sup>6,7</sup> Based on annual renewable water supply per person (1995) at the watershed level, most of South Africa is already experiencing water stress, and some areas are experiencing extreme water scarcity; these levels are expected to intensify based on projections for 2025.<sup>8</sup>

South Africa's approach to addressing water issues is one of integrated water resource management. A key principle of this approach is the need to balance protection of water resources with social and economic development, and the country's only guaranteed entitlements to water are for ecological preservation and to meet basic human needs.<sup>9</sup>

“Tongaat Hulett is committed to a philosophy of sustainable development and thus considers the management of the quantity, quality and reliability of waters resources as mandatory to achieve optimum, long-standing, environmentally sustainable, social and economic advantage for society.”

**Tongaat Hulett**

46%

South Africa 100 Response rate: (26/56)

### Sectors within South Africa 100:

**Consumer Discretionary:** 1 of 9; **Consumer Staples:** 6 of 13; **Energy:** 1 of 1; **Health Care:** 3 of 5; **Industrials:** 4 of 8; **Materials:** 11 of 20

### Responding industries:

**Beverages:** 1 of 2; **Chemicals:** 1 of 1; **Construction & Engineering:** 1 of 3; **Electrical Equipment:** 1 of 1; **Food & Staples Retailing:** 3 of 6; **Food Products:** 1 of 3; **Health Care Providers & Services:** 2 of 3; **Machinery:** 1 of 1; **Metals & Mining:** 9 of 15; **Oil, Gas & Consumable Fuels:** 1 of 1; **Paper & Forest Products:** 1 of 2; **Pharmaceuticals:** 1 of 2; **Textiles, Apparel & Luxury Goods:** 1 of 2; **Tobacco:** 1 of 1; **Trading Companies & Distributors:** 1 of 2

5 Department of Environmental Affairs, Republic of South Africa, “Environmental Sustainability Indicators: Technical Report 2009.” ([http://soer.deat.gov.za/State\\_of\\_the\\_Environment.html](http://soer.deat.gov.za/State_of_the_Environment.html))

6 Food and Agriculture Organization (FAO) of the United Nations, “Aquastat: Global Information System on Water and Agriculture.” 2011. (<http://www.fao.org/nr/water/aquastat/main/index.stm>)

7 Department of Environmental Affairs, Republic of South Africa, “Environmental Sustainability Indicators: Technical Report 2009.” ([http://soer.deat.gov.za/State\\_of\\_the\\_Environment.html](http://soer.deat.gov.za/State_of_the_Environment.html))

8 World Business Council for Sustainable Development, “Global Water Tool 2011.” Version 2011.01. (<http://www.wbcsd.org/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=MTc1Mg&doOpen=1&ClickMenu=LeftMenu>)

9 Food and Agriculture Organization (FAO) of the United Nations, “Aquastat: Global Information System on Water and Agriculture.” 2011. (<http://www.fao.org/nr/water/aquastat/main/index.stm>)

**The Australia 100 and South Africa 100 have lower response rates and higher levels of reported risk than the Global 500**

Despite the acuteness of water stress in Australia and South Africa, companies listed in the two countries have lower response rates than the Global 500. 54 of the largest 100 companies listed in the Australian Securities Exchange (ASX) and 56 of the largest 100 companies listed in the Johannesburg Stock Exchange (JSE) were invited to respond to the CDP Water Disclosure information request because they were considered to be in water-intensive sectors or sectors that are sensitive to water issues in the supply chain. Of the invited companies, 41% (22) responded from the Australia 100 and 46% (26) responded from the South Africa 100. This was the first

year that the CDP Water Disclosure information request was sent to companies listed on the ASX and JSE indices, which meant that many companies responded to the CDP Water Disclosure questionnaire for the first time: 17 of 22 respondents in the Australia 100 and 15 of 26 respondents in the South Africa 100 were first time respondents in 2011.

Water issues should be high on the agenda for Australian and South African companies given that 50% of respondents (11) in the Australia 100 and 58% of respondents (15) in the South Africa 100 have experienced detrimental water-related business impacts in the past five years, compared to 38% (73) in the Global 500. Business impacts reported by companies in the Australia 100 are caused by flooding (property damage and reduced production) and water scarcity due to drought (limited raw material inputs and reduced

production). Business impacts reported by the South Africa 100 are caused by flooding, water scarcity, declining water quality, increased water prices, and non-compliance with discharge limits.

More respondents in the Australia 100 and South Africa 100 identify exposure to risks in both direct operations and the supply chain than the Global 500, as shown in Figure 10. Respondents from the South Africa 100 report high exposure to risks in direct operations (85%, 22), compared to 59% (13) in the Australia 100 and 55% (105) in the Global 500. Water scarcity is clearly a major driver of risk for these companies: 36% of respondents (8) in the Australia 100 and 46% of respondents (12) in the South Africa 100 indicate that the majority (greater than 50%) of operations are located in regions at risk, compared to only 11% (21) in the Global 500.

**Figure 10: Ability to identify water-related risk and opportunity**

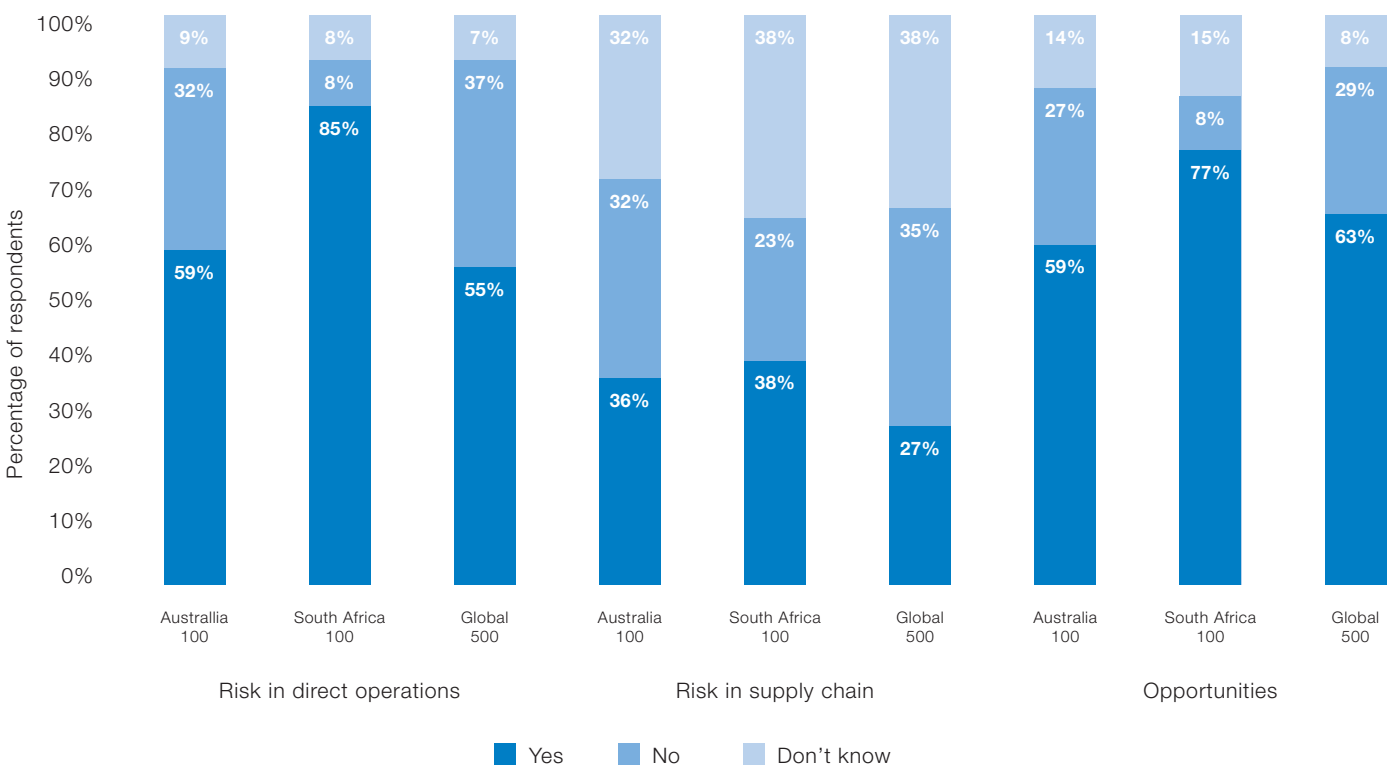
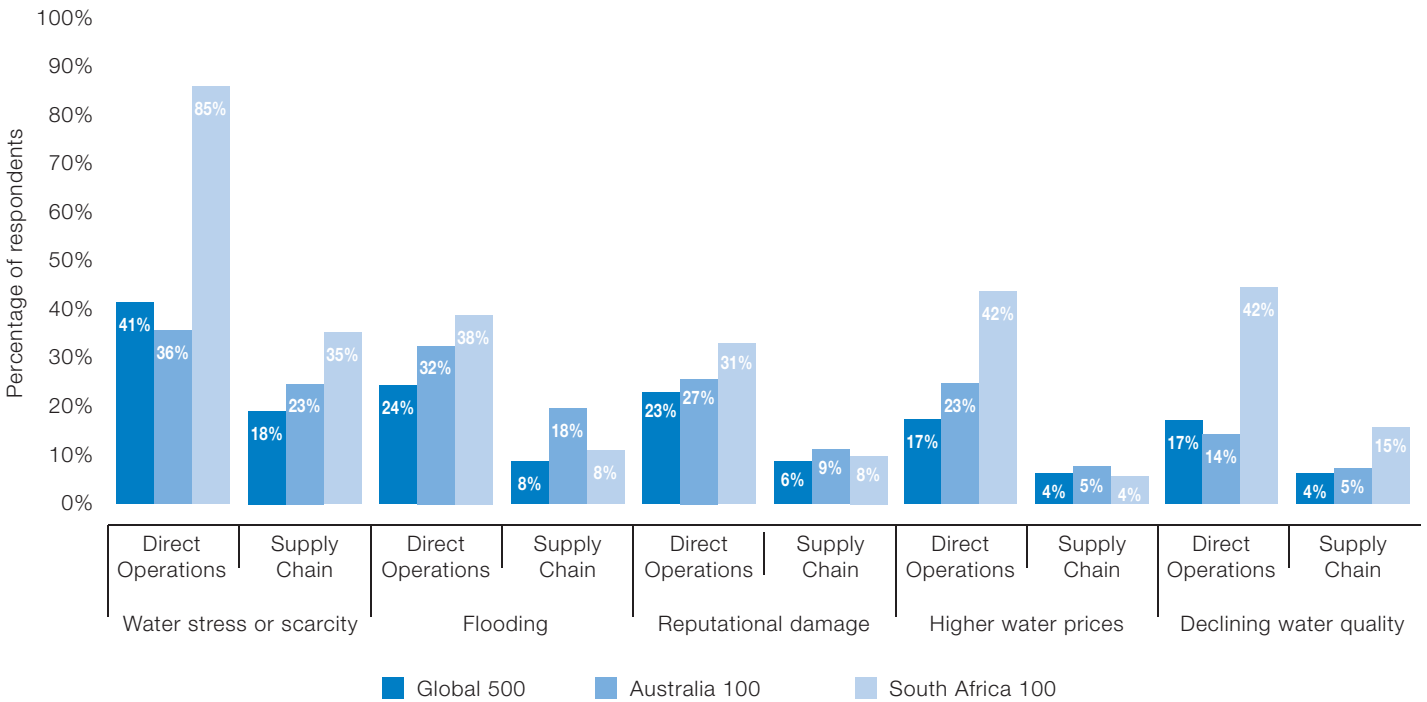


Figure 11: Types of water-related risk reported in direct operations and supply chain



Types of risk reported among respondents in direct operations and the supply chain include increased water stress or scarcity, flooding, declining water quality, higher water prices, and reputational damage (Figure 11). In addition, a large percentage of risks reported in direct operations are near-term (75% in the Australia 100 and 67% in the South Africa 100 compared to 64% in the Global 500), highlighting the immediacy of water as an issue in these regions.

The majority of respondents in the Australia 100 (59%, 13) and South Africa 100 (77%, 20) identify business opportunity from water issues (compared to 63%, 119, in the Global 500), and these opportunities are often reported to have near-term business impacts. The most frequently reported opportunities include efficiency gains and improvements in brand value.

“Our activities are often located in remote, arid environments, with limited access to high-quality water. In recognition that water is a critical input for our mining, smelting, refining and petroleum businesses, we continue to identify opportunities for water reuse or recycling, efficient use and responsible waste water disposal. Working with our communities is important to better understanding and addressing common water needs.”

### BHP Billiton

#### Many companies are moving toward better addressing water-related issues

Fewer companies in both the Australia 100 (86%, 19) and South Africa 100 (69%, 18) report having a water policy, strategy, or plan than the Global 500 (93%, 176) (Figure 12). Areas of focus within these plans include measuring and reporting water use, minimizing water use and wastewater discharge, increasing water recycling/reuse, and protecting biodiversity. Only 42% of respondents (11) in the South Africa 100 and 50% of respondents (11) in the Australia 100 set concrete, quantitative goals, compared to 57% (109) in the Global 500.

Most respondents in the Australia 100 (82%, 18) and South Africa 100 (85%, 22) are reporting actions to manage water resources in their direct operations. However, fewer companies are managing water issues in their supply chains, with only 32% of respondents (7) in the Australia 100 and 42% of respondents (11) in the South Africa 100 taking action in supply chain and watershed management. Whereas 26% of respondents (50) in the Global 500

report that they require key suppliers to report water use, risks, and management plans, only 14% of respondents (3) in the Australia 100 and 19% (5) in the South Africa 100 require this information from their suppliers.

The ability to report water withdrawals and water recycling/reuse data is similar in both regions to the Global 500, although more respondents in the South Africa 100 and fewer respondents in the Australia 100 have had the majority of this data verified compared to the Global 500. The ability of respondents to report water accounting data at the same level as companies in the Global 500 suggests that Australian and South African companies are taking some steps to address water-related risks.

