

CDP's water program: South Africa Report 2012

Recognising the strategic value of water

On behalf of 470 investors with assets of US\$50 trillion



Lead Partner
National Business Initiative



Report written by Irbaris
and Incite Sustainability





This year's CDP Global Water Report is a call to action for every company to treat water with the strategic importance it deserves; to consider the role they should play in tackling water challenges and to provide the leadership required to build a more resilient future.

Paul Simpson
CEO
Carbon Disclosure Project



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CDP Foreword



Analysis indicates that current “business as usual” water management practices and levels of water productivity will put at risk approximately 45% of the projected 2050 global GDP.

Water is the lifeblood of the global economy. It is the element that binds us together, creating deep and complex interdependencies between companies, communities and natural ecosystems and the pressure is growing for companies to build long-term resilience to water scarcity and flooding into their business.

As the Chinese proverb states: Not only can water float a boat, it can also