#### Awareness of the relationship between water and carbon is less than among companies in the Global 500

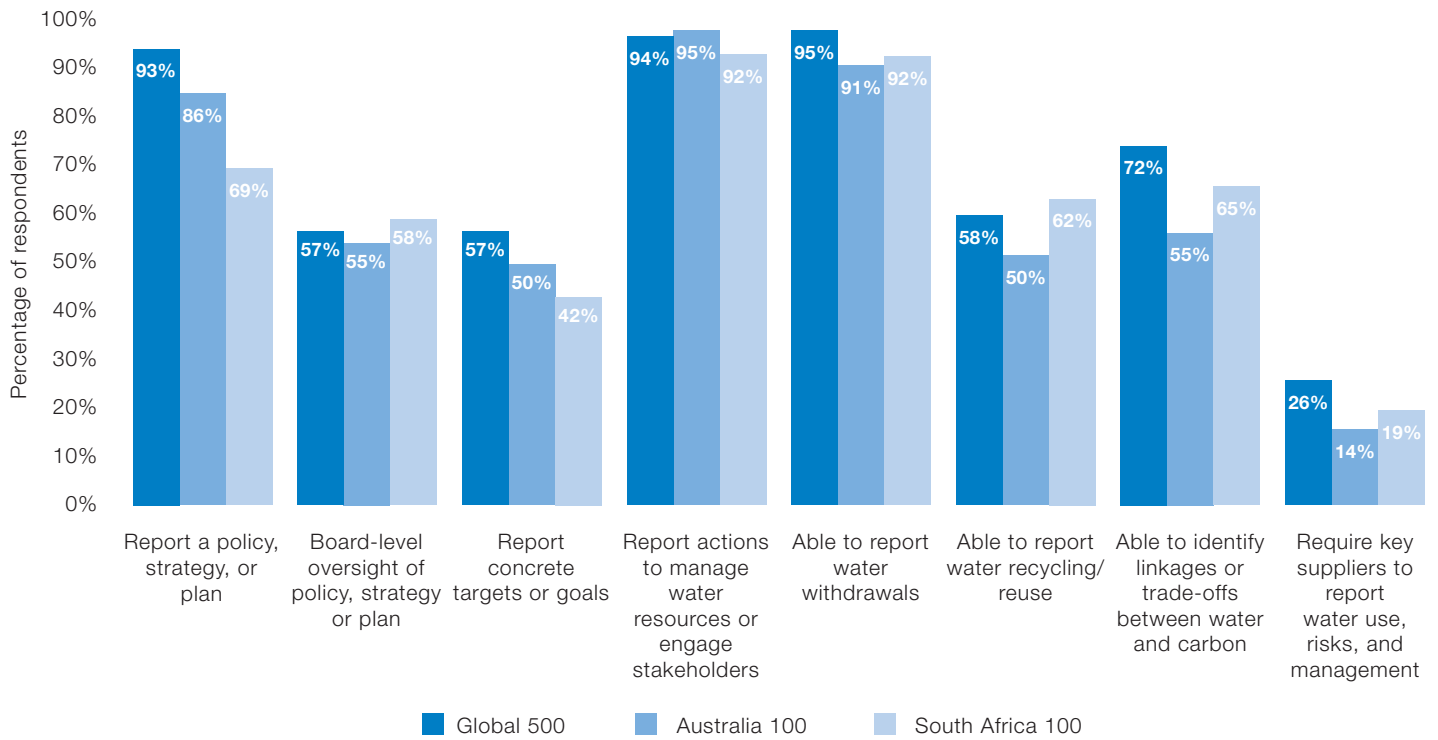
Respondents in the Australia 100 and South Africa 100 report less awareness of the interconnections between water use and carbon emissions: 55% of respondents (12) in the Australia 100 and 65% of respondents (17) in the South Africa 100 are able to identify linkages or trade-offs between water and carbon, compared to 72% (137) in the Global 500.

#### GPT Group: investing in water efficiency

Since 2005, GPT Group has saved 3.9 million kilolitres of water by taking action such as working with tenants to reduce their water use, installing water efficient appliances, using recycled water, harvesting rainwater, implementing black-water recycling plants, and planting to suit the local environment. GPT Group saved 1.1 million kilolitres in 2010, which not only provided environmental benefit but also resulted in avoided costs of US\$3.8 million.



Figure 12: Water management and governance



**Woolworths Holdings Limited: working with suppliers and collaboration with NGOs**

As part of their water strategy, Woolworths Holdings Limited has committed to reducing relative water consumption by 30% by 2012, working with suppliers to reduce water use and improve wastewater management, and researching and understanding the water footprint of selected priority products. Woolworths is the first retailer to have joined the World Wide Fund for Nature’s (WWF) Water Neutral Scheme, and has entered into a 20-year commitment to become water neutral by eliminating invasive water-thirsty alien plants on supplier farms and in protected areas, such as the Tankwa Karoo National Park.

# Consumer Discretionary

# 48%

Response rate: (22/46)

### Industries within sector:

**Auto Components:** 2 of 5; **Automobiles:** 6 of 11; **Hotels, Restaurants & Leisure:** 3 of 5; **Household Durables:** 2 of 4; **Internet & Catalog Retail:** 1 of 3; **Media** 0 of 1; **Multiline Retail:** 3 of 4; **Specialty Retail:** 3 of 8; **Textiles, Apparel & Luxury Goods:** 2 of 5

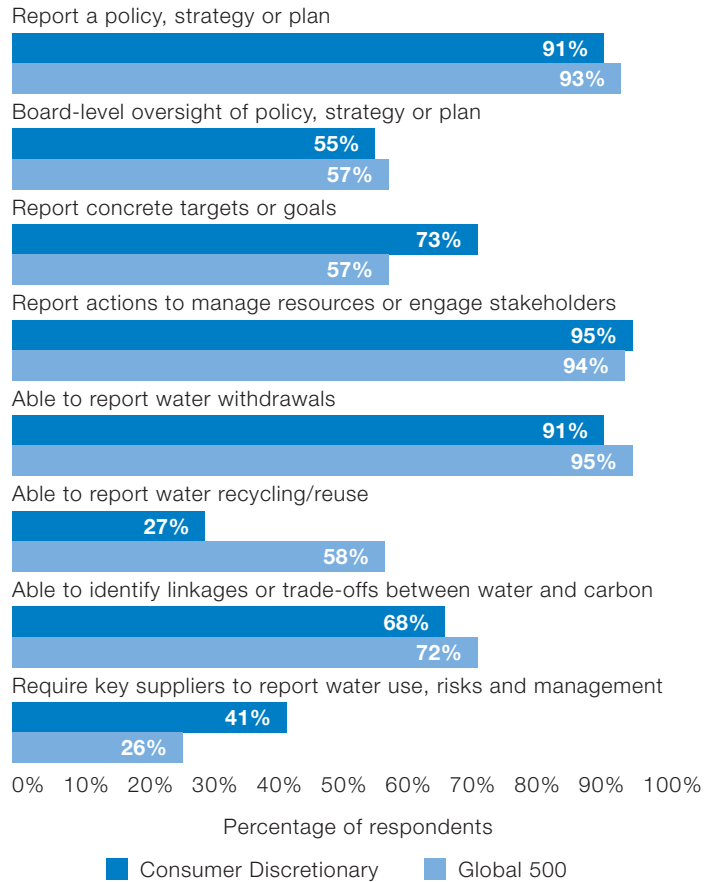
## Key findings

1. **Reported exposure to supply chain risk is greater in the Consumer Discretionary sector than in other sectors; however, levels of engagement to address this risk are also greater.**
2. **While the sector has the lowest percentage of respondents that identify opportunities, the opportunity to improve brand value through proactive water stewardship is often reported.**

## Leading practices

- A high percentage of respondents have set water-related targets and goals (82%), while 73% have set concrete, quantitative targets/goals. This compares to 81% and 57% in the Global 500.
- The sector is active in engaging stakeholders. 36% of respondents report engaging local communities on water-related issues; these interactions are often focused on supporting access to drinking water and sanitation facilities in areas lacking these resources.
- 41% of respondents request water-related information from suppliers, compared to only 26% on average among the Global 500.

## Water management and governance



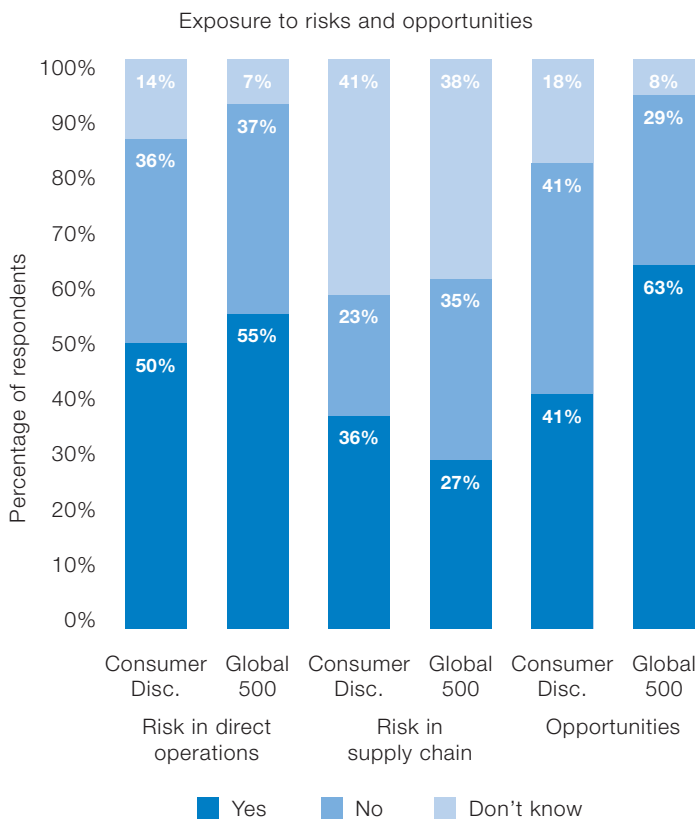
“We are engaging our suppliers and working with NGOs such as the NRDC [Responsible Sourcing Initiative] to help improve environmental practices in fabric mills; from developing environmental management systems to using less energy and water, reducing chemical usage and identifying potential opportunities for increased water conservation and recycling.”

### Gap

## Leading practice examples

Company	Leading Practice	Example
H&M Hennes & Mauritz	Water accounting and supplier engagement	Monitors water efficiency among its suppliers; in 2010, the company collected data from 326 manufacturing sites
PPR	Goal setting and supplier engagement	Subsidiary Puma set target of reducing water use by 25% between 2010 and 2015 in both its own operations and those of its strategic manufacturing partners and has launched its environmental reporting tool at 70 sites to help partners monitor water consumption
Starwood Hotels & Resorts Worldwide	Stakeholder engagement	Encouraged awareness-building among employees to identify site-level improvement opportunities and locally relevant water-related issues

## Water-related risks and opportunities in direct operations and the supply chain



“99.9% of [water consumption from Puma operations and across our global supply chain] was from our supply chain, of which 89% was consumed in either Tier 3 or 4. This information will be used to highlight the importance of action deeper down the supply chain.”

### Puma

## Responding to risk

- 86% of Consumer Discretionary respondents are able to identify whether they are exposed to risks in direct operations (compared to 93% in the Global 500), and only 68% of respondents can identify which operations are located in regions at risk. This suggests that management of water-related risks in direct operations is a lower priority in this sector.
- The percentage of Consumer Discretionary respondents that report exposure to risk in the supply chain (36%) is greater than in the Global 500 (27%), but steps to manage these risks are also greater; 41% of the sector requires their suppliers to report water-related information, compared to only 26% of the Global 500.
- Frequently reported risks include water stress or scarcity, declining water quality, and reputational damage. **Hyundai Mobis** reports potential reductions in productivity due to water scarcity; **Carnival** reports that negative press concerning spills could impact the company's brand.

## Seizing opportunity

- A lower percentage of Consumer Discretionary respondents report water-related opportunities (41%) compared to the Global 500 (63%).
- In addition to improving brand value through proactive water stewardship, some respondents are leveraging products with water-related benefits, such as treatment technologies and other technologies to conserve water. **Phillips Electronics** identifies the production of UV lamps for water purification processes as a business opportunity.
- Respondents also report implementing more efficient technologies in direct operations to reduce both water use and cost.

## Ford Motor: limiting impact in a water-stressed region

For the past few years the Mexican state of Chihuahua has suffered droughts caused by below average rainfall and as a result, the Rio Grande River that supplies the region is unable to support increasing development and a growing population. As water resources became stressed at the Ford Motor Chihuahua Engine Plant (CHEP) in Chihuahua City, the company investigated ways to reduce water use and limit impact to the surrounding community. Six years ago, Ford Motor began making changes in its manufacturing process at CHEP; today, the plant uses no potable water except for human consumption. Given that the industrial park where CHEP is located draws from the same groundwater resources as the local community, Ford Motor has made several changes that rely on recycled and other treated gray water to meet the needs of the plant while preserving freshwater reserves. These initiatives combine to save more than 32,000 cubic meters of water a year, and include using treated gray water from the city for compressor cooling, rethinking water-intensive manufacturing processes, and using advanced treatment and filtration techniques. In the future, Ford Motor plans to continue to assess opportunities to use advanced water conservation technologies across its operations, particularly in other water-stressed regions.

# Consumer Staples

# 73%

Response rate: (27/37)

### Industries within sector:

**Beverages:** 7 of 8; **Food & Staples Retailing:** 5 of 10; **Food Products:** 5 of 8; **Household Products:** 1 of 1; **Personal Products:** 4 of 4; **Tobacco:** 5 of 6

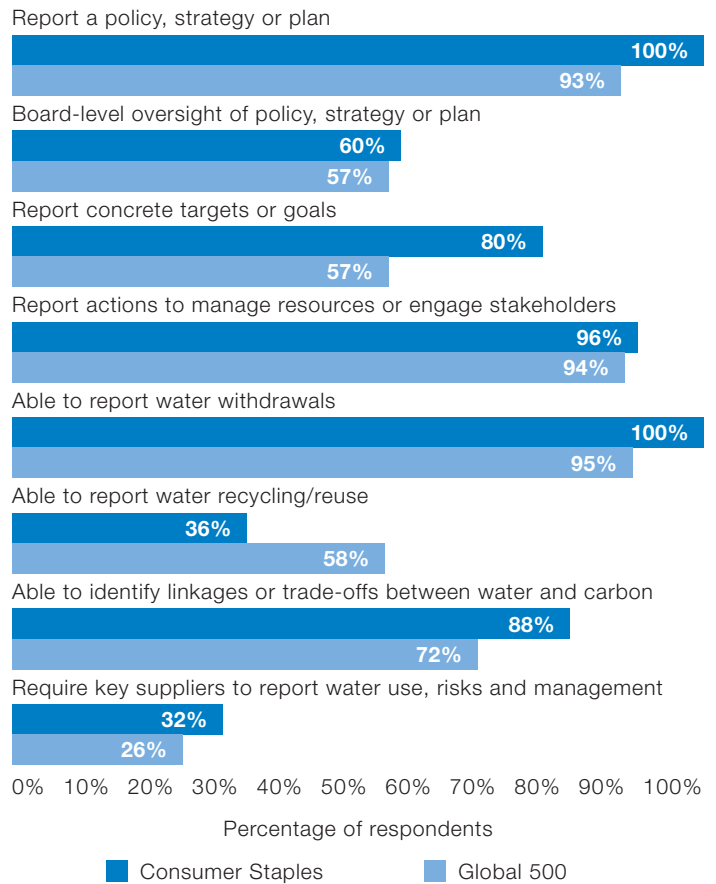
## Key findings

1. The Consumer Staples sector is highly engaged with a response rate of 73%.
2. According to respondents, the supply chain is a significant source of risk; the percentage of companies reporting exposure to risk in the supply chain (60%) is the highest among sectors.
3. Many companies in Consumer Staples identify water-related opportunities.

## Leading practices

- Compared to other sectors, a higher percentage of Consumer Staples respondents (80%) have set concrete, quantitative water-related targets or goals.
- All respondents in the sector have water-related policies, strategies, or plans, which address a range of issues including understanding water scarcity and quality, maximizing efficiency and recycling/reuse, replenishing local watersheds, investing in supplier and community programs, and engaging external stakeholders.

## Water management and governance



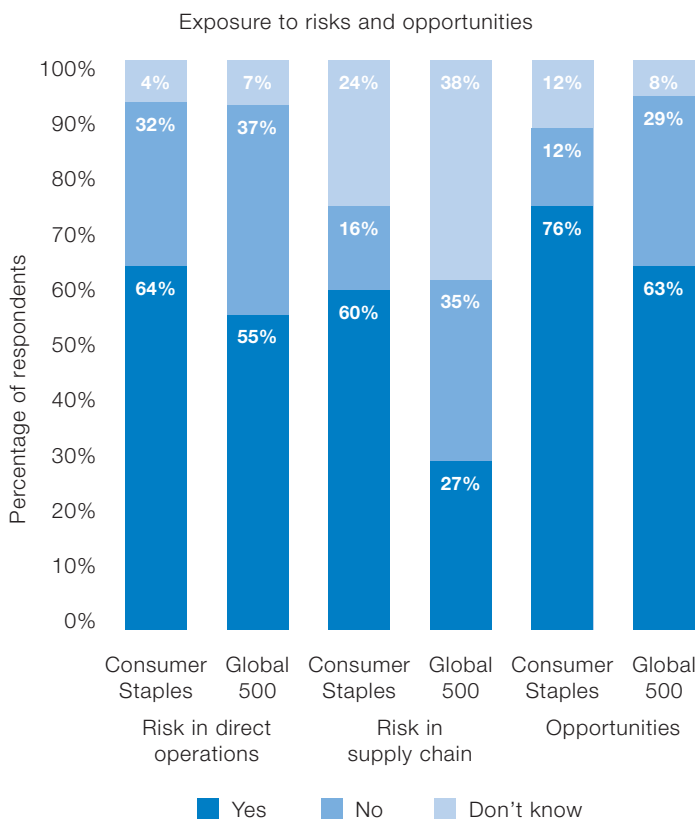
“We are keenly aware that water has the ability to immediately impact our operations.”

**Molson Coors**

## Leading practice examples

Company	Leading Practice	Example
Coca-Cola Company	Water strategy development	Launched global water strategy that addresses water management at each of the company's 900 bottling plants and extends outside operations to include watershed protection, supporting sustainable communities, and helping raise awareness and inspire action around global water challenges
Diageo	Stakeholder engagement	Water of Life (WOL) initiative aims to provide safe drinking water to communities in need while also improving the company's license to operate; since 2008, Diageo has launched 150 WOL projects in 15 countries
L'Oreal	Goal setting	Established an ambitious goal for factories and distribution centers to reduce water consumption by 50% per finished product between 2005 and 2015

## Water-related risks and opportunities in direct operations and the supply chain



## Responding to risk

- 72% of Consumer Staples respondents report exposure to water-related risk, compared to 59% in the Global 500. The percentage of respondents identifying exposure to risk in direct operations (64%) and the supply chain (60%) are similar, indicating that risk in the supply chain could be significant.
- However, a large percentage of respondents are able to identify whether their supply chain is exposed to risk (76%) and identify key water-intensive inputs from regions with water-related risk (48%) compared to the Global 500 (62%, 31%).

## Experiencing business impacts

- Approximately 40% of respondents have experienced water-related business impacts in the past five years; severe weather events and water shortages are reported most frequently.
- In 2010, **Kimberly-Clark** suffered a production stoppage costing US\$2 million due to a short-term seasonal drought; the company responded by installing wastewater treatment equipment and other technologies to ensure reliable water supplies and reduce future risk.

## Seizing opportunity

- A high percentage of respondents report water-related opportunities (76%) including the ability to leverage products with water-related benefits and products that promote water efficiency or provide water treatment.

## Managing the linkages and trade-offs between water and carbon

- Compared to the Global 500 (72%), respondents in the sector have a greater ability to identify linkages and trade-offs between water and carbon (88%).
- Most respondents recognize that water conservation saves energy and GHG emissions because electricity is required for transporting, heating/cooling, and treating water used in operations. Most respondents also acknowledge the trade-offs; energy conservation projects can lead to increased water use.

"We are continually working towards reducing our impacts on the environment, including water in recognition that this very important resource is crucial to our ability to grow our business in a sustainable manner in the short, medium and long term."

**British American Tobacco**

## Unilever: water-related product innovation

Unilever is already measuring water in products and water used by consumers in water-scarce countries. The company has set ambitious targets for different product types and is driving product innovation in water purification technologies.

As an example, Pureit is an affordable in-home water purifier that makes unsafe water potable; it provides water 'as safe as boiled' without needing electricity or pressurized tap water. Unilever has already made clean drinking water available to over 25 million consumers in India and has recently launched Pureit in Bangladesh, Mexico, and Indonesia.

The company aims to reach 500 million people worldwide by 2020.

# Energy

47%

Response rate: (25/53)

**Industries within sector:**

**Energy Equipment & Services:** 4 of 7; **Oil, Gas & Consumable Fuels:** 21 of 46

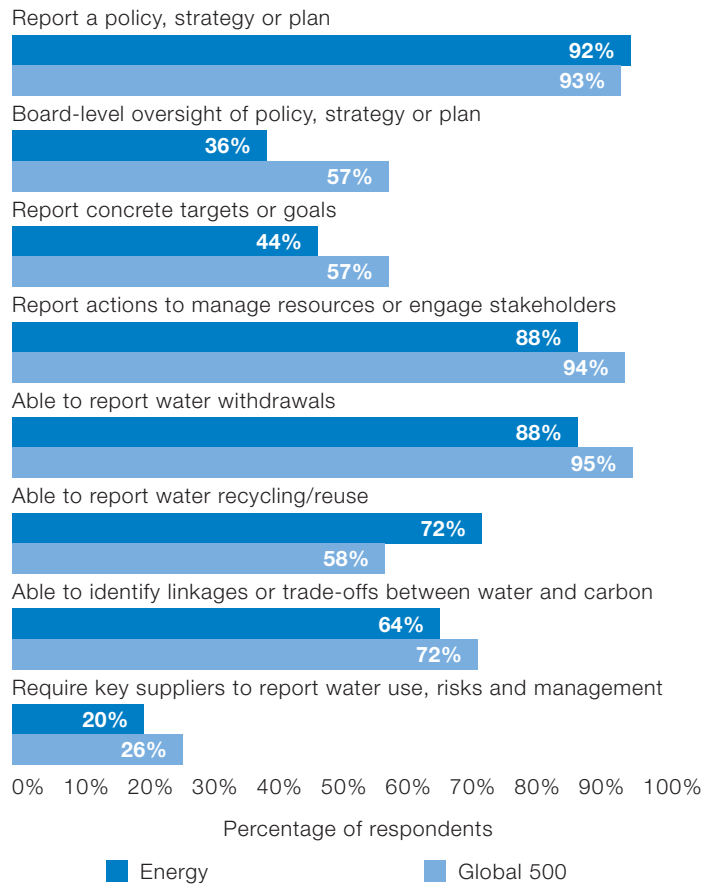
## Key findings

1. According to respondents, fewer Energy companies report board-level oversight and concrete targets or goals than other sectors.
2. More companies in the sector report exposure to risk in direct operations and water-related business impacts in the last five years than the Global 500.

## Leading practices

- 84% of Energy respondents have set water-related targets or goals, but only 44% of respondents report concrete, quantitative targets or goals.
- 72% of respondents are able to report water recycling/reuse data compared to 58% in the Global 500. Moreover, 44% of the sector has had the majority of these data verified, compared to 34% in the Global 500.

## Water management and governance



“ONGC is committed to the development of water management practices in a sustainable and responsible manner as an integral part of its corporate vision of sustainable growth that conserves and protects fresh water resources and enhances the efficiency of water utilization at ONGC’s facilities.”

**Oil & Natural Gas Corporation**

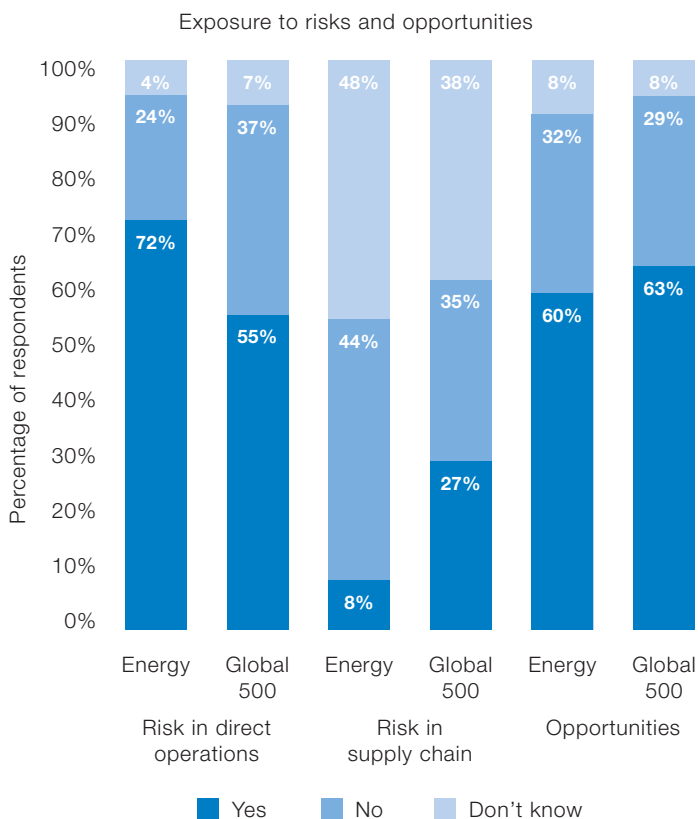
“Hess supports disclosure of frac fluid chemicals and is working with our hydraulic fracturing vendors to post accurate and reliable information on the Frac Focus website, a joint effort of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission launched in April, 2011.”

**Hess**

## Leading practice examples

Company	Leading Practice	Example
Suncor Energy	Identifying opportunities	Identified opportunities to reuse water on site as a result of technology advancements and tailings reductions
Halliburton	Direct operations	Reduces freshwater use by recycling wastewater for use in well operations

## Water-related risks and opportunities in direct operations and the supply chain



“Penn West recognizes the importance of water resources to all stakeholders. We are committed to respectful and responsible use of the resource.”

### Penn West Exploration

“In 2011, BP is investing in water management approaches to develop a consistent approach to understanding the risks and opportunities related to water withdrawals, use, and disposal.”

### BP

## Responding to risk

- Respondents report more exposure to water-related risk in direct operations or supply chain (72%) than the Global 500 (59%).
- Only 36% of Energy respondents report board-level oversight of water-related policies, strategies or plans, which is lower than any other sector and the Global 500 (57%).
- Energy is also the only sector in which some respondents report that no one is responsible for these policies, strategies or plans (8%).

## Experiencing business impacts

- 48% of respondents in the sector have experienced water-related business impacts in the last five years, compared to 38% in the Global 500.
- Several business impacts are associated with company license to operate; **Anadarko** reports that a government-imposed moratorium on drilling in the Gulf of Mexico, a more stringent regulatory environment, and reputational damage to the Oil, Gas & Consumable Fuels industry have impacted the company's ability to operate in the Gulf. To mitigate this risk, Anadarko has committed to improving transparency around hydraulic fracturing to dispel public concerns, and has also focused on stakeholder engagement, the safety of its operations, continued environmental stewardship, and involvement in the policy-making process.

## Seizing opportunity

- 60% of Energy respondents identify water-related opportunities.
- Respondents report opportunities that include the ability to implement water and wastewater treatment technologies for use both by Energy companies and by those in other sectors, increased water recycling and reuse, and competitive advantage gained through improved brand value.

## Sasol: working with communities to reduce risk

Sasol has begun to help maintain the potable water and sewage treatment plants in municipalities where they have operations to reduce water risks to the company and community. Sasol has finalized an agreement with the Govan Mbeki Municipality in Secunda on a joint water conservation initiative and a similar public-private partnership agreement on municipal water conservation with the Emfuleni Municipality in the Gauteng Province is close to being finalized. Sasol also participated in a comprehensive water quality awareness campaign in Sasolburg where students were able to perform hands-on water testing in order to understand how water quality testing is performed.

# Health Care

79%

Response rate: (23/29)

**Industries within sector:**

**Biotechnology:** 3 of 5; **Health Care Equipment & Supplies:** 3 of 6; **Life Sciences Tools & Services:** 1 of 1; **Pharmaceuticals:** 16 of 17

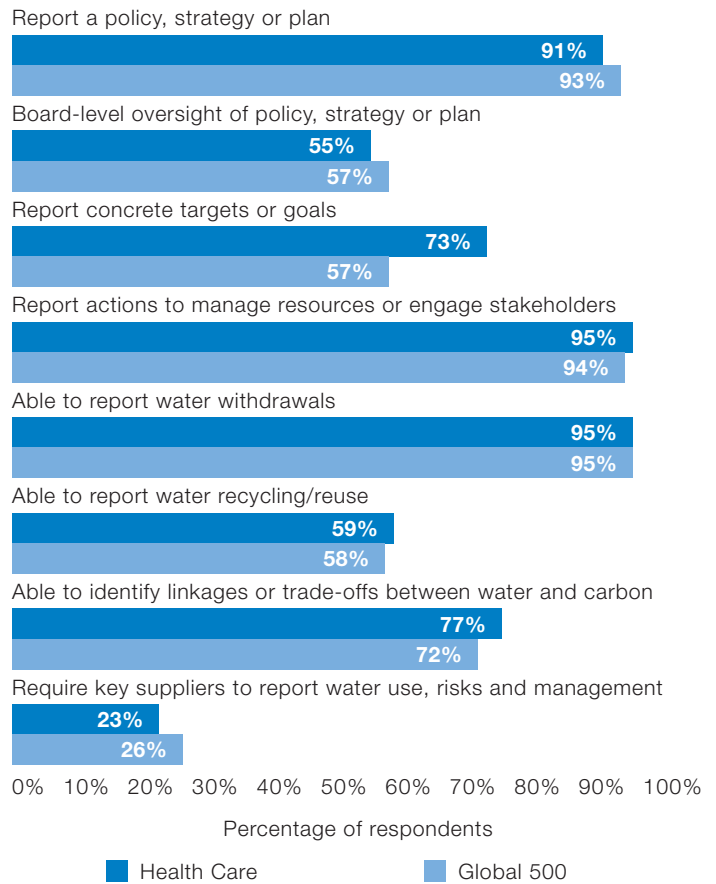
## Key findings

1. A significant proportion of Health Care respondents have developed specific water policies, strategies, or plans, perhaps given the importance of high-quality water as a production input for health care products.
2. According to respondents, water management and governance often extends beyond company operations to programs engaging suppliers, local communities, and other stakeholders.
3. The Health Care sector reports below average exposure to risk in both direct operations and supply chain when compared to other sectors

## Leading practices

- 26% of Health Care respondents have developed specific water policies, strategies, or plans rather than incorporating water into general environmental or sustainability plans. Within these plans, respondents frequently establish site-level targets and goals and describe processes for engaging suppliers and other stakeholders to achieve water-related improvements.
- 73% of Health Care respondents report concrete targets and goals, compared to 57% in the Global 500. Some respondents are expanding targets or goals to include key suppliers or have extended water management beyond direct operations and the supply chain into local communities.

## Water management and governance



“We recognize the need for a strategic approach to water use that reflects the complex interactions with human population growth, climate change, disease pattern changes and biodiversity stresses. Addressing water issues will help our business by increasing water security, improving manufacturing efficiency and strengthening our reputation and relationships with stakeholders.”

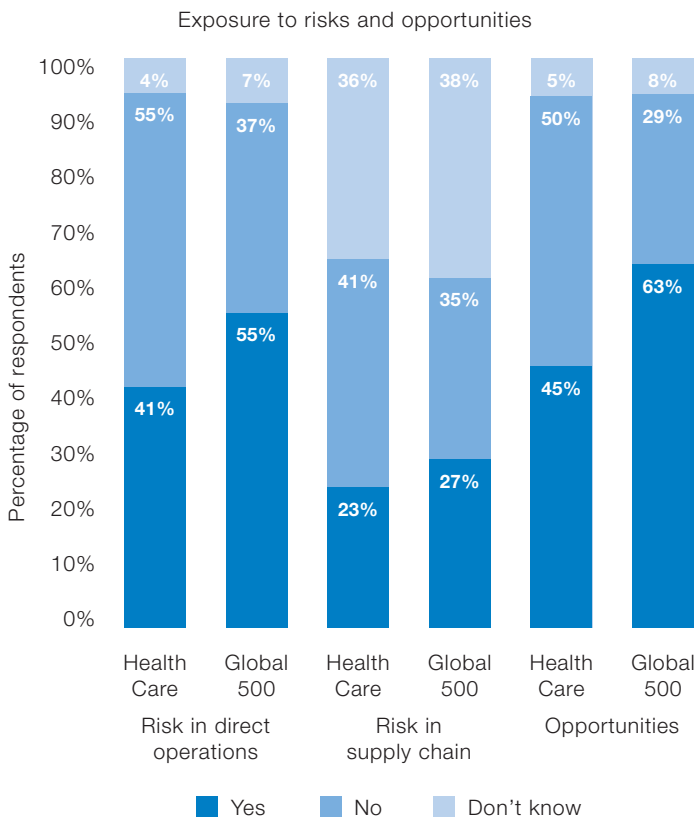
**GlaxoSmithKline**

## Leading practice examples

Company	Leading Practice	Example
AstraZeneca	Supplier engagement	Established a goal to integrate water management into strategic sourcing and supplier management activities and has established targets, action plans and performance reporting with 90% of suppliers of key intermediates and active pharmaceutical ingredients
Bayer	Risk management	Has initiated a project investigating the impact of climate change on its business to better understand how changing climate- and water-related conditions can impact both direct operations and the supply chain



## Water-related risks and opportunities in direct operations and the supply chain



“Pfizer ... established a global Water Strategy in late 2009 identifying sustainable water management as core to the overarching sustainability program. The water sustainability program provides a clear purpose through a strategic roadmap that outlines specific objectives, goals and deliverables. Results from the roadmap have helped inform our policy positions and shape the development of a longer term strategy.”

### Pfizer

“The efficient management of water resources is an integral component of the Novartis Corporate Citizenship Policy: Novartis strives to make efficient use of natural resources and to minimize the environmental impacts of its activities and products over their entire life cycle.”

### Novartis

## Sanofi-Aventis: managing regulatory uncertainty and reputational risk

Sanofi-Aventis acknowledges that pharmaceutical byproducts in the environment are an emerging issue for both regulators and the public.

To inform regulators and the general public, Sanofi-Aventis is working with stakeholders including the pharmaceutical industry and academia to expand and promote scientific knowledge on the topic of persistent pharmaceuticals. With these efforts, the company intends to both detect and quantify pharmaceutical byproducts in effluent materials and assess the potential impact of these ingredients once they find their way into the aqueous environment.

## Responding to risk

- 95% of Health Care respondents report an ability to identify operations in water-stressed regions (89% in the Global 500).
- According to respondents, the sector is less exposed to water-related risks than the Global 500; 41% of respondents report exposure to risks in direct operations and 23% report exposure to risks in the supply chain.
- Despite lower reported risk exposure than the Global 500, the sector is highly engaged; Health Care has the highest response rate of any sector (79%). Reliance on high-quality water as an input to the production process has perhaps motivated this engagement.

## Experiencing business impacts

- Approximately 23% of respondents in the sector have experienced water-related business impacts in the last five years, compared to 38% of Global 500 respondents.
- Most water shortages reported by Health Care respondents were temporary rather than persistent.

## Seizing opportunity

- Only 45% of respondents have identified water-related opportunities, compared to 63% in the Global 500.
- Opportunities identified include the ability to leverage products with water-related benefits and products that indirectly address results of water scarcity (e.g. vaccines for water-borne disease).

## Managing the linkages and trade-offs between water and carbon

- 77% of respondents are able to identify linkages and trade-offs between water and carbon.
- **Merck** explains that water accounts for 40% of the company's total cost of energy and that reducing use thus reduces energy use; Merck uses energy to produce steam, transport and treat water.

# Industrials

# 48%

Response rate: (21/44)

### Industries within sector:

**Aerospace & Defense:** 4 of 11; **Building Products:** 0 of 1; **Commercial Services & Supplies:** 1 of 1; **Construction & Engineering:** 0 of 2; **Electrical Equipment:** 0 of 3; **Industrial Conglomerates:** 7 of 12; **Machinery:** 7 of 12; **Trading Companies & Distributors:** 2 of 2

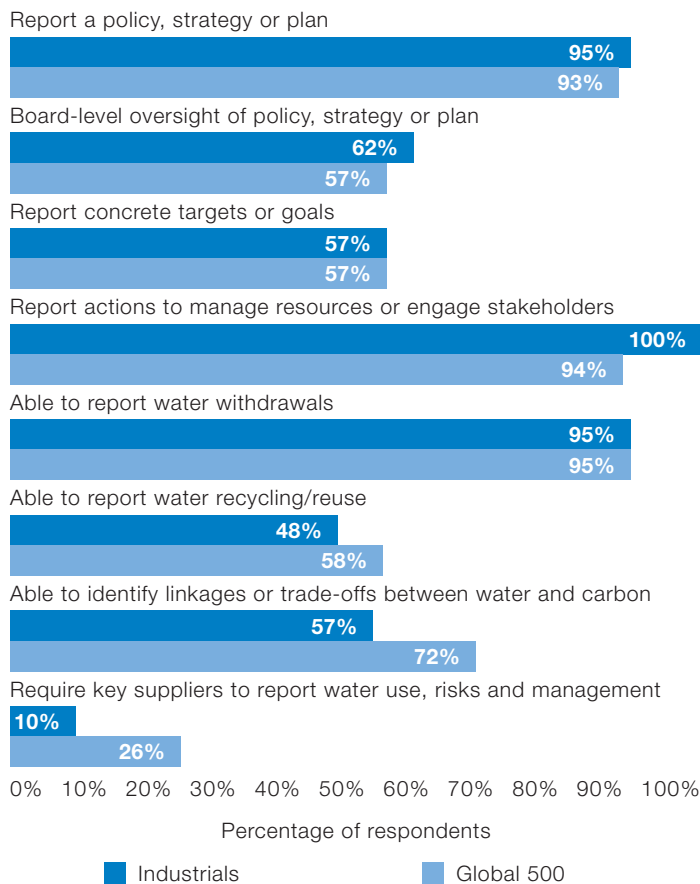
## Key findings

1. Fewer respondents in the Industrials sector report exposure to risk than in the Global 500.
2. While companies in the sector are engaging with local communities, they are collaborating with suppliers less than those in other sectors.
3. Linkages and trade-offs between water and carbon are not widely acknowledged by Industrials respondents (57%; the lowest sector in the Global 500).

## Leading practices

- 57% of respondents report community engagement as a key action taken over the past year.
- All respondents in the sector are able to identify operations in water-stressed regions, compared to 89% in the Global 500.
- The percentage of companies reporting concrete absolute reduction goals (33%) is among the highest in the Global 500.

## Water management and governance

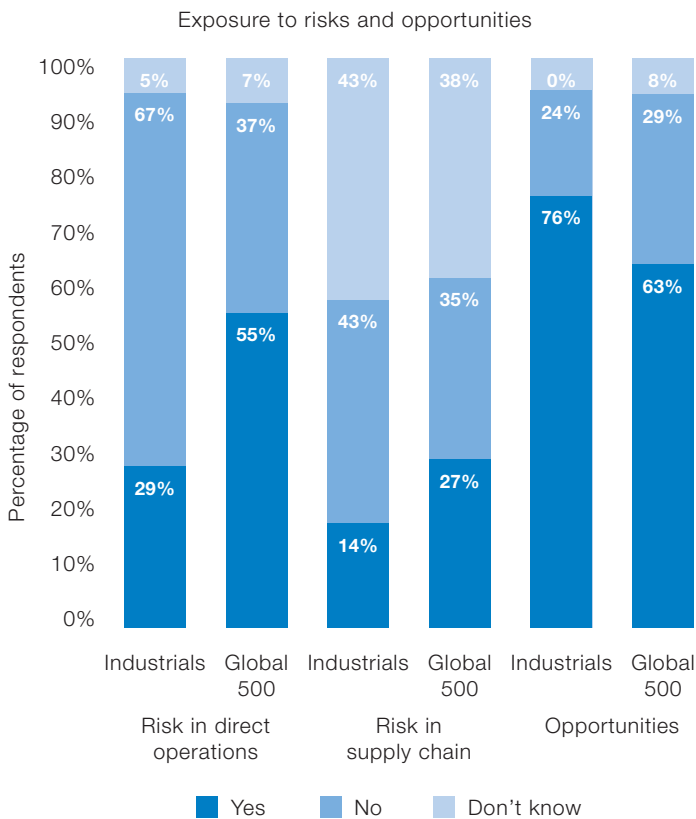


“In 2010, 3M developed a Corporate Water Management Standard [which] requires 3M to manage water resources through compliance with regulatory requirements, systematic conservation, reuse, and reporting of water usage internally.”  
**3M Company**

## Leading practice examples

Company	Leading Practice	Example
Lockheed Martin	Risk management	To manage risk, Lockheed Martin prioritizes water-related actions based on the absolute water use of each location; in this way operations with a significant water footprint are addressed first
Siemens	Community engagement	Co-founder of the Stockholm Water Prize, which supports the Stockholm International Water Institute in encouraging research and development on behalf of the world’s water environment
United Technologies Corporation	Goal setting	Reviewed water-related goals with prominent NGOs to confirm that the company is focused on the most critical issues

## Water-related risks and opportunities in direct operations and the supply chain



“Increased focus on water-related issues has many environmental and commercial implications... Our products, services, and solutions are used around the world to provide access to clean water and reliable power...”

### Caterpillar

## Responding to risk

- Industrials respondents report lower exposure to water-related risks in direct operations (29%) and supply chain (14%) than the Global 500 (55%, 27%) and no respondents report that the majority of operations are located in regions at risk.
- A lower percentage of companies in the sector require key suppliers to report water use, risks, and management plans (10%) than the Global 500 (26%).
- The most frequently reported risks include increased water stress or scarcity and statutory water withdrawal limits/changes to water allocation.

## Seizing opportunity

- A high percentage of respondents are able to identify opportunities (76%) compared to the Global 500 (63%).
- The ability to leverage products with water-related benefits, particularly those related to water infrastructure and conservation technologies, is most often reported by Industrials respondents. Cost reductions associated with water efficiency are also reported

## Managing the linkages and tradeoffs between water and carbon

- Respondents in the sector are less able to identify linkages and trade-offs between water and carbon (57%) compared to the Global 500 (72%).

### Raytheon: reducing internal water use

In the past year, Raytheon has implemented numerous water-saving projects including cooling tower upgrades, improved water treatment, use of low-flow fixtures, satellite-controlled smart irrigation systems, increasing the use of recycled water, and process changes. At one site, the company purchased recycled water from a reprocessor for on-site irrigation, saving 19 million gallons of water annually. Raytheon also recycled an additional 23 million gallons on-site, for a total use of recycled water of over 42 million gallons during 2010.

### Waste Management: understanding water-related risk

While Waste Management does not yet have a water-related risk assessment program in place, in preparation for responding to CDP's Water Disclosure information request, the company undertook a project to estimate potable water withdrawals for non-industrial use by market area using the California Department of Water Resources gallons per employee per day (GED) methodology. Waste Management also used the World Business Council for Sustainable Development (WBCSD) Global Water Tool to analyze watershed impact by geographical location. This has helped the company begin to assess current and future risks related to water.

# Information Technology

69%

Response rate: (22/32)

## Industries within sector:

**Communications Equipment:** 4 of 6; **Computers & Peripherals:** 7 of 9; **Electronic Equipment, Instruments & Components:** 5 of 7; **Internet Software & Services:** 2 of 3; **IT Services:** 0 of 2; **Semiconductors & Semiconductor Equipment:** 2 of 2; **Software:** 2 of 3

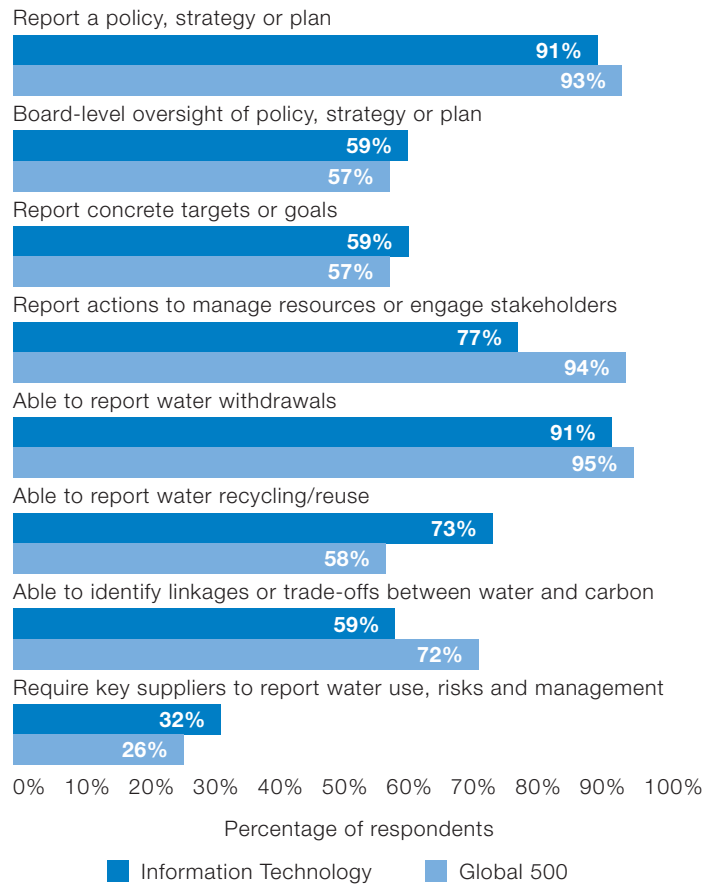
## Key findings

1. The Information Technology sector reports average levels of water management and governance compared to other sectors.
2. While the sector reports low exposure to risks in both direct operations and supply chain, it is also less able to identify whether risks exist.

## Leading practices

- The Information Technology sector has an above average response rate (69%), compared to the Global 500 (60%).
- A high percentage of respondents are taking action in supply chain and watershed management (50%); 32% require key suppliers to report water use, risks, and management plans, compared to 26% in the Global 500.

## Water management and governance



“Our goal is to be a leading global company in water resource management.”

### Taiwan Semiconductor Manufacturing

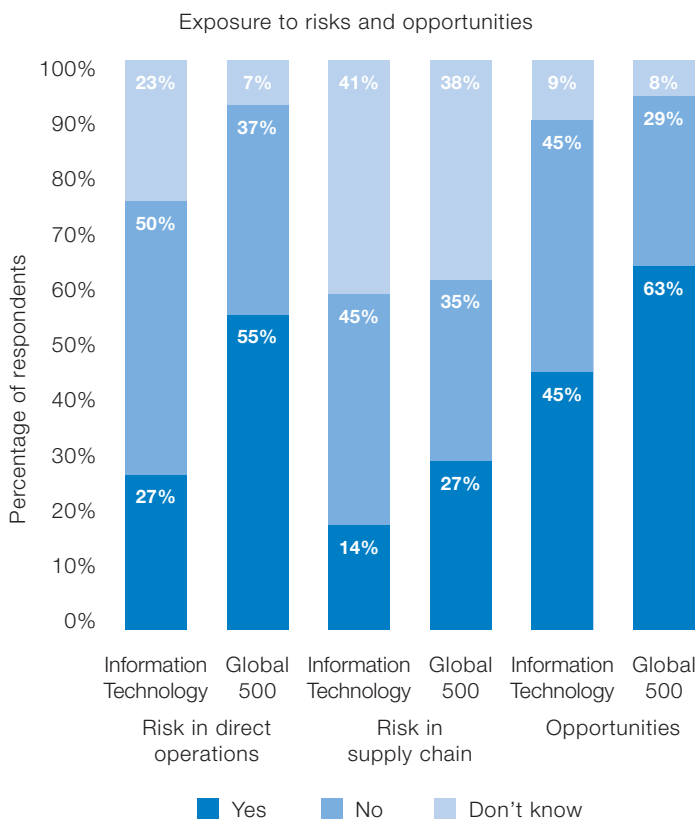
“Intel is constantly investing in responsible water management, in the form of process efficiencies, recycling, reuse, and even storm water capture. We also consistently collaborate with municipal, state, national, and international regulatory agencies and non-governmental organizations to benchmark our water use, as well as identify and share best practices to minimize risk.”

Intel

## Leading practice examples

Company	Leading Practice	Example
Applied Materials	Seizing opportunities	Developed a “design for environment” program within its product life cycle process that focuses on resource reduction within and across product generations; these tools are implemented globally by customers
Cisco Systems	Governance	Established an “EcoBoard” in 2006 comprised of 14 leaders from across the company; this group establishes the vision, strategy, and goals for Cisco’s sustainability initiatives, including water management
IBM	Seizing opportunities	Recently developed a range of products that helps business and government monitor, analyze and control water systems for more efficient performance

## Water-related risks and opportunities in direct operations and the supply chain



### Responding to risk

- 23% of Information Technology companies are unable to report whether they are exposed to risk in direct operations compared to only 7% in the Global 500.
- 27% of respondents are exposed to risk in direct operations and 14% in the supply chain, compared 55% and 27%, respectively, in the Global 500.
- Despite below average reported exposure to water-related risk, the Information Technology sector report similar levels of water management and governance as the Global 500; 59% of respondents in the sector have board-level oversight of water-related plans and 59% have set concrete targets or goals.

### Experiencing business impacts

- Only 14% of respondents in the Information Technology sector have experienced water-related business impacts in the past five years, which is the lowest when compared to other sectors.
- Of the impacts identified, severe weather events and water shortages are most often reported. Impacts from more stringent regulatory requirements and financial and reputational impacts are also reported by some respondents.

### Seizing opportunity

- A lower percentage of companies in the sector identify opportunities (45%) compared to the Global 500 (63%).
- However, several respondents report improved brand value as a significant opportunity resulting from water conserving technologies, proactive management in water-stressed regions, and transparency in reporting.
- Information Technology respondents also report opportunities in assisting business or government to mitigate, map, and understand water risk through tools such as cloud computing and water resource mapping. **Hewlett-Packard's** Environment and Sustainability Management (ESM) service helps customers understand and reduce their environmental impacts.

### Managing the linkages and tradeoffs between water and carbon

- A lower percentage of respondents in the Information Technology sector (59%) report the ability to identify linkages and trade-offs between water and carbon compared to the Global 500 (72%).

*"Marvell's water conservation policy... recognizes water is an increasingly scarce resource and conservation is vital to ease pressure on water supplies and maintain an adequate flow of water for sustainable economic and social development."*

**Marvell Technology Group**

### Cisco Systems: reducing water use in product supply chain

Cisco Systems worked with three printed circuit board assembly partners to dramatically reduce water use in processes for Cisco Systems products. Up to 20 million gallons of water was being used each year to wash the printed circuit boards after they were soldered. By implementing a new soldering practice, the wash stage of the process became unnecessary. This led to a significant reduction in the amount of wastewater produced and requiring treatment and disposal. Cisco Systems set out to eliminate this process in mid-2010 and achieved that goal in 2011. The result is less water use and increased assembly efficiency, saving Cisco Systems over US\$1 million per year with no adverse impact on product quality.

# Materials

# 72%

Response rate: (34/47)

### Industries within sector:

**Chemicals:** 13 of 17; **Construction Materials:** 2 of 2; **Metals & Mining:** 19 of 28

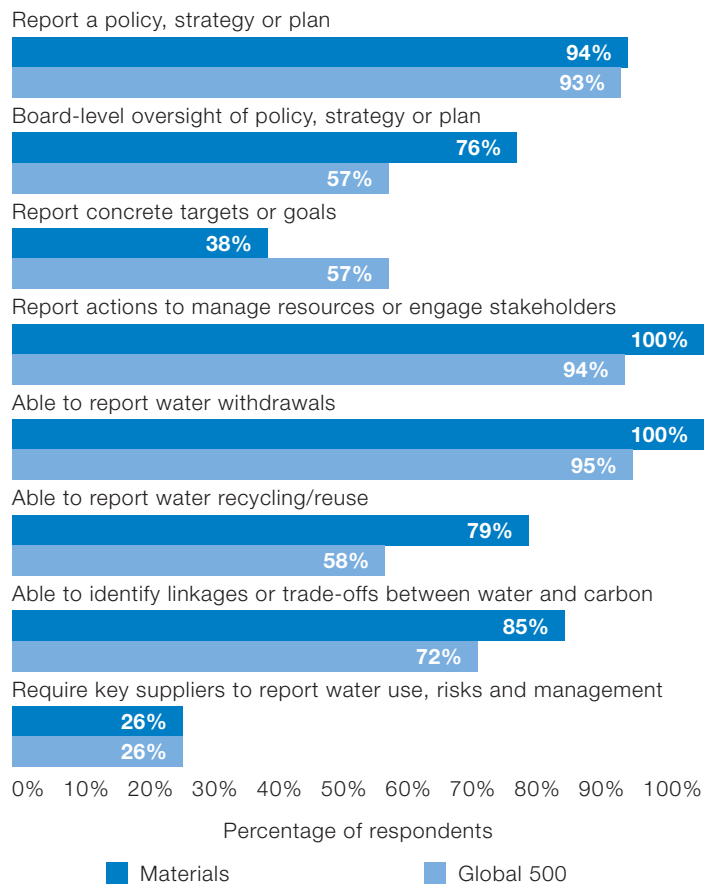
## Key findings

1. **Despite the low percentage of Materials respondents with concrete targets and goals, the sector shows significant engagement in overall water stewardship (e.g. a response rate of 72%).**
2. **According to respondents, the Materials sector has an increased exposure to water-related risks, particularly in direct operations.**
3. **A large number of Materials respondents identified water-related opportunities (85% compared to 63% in the Global 500).**

## Leading practices

- 76% of respondents reported board-level oversight of their water policy, strategy, or plan, compared to 57% in the Global 500.
- All Materials respondents report actions to manage water resources or engage stakeholders. Engaging stakeholders and supply chain partners in particular are common strategies for companies in the sector.

## Water management and governance



“Water is valued with the same strategic value as the metals we mine.”

**Anglo Platinum**

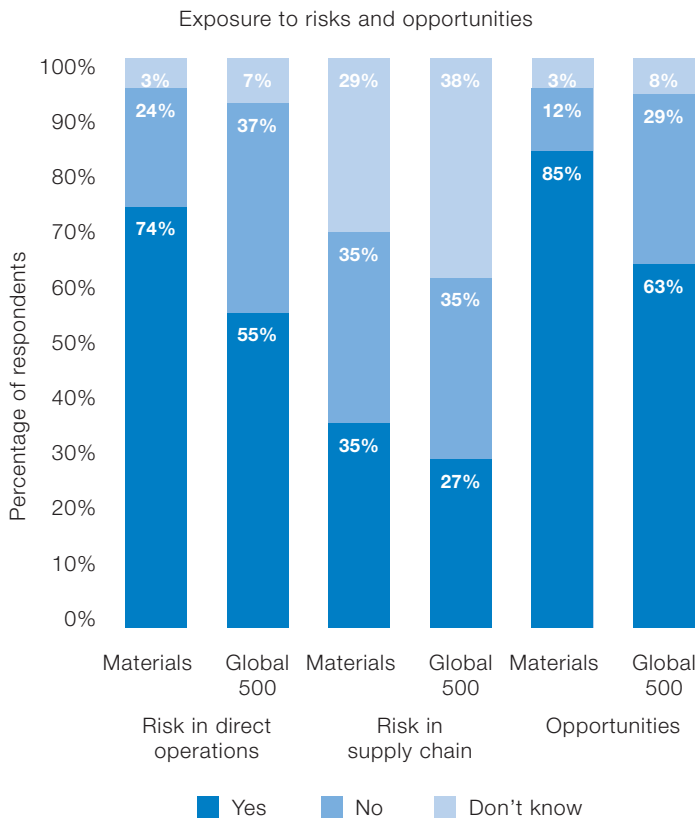
“Excellence in environmental performance, including water, is essential to our business success”

**Rio Tinto**

## Leading practice examples

Company	Leading Practice	Example
Air Products & Chemicals	Assessing risk	Considers water sourcing during facility siting and sizing because industrial expansion in some markets is outpacing the ability to secure adequate water supplies
BHP Billiton	Water accounting	Has been an active participant in the development of the Minerals Council of Australia Water Accounting Framework and requires all water consumption to be reported by quantity and quality metrics across its sites
Goldcorp	Stakeholder engagement	Developed a water monitoring program that engages employees and local, technically trained community members to administer parallel water monitoring studies. Program participants meet to discuss similarities and differences in monitoring results

## Water-related risks and opportunities in direct operations and the supply chain



## Responding to risk

- A high percentage of respondents are able to identify whether they are exposed to risk in direct operations (97%) and the supply chain (71%) compared to the Global 500 (93%, 62%). Frequently reported risks include increased water stress or scarcity, flooding, statutory water withdrawal limits/changes to water allocation, and reputational damage.
- According to respondents, risk exposure is also high: 76% of Materials respondents report exposure to risk either in direct operations or the supply chain compared with 59% of companies in the Global 500.
- 26% of respondents have more than half of their operations located in regions at risk, compared with only 11% in the Global 500.
- Engagement on water is also strong: 76% of respondents report board-level oversight of water policies, strategies, or plans, higher than any sector.

- In contrast to the high engagement, only 38% of Materials respondents set concrete, quantitative targets or goals compared to 57% in the Global 500.

## Experiencing business impacts

- Approximately 68% of respondents have experienced water-related business impacts in the past five years, the highest percentage of any sector. Production losses due to water shortages, flooding, and energy supply disruptions are commonly reported.

## Seizing opportunity

- 85% of respondents identify water-related opportunities including the ability to leverage products with water-related benefits.
- Opportunities include developing drought-resistant crop species (**DuPont**), expanding products and services for the water treatment industry (**BASF**), and providing products and services focused on water conservation (**Ecolab**).

## Managing the linkages and tradeoffs between water and carbon

- 85% of respondents are able to identify linkages and trade-offs between water and carbon, compared to 72% in the Global 500.
- Linkages identified by Materials respondents include the energy requirements for transporting, heating/cooling, and treating water used in operations. Trade-offs are caused by specific technologies. **Teck Resources** reports that distant seawater is being considered in place of local freshwater resources in water-stressed areas of Chile, but transporting that water comes at a significant energy cost.

## Barrick Gold: cost savings from water recycling

At one mine in Barrick Gold's portfolio, the company assessed and implemented enhanced recycling of process water, which ultimately eliminated the need to develop a nearby treatment facility to process and discharge underground mine seepage. This process reduced consumption of freshwater and avoided additional capital and operating costs associated with the treatment facility. In the future, Barrick Gold plans to evaluate similar opportunities at other mines to further reduce water use, capital expenditures, and operating costs.

# Utilities

59%

Response rate: (16/27)

**Industries within sector:**

**Electric Utilities:** 10 of 19; **Gas Utilities:** 1 of 2;

**Multi-Utilities:** 5 of 6

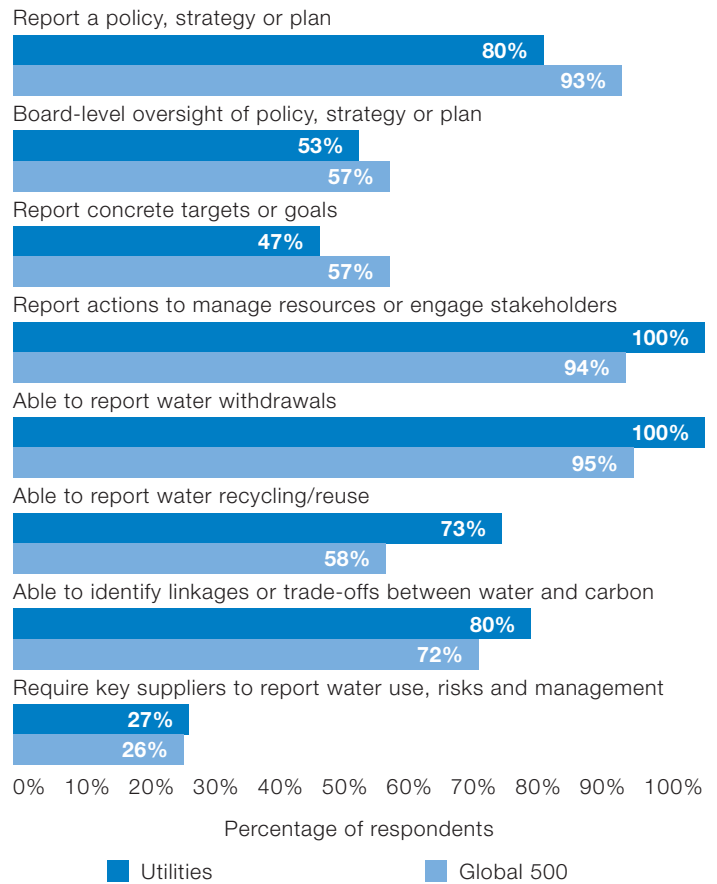
## Key findings

1. While a large percentage of Utilities companies report exposure to water-related risk, fewer companies report water-related management plans and concrete targets or goals.
2. Although water accounting is considered mature in this sector, just 47% of Utilities respondents report concrete targets or goals.
3. Utilities companies report an increased understanding of the linkages and trade-offs between water and carbon.

## Leading practices

- Water accounting is considered mature among Utilities respondents; 100% of respondents are able to report water withdrawal data, 73% are able to report recycling/reuse data, and 100% are able to identify discharges by destination, treatment type, and quality.
- The sector is active in stakeholder engagement, with 73% of respondents taking action in community engagement, 47% taking collective action, and 33% taking action in public policy.

## Water management and governance



“The sustainable use of water is of growing importance for us... water is already one of the most important environmental topics for us today, which is why we set up a more extensive water-management system for the entire Group.”

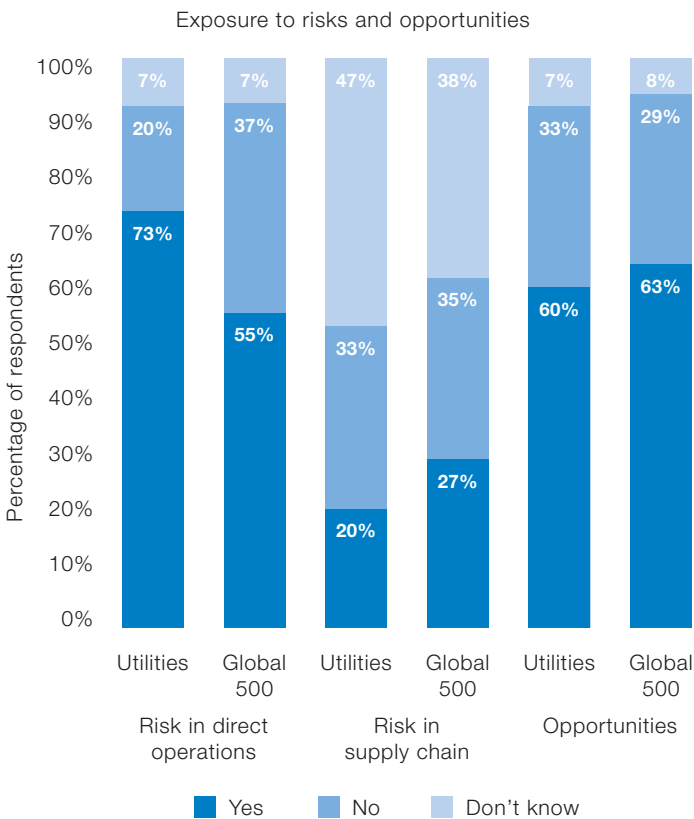
**E.ON**

## Leading practice examples

Company	Leading Practice	Example
EDF Group	Risk management	Invests significant resources to evaluate the potential risk caused by environmental changes (e.g. water quality, climate change, biodiversity) on the company's electricity generation assets; collaborates with NGO's and research organizations to better understand water-related impacts
PG&E	Stakeholder engagement	Working with the US Geological Survey (USGS) and California Department of Water Resources to begin using a USGS watershed model that will help manage reservoirs in watersheds experiencing loss of mountain snowpack; the model is currently being tested at low-elevation hydroelectric facilities



## Water-related risks and opportunities in direct operations and the supply chain



“Since water is becoming an increasingly scrutinized issue for new projects, the development of our less water consuming energy sources (solar and wind farms) will face less administrative or financing barriers in the future. In addition, our license to operate hydro facilities and to construct new ones will be easier to maintain [and] obtain if our impact to aquatic environment is as low as possible...”

**Endesa**

## Responding to risk

- A lower percentage of Utilities companies report policies, strategies, or plans (80%) than the Global 500 (93%). The sector also has relatively low percentage of companies with concrete targets/goals (47%) when compared with other sectors.
- Utilities companies depend heavily on water in direct operations, which may explain why a greater percentage of respondents are exposed to water-related risk in direct operations (73%) than in the Global 500 (55%).
- The most frequently reported risks include increased water stress or scarcity, flooding, increased difficulty in obtaining operations permits, regulatory uncertainty, and regulation of discharge quality/volumes leading to higher compliance costs.

## Experiencing business impacts

- The sector experienced a high percentage of water-related business impacts (53%) in the past five years. **The Southern Company** reports that it incurred US\$200 million in additional costs when drought prevented the company from generating electricity from low-cost hydroelectric facilities. To mitigate this impact, The Southern Company maintains a diverse portfolio of generating sources, plans for contingencies at its fossil fuel and nuclear facilities, and works with government agencies to better understand the risk of drought.

## Managing the linkages and trade-offs between water and carbon

- A high percentage of Utilities respondents identify linkages and tradeoffs between water and carbon (80%). Given that energy is a core business for Utilities companies, the remaining 20% can be more proactive.
- Reported linkages include the energy requirements associated with cooling, and in some cases, treating water.
- The most commonly reported trade-off between water and carbon is the use of Carbon Capture and Storage (CCS) technology, which requires relatively large volumes of water; other trade-offs reported include the environmental costs of hydroelectricity and the potential for increased water consumption associated with the potential for more stringent GHG regulations.

## EDP: identifying water reduction opportunities

EDP's internal process for identifying water reduction opportunities has produced results. At one power plant, EDP replaced a boiler slag extraction wet system with a dry system, reducing water use by 532,000 cubic meters of water. The dry system also realized other benefits including preventing loss of product associated with hopper water treatment (44 tons annually), significant cost reduction associated with site cleaning, and the possibility of selling bottom ash as a byproduct.

# Appendix I: Table of Response Status and Sector by Company

## Global 500

### Key to Response Status:

- AQ Answered Questionnaire
- AQ(SA) Company is either a subsidiary or has merged during the reporting process. See Company in brackets for further information on company's status
- DP Declined to participate
- IN Provided information
- NP Answered questionnaire but response not made publicly available
- NR No response

Company	Sector	Response Status
3M Company	Industrials	AQ
ABB	Industrials	NP
Abbott Laboratories	Health Care	AQ
Air Liquide	Materials	AQ
Air Products & Chemicals	Materials	AQ
Alcon	Health Care	DP
Allergan	Health Care	AQ
Altria	Consumer Staples	AQ
Amazon	Consumer Discretionary	NR
Ambev	Consumer Staples	NR
American Electric Power	Utilities	AQ
Amgen	Health Care	AQ
Anadarko	Energy	AQ
Anglo American	Materials	AQ
Anglo Platinum	Materials	AQ
AngloGold Ashanti	Materials	AQ
Anheuser Busch	Consumer Staples	AQ
Antofagasta	Materials	AQ
Apache	Energy	AQ
Apple	Information Technology	DP
Arcelor Mittal	Materials	AQ
Archer Daniels Midland	Consumer Staples	NR
Astellas Pharma	Health Care	NP
Astra International	Consumer Discretionary	NP
AstraZeneca	Health Care	AQ
Atlas Copco	Industrials	AQ

Company	Sector	Response Status
Automatic Data Processing	Information Technology	AQ
BAE Systems	Industrials	DP
Baker Hughes	Energy	NP
Barrick Gold	Materials	AQ
BASF	Materials	AQ
Baxter International	Health Care	AQ
Bayer	Health Care	AQ
Becton, Dickinson and Co.	Health Care	AQ
Belle International	Consumer Discretionary	NR
Best Buy	Consumer Discretionary	NR
BG Group	Energy	AQ
Bharat Heavy Electricals	Industrials	NR
BHP Billiton	Materials	AQ
BMW	Consumer Discretionary	NP
Boeing	Industrials	AQ
BP	Energy	AQ
Bristol-Myers Squibb	Health Care	AQ
British American Tobacco	Consumer Staples	AQ
BYD	Consumer Discretionary	NR
Canadian Natural Resources	Energy	NR
Canon	Information Technology	NP
Carnival	Consumer Discretionary	AQ
Carrefour	Consumer Staples	NP
Caterpillar	Industrials	AQ
Celgene	Health Care	NR
Genovus Energy	Energy	AQ
Centrica	Utilities	AQ
CEZ	Utilities	DP
Chevron	Energy	DP
Christian Dior	Consumer Discretionary	NP
Chubu Electric Power	Utilities	DP
Chunghwa Telecom	Information Technology	AQ
Cisco Systems	Information Technology	AQ
CLP Holdings	Utilities	AQ
CNOOC	Energy	NP
Coca-Cola Company	Consumer Staples	AQ
Colgate Palmolive	Consumer Staples	AQ
Companhia Siderurgica Nacional	Materials	AQ

Company	Sector	Response Status
ConocoPhillips	Energy	DP
Corning	Information Technology	DP
Costco Wholesale	Consumer Staples	DP
Covidien	Health Care	NR
CSL	Health Care	AQ
Cummins India	Consumer Discretionary	NR
CVS Caremark	Consumer Staples	AQ
Daimler	Consumer Discretionary	NP
Danaher	Industrials	NR
Danone	Consumer Staples	AQ
Dell	Information Technology	AQ
DENSO	Consumer Discretionary	NR
Devon Energy	Energy	AQ
Diageo	Consumer Staples	AQ
Dominion Resources	Utilities	AQ
Dongfeng Motor Group	Consumer Discretionary	NR
Dow Chemical Company	Materials	IN
Duke Energy	Utilities	AQ
DuPont	Materials	AQ
E.ON	Utilities	AQ
EADS	Industrials	DP
eBay	Consumer Discretionary	DP
Ecopetrol	Energy	NP
EDF Group	Utilities	AQ
EMC	Information Technology	AQ
Emerson	Industrials	DP
Empresas Copec	Energy	NR
Enbridge	Energy	AQ
Encana	Energy	AQ
Endesa	Utilities	AQ
Enel	Utilities	DP
Eni	Energy	AQ
EOG Resources	Energy	DP
Ericsson	Information Technology	DP
Eurasian Natural Resources Corporation	Materials	DP
Exelon	Utilities	AQ
Exxon Mobil	Energy	DP
FANUC	Industrials	NR
Fiat	Consumer Discretionary	NR
Ford Motor	Consumer Discretionary	AQ
Formosa Petrochemical	Energy	NR
Fortum Oyj	Utilities	DP

Company	Sector	Response Status
Freeport-McMoRan Copper & Gold	Materials	AQ
FujiFilm	Materials	DP
Gazprom	Energy	AQ
Gazprom Neft	Energy	NR
GDF Suez	Utilities	NP
General Dynamics	Industrials	DP
General Electric	Industrials	AQ
General Mills	Consumer Staples	AQ
Genting Singapore	Consumer Discretionary	DP
Genzyme	Health Care	NR
Gilead Sciences	Health Care	AQ
GlaxoSmithKline	Health Care	AQ
Goldcorp	Materials	AQ
Google	Information Technology	DP
H&M Hennes & Mauritz	Consumer Discretionary	AQ
Halliburton	Energy	AQ
Heineken	Consumer Staples	AQ
Hermes International	Consumer Discretionary	NR
Hess	Energy	AQ
Hewlett-Packard	Information Technology	AQ
High Tech Computer	Information Technology	NP
Hitachi	Industrials	AQ
Holcim	Materials	AQ
Home Depot	Consumer Discretionary	NR
Hon Hai Precision Industry	Information Technology	DP
Honda Motor	Consumer Discretionary	NR
Honeywell International	Industrials	DP
Hong Kong & China Gas	Utilities	NR
Husky Energy	Energy	AQ
Hutchison Whampoa	Industrials	NR
Hyundai Heavy Industries	Industrials	NR
Hyundai Mobis	Consumer Discretionary	AQ
Hyundai Motor	Consumer Discretionary	NR
Iberdrola	Utilities	AQ
IBM	Information Technology	AQ
Illinois Tool Works	Industrials	NP
Impala Platinum Holdings	Materials	NP
Imperial Oil	Energy	DP

# Global 500 (continued)

Company	Sector	Response Status
Imperial Tobacco Group	Consumer Staples	AQ
Indian Oil Corporation	Energy	NR
Inditex	Consumer Discretionary	AQ
Inpex	Energy	AQ
Intel	Information Technology	AQ
Israel Chemicals	Materials	AQ
ITC	Industrials	AQ
Japan Tobacco	Consumer Staples	NR
Jardine Matheson	Industrials	NR
Jardine Strategic	Industrials	NR
JFE Holdings	Materials	NR
John Deere	Industrials	AQ
Johnson & Johnson	Health Care	AQ
Johnson Controls	Consumer Discretionary	AQ
Kellogg	Consumer Staples	AQ
Kimberly-Clark	Consumer Staples	AQ
Kinross Gold	Materials	AQ
Kohl's	Consumer Discretionary	AQ
Komatsu	Industrials	AQ
Korea Electric Power Corporation	Utilities	NR
Kraft Foods	Consumer Staples	DP
Kumba Iron Ore	Materials	DP
Kyocera	Information Technology	NP
Lafarge	Materials	AQ
Larsen & Toubro	Industrials	DP
LG Chem	Materials	DP
Li & Fung	Consumer Discretionary	NR
Lilly	Health Care	AQ
Linde	Materials	AQ
Lockheed Martin	Industrials	AQ
L'Oreal	Consumer Staples	AQ
Lowe's	Consumer Discretionary	DP
Lukoil	Energy	NR
LVMH	Consumer Discretionary	AQ
Marathon Oil Corporation	Energy	DP
MasterCard	Information Technology	DP
McDonald's	Consumer Discretionary	DP
Medtronic	Health Care	AQ

Company	Sector	Response Status
Merck	Health Care	AQ
Metro	Consumer Discretionary	AQ
Microsoft	Information Technology	AQ
Mitsubishi	Industrials	NP
Mitsubishi Electric	Information Technology	NP
Mitsui & Co.	Industrials	AQ
MMC Norilsk Nickel	Materials	NR
Monsanto	Materials	NP
Mosaic	Materials	NP
Motorola Solutions	Information Technology	AQ
Nan Ya Plastics	Materials	NR
Naspers	Consumer Discretionary	DP
National Grid	Utilities	AQ
National Oilwell Varco	Energy	NR
Nestle	Consumer Staples	AQ
NetApp	Information Technology	NR
Newcrest Mining	Materials	AQ
Newmont Mining	Materials	AQ
NextEra Energy	Utilities	DP
Nike	Consumer Discretionary	NR
Nippon Steel	Materials	DP
Nissan Motor	Consumer Discretionary	NR
NLMK - Novolipetskii Metallurgicheski Kombinat	Materials	NR
NMDC	Materials	NR
Nokia	Information Technology	NP
Northrop Grumman	Industrials	DP
Novartis	Health Care	AQ
Novatek	Energy	AQ
Novo Nordisk	Health Care	AQ
NTPC	Utilities	NR
Occidental Petroleum	Energy	AQ
OGX Petróleo e Gás Participações	Energy	NR
Oil & Natural Gas Corporation	Energy	AQ
Oracle	Information Technology	DP

# Global 500 (continued)

Company	Sector	Response Status
PACCAR	Industrials	NR
Panasonic	Consumer Discretionary	NP
PepsiCo	Consumer Staples	AQ
Pernod Ricard	Consumer Staples	AQ
Petrobras	Energy	NP
PETROCHINA	Energy	NR
Pfizer	Health Care	AQ
PG&E	Utilities	AQ
Philip Morris International	Consumer Staples	AQ
Philips Electronics	Consumer Discretionary	AQ
POSCO	Materials	AQ
Potash Corporation of Saskatchewan	Materials	AQ
PPR	Consumer Discretionary	AQ
Praxair	Materials	NP
Precision Castparts	Industrials	NR
Priceline	Consumer Discretionary	AQ
Procter & Gamble	Consumer Staples	AQ
PSEG	Utilities	DP
PTT	Materials	NP
PTT Exploration & Production Public Company	Energy	DP
QUALCOMM	Information Technology	NR
Raytheon	Industrials	AQ
Reckitt Benckiser	Consumer Staples	AQ
Reliance Industries	Industrials	NR
Repsol YPF	Energy	DP
Reynolds American	Consumer Staples	AQ
Richemont	Consumer Discretionary	DP
Rio Tinto	Materials	AQ
Roche	Health Care	AQ
Rolls-Royce	Industrials	DP
Rosneft	Energy	NR
Royal Dutch Shell	Energy	NR
RWE	Utilities	AQ
S.A.C.I. Falabella	Consumer Discretionary	NR
SABMiller	Consumer Staples	AQ
Saint-Gobain	Industrials	DP

Company	Sector	Response Status
Saipem	Energy	DP
Samsung	Information Technology	NP
Sandvik	Industrials	AQ
Sanofi-Aventis	Health Care	AQ
Sasol	Energy	AQ
Schlumberger	Energy	DP
Schneider Electric	Industrials	DP
Seven & i	Consumer Staples	AQ
Shin-Etsu Chemical	Materials	AQ
Siemens	Industrials	AQ
Sime Darby	Industrials	NR
Snam Rete Gas	Utilities	AQ
Sony	Information Technology	AQ
Southern Copper Corporation	Materials	NR
Starbucks	Consumer Discretionary	AQ
Statoil	Energy	AQ
Steel Authority of India	Materials	NR
Stryker Corporation	Health Care	DP
Suncor Energy	Energy	AQ
Surgutneftegas	Energy	DP
Syngenta	Materials	AQ
SYSCO	Consumer Staples	NR
Taiwan Semiconductor Manufacturing	Information Technology	AQ
Takeda Pharmaceutical	Health Care	AQ
Talisman Energy	Energy	NR
Target	Consumer Discretionary	AQ
Teck Resources	Materials	AQ
Tenaris	Energy	NR
Tesco	Consumer Staples	DP
Teva Pharmaceutical Industries	Health Care	NR
Texas Instruments	Information Technology	AQ
The Kansai Electric Power Co.	Utilities	DP
The Southern Company	Utilities	AQ

# Global 500 (continued)

Company	Sector	Response Status
The Tokyo Electric Power Company, Inc (TEPCO)	Utilities	DP
Thermo Fisher Scientific	Health Care	AQ
Thomson Reuters	Consumer Discretionary	DP
ThyssenKrupp	Industrials	NP
TJX Companies	Consumer Discretionary	DP
Toshiba	Information Technology	AQ
Total	Energy	NP
Toyota Motor	Consumer Discretionary	NP
TransCanada Corporation	Energy	NR
Transocean	Energy	NR
Tullow Oil	Energy	DP
Tyco International	Industrials	NP
Unilever	Consumer Staples	AQ
United Technologies Corporation	Industrials	AQ
VALE	Materials	AQ
Vinci	Industrials	DP
Visa	Information Technology	NR
Volkswagen	Consumer Discretionary	AQ
Volvo	Industrials	IN
Wal Mart de Mexico	Consumer Staples	NP
Walgreen Company	Consumer Staples	NR
Wal-Mart Stores, Inc.	Consumer Staples	DP
Waste Management	Industrials	AQ
Wilmar International Limited	Consumer Staples	NR
Woodside Petroleum	Energy	IN
Woolworths Limited	Consumer Staples	AQ
Xstrata	Materials	NP
Yahoo!	Information Technology	AQ
Yahoo! Japan	Information Technology	NP
Yum! Brands	Consumer Discretionary	NP

# Australia 100

Company	Sector	Response Status
AGL Energy	Utilities	DP
Alumina Ltd	Materials	DP
Amtor	Materials	AQ
APA Group	Utilities	DP
Aquarius Platinum	Materials	AQ
BHP Billiton	Materials	AQ
Billabong	Consumer Discretionary	NP
BlueScope Steel	Materials	DP
Boart Longyear	Industrials	NR
Boral	Materials	NP
Caltex Australia	Energy	AQ
Coca-Cola Amatil	Consumer Staples	NP
Computershare	Information Technology	DP
CSL	Health Care	AQ
CSR	Industrials	NR
David Jones	Consumer Discretionary	NR
DEXUS	Financials	DP
DUET Group	Utilities	DP
Fairfax Media	Consumer Discretionary	IN
Fortescue Metals	Materials	AQ
Fosters	Consumer Staples	DP
Goodman Fielder	Consumer Staples	DP
GPT Group	Financials	AQ
Harvey Norman	Consumer Discretionary	DP
Iluka Resources	Materials	DP
Incitec Pivot	Materials	DP
James Hardie Industries	Materials	AQ
JB Hi-Fi	Consumer Discretionary	DP
Leighton	Industrials	DP
Lend Lease	Financials	DP
Lynas	Materials	NR
Macarthur Coal	Materials	DP
Metcash	Consumer Staples	AQ
Mincor Resources	Materials	DP
Myer Holdings	Consumer Discretionary	DP
Newcrest Mining	Materials	AQ
Oil Search	Energy	DP
OneSteel	Materials	AQ
Orica	Materials	AQ
Origin Energy	Energy	DP

Company	Sector	Response Status
OZ Minerals	Materials	AQ
Paladin Energy	Energy	NR
Rio Tinto	Materials	AQ
Riversdale Mining	Energy	DP
Santos	Energy	IN
Sims Metal Management	Materials	AQ
Spark Infrastructure Group	Utilities	NR
Stockland	Financials	AQ
UGL Limited	Industrials	NR
Wesfarmers	Financials	AQ
West Australian Newspapers Holdings Ltd	Consumer Discretionary	DP
Woodside Petroleum	Energy	IN
Woolworths Limited	Consumer Staples	AQ
WorleyParsons	Energy	NP

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- DP Declined to participate
- IN Provided information
- NP Answered questionnaire but response not made publicly available
- NR No response

# South Africa 100

Company	Sector	Response Status
Adcock Ingram	Health Care	AQ
AECI	Materials	AQ
African Rainbow Minerals	Materials	NR
Anglo American	Materials	AQ
Anglo Platinum	Materials	AQ
AngloGold Ashanti	Materials	AQ
Arcelor Mittal South Africa (see Arcelor Mittal in Global 500)	Materials	AQ(SA)
Aspen Pharmacare	Health Care	DP
Assore	Materials	DP
Aveng	Industrials	DP
Avi	Consumer Staples	DP
Barloworld	Industrials	NP
BHP Billiton	Materials	AQ
Bidvest	Industrials	DP
British American Tobacco	Consumer Staples	AQ
Caxton and CTP Publishers and Printers	Consumer Discretionary	DP
Clicks Group	Consumer Discretionary	DP
Distell	Consumer Staples	DP
Evraz Highveld Steel and Vanadium Limited	Materials	AQ
Exxaro Resources	Materials	AQ
Gold Fields	Materials	AQ
Grindrod	Industrials	AQ
Harmony Gold Mining	Materials	DP
Illovo Sugar	Consumer Staples	DP
Impala Platinum Holdings	Materials	NP
Imperial Holdings	Industrials	DP
Kumba Iron Ore	Materials	DP
Life Healthcare Group	Health Care	NR
Lonmin	Materials	DP
Massmart	Consumer Discretionary	DP
Mediclinic International	Health Care	AQ
Mondi	Materials	AQ

Company	Sector	Response Status
Mr Price Group	Consumer Discretionary	DP
Murray & Roberts	Industrials	DP
Nampak	Materials	DP
Naspers	Consumer Discretionary	DP
Netcare	Health Care	AQ
Northam Platinum	Materials	AQ
Pick 'n Pay	Consumer Staples	DP
Pioneer Foods	Consumer Staples	NP
Pretoria Portland Cement	Materials	DP
Reunert	Industrials	AQ
Richemont	Consumer Discretionary	DP
SABMiller	Consumer Staples	AQ
Sappi	Materials	DP
Sasol	Energy	AQ
Shoprite	Consumer Staples	DP
Steinhoff International	Consumer Staples	DP
Sun International	Consumer Discretionary	NR
The Foschini Group	Consumer Discretionary	NP
The Spar Group	Consumer Staples	DP
Tiger Brands	Consumer Staples	NP
Tongaat Hulett	Consumer Staples	AQ
Truworths International	Consumer Discretionary	DP
Wilson Bayly Holmes-Ovcon	Industrials	NP
Woolworths Holdings Limited	Consumer Staples	AQ

## Key to Response Status:

- AQ Answered Questionnaire
- AQ(SA) Company is either a subsidiary or has merged during the reporting process. See Company in brackets for further information on company's status
- DP Declined to participate
- IN Provided information
- NP Answered questionnaire but response not made publicly available
- NR No response



# Other Responding Companies

Company	Sector	Response Status
Acciona	Industrials	AQ
Altron	Information Technology	AQ
Applied Materials	Information Technology	AQ
Beiersdorf	Consumer Staples	AQ
Bemis	Materials	AQ
Carlsberg	Consumer Staples	NP
CRH	Materials	AQ
DSM	Materials	AQ
Ecolab	Materials	AQ
EDP	Utilities	AQ
Entergy	Utilities	AQ
Essilor International	Health Care	NP
Gap	Consumer Discretionary	AQ
General Motors	Consumer Discretionary	AQ
HudBay Minerals	Materials	AQ
Investec Limited	Financials	AQ
KAO	Consumer Staples	AQ
Kirin	Consumer Staples	AQ
Layne Christensen	Industrials	AQ
LG Electronics	Consumer Discretionary	NP
Maples Industries	Consumer Discretionary	NP
Marvell Technology Group	Information Technology	AQ
McCormick & Company	Consumer Staples	AQ
Molson Coors	Consumer Staples	AQ
Motorola Mobility	Consumer Discretionary	AQ
Nedbank	Financials	AQ
Nidec	Information Technology	NP
Norsk Hydro	Materials	AQ
NYSE Euronext	Financials	AQ
Orbis Corp	Industrials	NP
Owens Corning	Industrials	AQ
Penn West Exploration	Energy	AQ
Puma	Consumer Discretionary	AQ
Reed Elsevier	Consumer Discretionary	AQ
Santam	Financials	AQ
Sigma-Aldrich	Materials	AQ
Stanley Black & Decker	Industrials	AQ

Company	Sector	Response Status
Starwood Hotels & Resorts Worldwide	Consumer Discretionary	AQ
Taisei	Industrials	AQ
Toto	Industrials	AQ
UPM-Kymmene	Materials	AQ

## Key to Response Status:

AQ	Answered Questionnaire
AQ(SA)	Company is either a subsidiary or has merged during the reporting process. See Company in brackets for further information on company's status
DP	Declined to participate
IN	Provided information
NP	Answered questionnaire but response not made publicly available
NR	No response

# Appendix II: Report Methodology

For the purposes of this report, respondents from the Global 500 are categorized into eight sectors based on the Global Industry Classification Standard (GICS): Consumer Discretionary, Consumer Staples, Energy, Health Care, Industrials, Information Technology, Materials, and Utilities.<sup>1,2</sup> The Australia 100 also includes respondents from the Financials sector.

Response rates are based on responses received from companies that were sent the CDP Water Disclosure 2011 information request. Other responding companies are excluded from these calculations,<sup>3</sup> but may be used in leading practice examples, quotations, and case studies. In addition, findings and conclusions discussed in the report are based only on invited companies that responded; these insights cannot be attributed to either companies who were invited but did not respond, or other non-invited companies for a particular geography, sector, or other division.

For the Global 500, analysis and discussion in the Consumer Discretionary, Energy, Industrials, Information Technology, and Materials sectors reflect all responding companies (public and non-public). However, given the small number of non-public responses in the Consumer Staples, Health Care, and Utilities sectors, analysis, findings, and conclusions reflect responses only from companies that elected to make their submissions public. Non-public responses are not included to protect the confidentiality of these companies' submissions.

For most metrics, the percentage of responses is based on the number of reporting companies for the relevant geography, sector, or other division. Blank responses to particular questions are tabulated as "No" or "Don't know" when calculating quantitative responses, based on the question which has been asked.<sup>4</sup>

Questions 1.1b and 1.1c, which request information on water reduction, efficiency, and quality targets, were responded to by some companies with qualitative goals or goals without concrete targets. Wherever the number of respondents with concrete targets or goals is referenced in the report, the figure is based only on respondents that provided concrete, quantitative targets or goals as part of this question.

For Question 4.1, which requests a description of detrimental impacts related to water that companies have faced in the past five years, some companies responded "yes" in the narrative despite not having experienced a detrimental impact. Conversely, other companies responded "no" in the narrative yet described a detrimental impact. To calculate the number of companies experiencing detrimental impacts, individual responses were judged independently of company "yes" and "no" answers. Companies with blank responses were considered not to have experienced these impacts.

Except where otherwise stated, all figures, tables, findings, and conclusions in the report are based on the CDP Water Disclosure 2011 information request and do not reflect external research or analysis by CDP or Deloitte.

Additional notes describing the methodology are provided throughout the report.

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1 Companies that are considered to be in either water-intensive sectors or those sensitive to water issues in their supply chain were invited to respond to CDP's 2011 Water Disclosure information request. These companies were selected from the largest publicly listed companies by market capitalization at the time of the analysis (Q4 2010). The Global 500 is based on the FTSE Global Equity Index Series, the Australia 100 is based on the Australian Securities Exchange (ASX) Index, and the South Africa 100 is based on the Johannesburg Stock Exchange (JSE) Index.

2 Sectors were realigned in 2011 to allow for a greater number of respondents to be included in the analysis. 2010 sectors included Chemicals; Construction, Infrastructure and Real Estate; Food, Beverage and Tobacco; Industrial and Manufacturing; Metals and Mining; Oil and Gas; Pharmaceuticals and Biotechnology; Retail, Consumer Discretionary and Consumer Staples; Technology and Communications; and Utilities. Due to this realignment, comparisons are not made at the sector level between 2010 and 2011 responses.

3 Other responding companies include companies that were not invited as part of the Global 500, Australia 100, or South Africa 100 but chose to answer the CDP 2011 Water Disclosure questionnaire.

4 Blank responses tabulated as "No" include 1.1, 1.1b, 1.2, 2.1, 2.2, 2.5, 3.3, 4.1, 6.1, 7.1, 7.1a, 7.2, 7.2a, 8.1, 8.2, 9.1, and 9.2; questions tabulated as "Don't know" include 3.1, 3.4, 5.1, 7.4, and 8.3.

# Appendix III: Global 500 Companies by Country

Region	Country	Public respondents	Non-public respondents	Total respondents	Total companies sent information request
<b>North America</b>		<b>77</b>	<b>6</b>	<b>83</b>	<b>130</b>
	Canada	10		10	14
	USA	67	6	73	116
<b>Latin America</b>		<b>2</b>	<b>4</b>	<b>6</b>	<b>11</b>
	Bermuda		1	1	1
	Brazil	2	1	3	5
	Chile				2
	Colombia		1	1	1
	Mexico		1	1	1
	Peru				1
<b>Europe</b>		<b>51</b>	<b>10</b>	<b>61</b>	<b>85</b>
	Belgium	1		1	1
	Czech Republic				1
	Denmark	1		1	1
	Finland		1	1	2
	France	9	4	13	17
	Germany	8	3	11	11
	Ireland				1
	Italy	2		2	5
	Luxembourg	1		1	2
	Netherlands	2		2	4
	Norway	1		1	1
	Spain	3		3	4
	Sweden	3		3	5
	Switzerland	5	2	7	10
	United Kingdom	15		15	20
<b>Africa</b>		<b>3</b>	<b>1</b>	<b>4</b>	<b>6</b>
	South Africa	3	1	4	6
<b>East Asia</b>		<b>16</b>	<b>11</b>	<b>27</b>	<b>60</b>
	Greater China	3	2	5	17
	Japan	9	8	17	28
	Russia	2		2	8
	South Korea	2	1	3	7
<b>South and West Asia</b>		<b>3</b>	<b>0</b>	<b>3</b>	<b>12</b>
	India	2		2	10
	Israel	1		1	2
<b>Southeast Asia and Oceania</b>		<b>4</b>	<b>2</b>	<b>6</b>	<b>11</b>
	Australia	4		4	5
	Indonesia		1	1	1
	Malaysia				1
	Singapore				2
	Thailand		1	1	2
<b>Total</b>		<b>156</b>	<b>34</b>	<b>190</b>	<b>315</b>

# Appendix IV: Summary of Key Indicators<sup>1</sup>

## Key indicators

Total respondents

Public respondents

Non-public respondents

Non-respondents

### % of invited companies that responded

Other responding companies

% of respondents with water policy, strategy or plan in place

% of respondents with board-level oversight of policy, strategy or plan

% of respondents with concrete targets or goals in place

% of respondents that report actions to manage water resources or engage stakeholders

% of respondents that require key suppliers to report water use, risks and management

% of respondents that are able to identify operations in water-stressed regions

% of respondents with more than half operations located in regions at risk

% of respondents that are able to identify key water-intensive inputs from regions with water-related risk

% of respondents that are able to identify whether they are exposed to risk in direct operations

% of respondents that identify risk in direct operations

% of respondents that are able to identify whether they are exposed to risk in supply chain

% of respondents that identify risk in the supply chain

% of respondents that identify risk in either direct operations or the supply chain

% of respondents that suffered water-related business impacts in past 5 years

% of respondents that identify opportunity

% of respondents that are able to identify linkages or trade-offs between water and carbon

% of respondents that report water withdrawals

% of respondents that verify the majority of water withdrawal data

% of respondents that report water recycling/reuse

% of respondents that verify the majority of water recycling/reuse data

% of respondents that report water sources significantly affected by their water withdrawals

% of respondents that are able to identify discharges by destination, treatment type and quality

% of respondents that paid penalties/fines for breaches of discharge regulations

% of respondents that report water bodies/habitats significantly affected by discharges or runoff from their operations

<sup>1</sup> Sector data is based on Global 500 respondents only

<sup>2</sup> Due to small numbers of non-public respondents in Consumer Staples, Health Care, and Utilities sectors, all indicators for these sectors except the

Global 500									Regional listings	
Consumer Discretionary	Consumer Staples <sup>2</sup>	Energy	Health Care <sup>2</sup>	Industrials	Information Technology	Materials	Utilities <sup>2</sup>	Global 500	Australia 100	South Africa 100
22	27	25	23	21	22	34	16	190	22	26
15	25	20	22	16	15	28	15	156	18	20
7	2	5	1	5	7	6	1	34	4	6
24	10	28	6	23	10	13	11	125	32	30
<b>48</b>	<b>73</b>	<b>47</b>	<b>79</b>	<b>48</b>	<b>69</b>	<b>72</b>	<b>59</b>	<b>60</b>	<b>41</b>	<b>46</b>
8	6	1	1	7	4	8	2	37	0	4
91	100	92	91	95	91	94	80	93	86	69
55	60	36	55	62	59	76	53	57	55	58
73	80	44	73	57	59	38	47	57	50	42
95	96	88	95	100	77	100	100	94	95	92
41	32	20	23	10	32	26	27	26	14	19
68	100	92	95	100	73	97	93	89	86	85
9	12	12	14	0	5	26	0	11	36	46
27	48	28	14	24	18	41	40	31	36	42
86	96	96	95	95	77	97	93	93	91	92
50	64	72	41	29	27	74	73	55	59	85
59	76	52	64	57	59	71	53	62	68	62
36	60	8	23	14	14	35	20	27	36	38
59	72	72	45	29	32	76	80	59	68	85
23	40	48	23	24	14	68	53	38	50	58
41	76	60	45	76	45	85	60	63	59	77
68	88	64	77	57	59	85	80	72	55	65
91	100	88	95	95	91	100	100	95	91	92
50	64	56	64	48	50	62	40	56	41	69
27	36	72	59	48	73	79	73	58	50	62
27	20	44	23	29	36	50	33	34	23	50
5	8	8	5	0	0	21	13	8	5	15
50	92	92	82	57	73	94	100	81	73	69
5	28	12	18	10	5	18	27	15	5	12
0	8	0	5	5	5	18	20	7	9	15

response rate are based on public respondents only in order to preserve anonymity of non-public response data



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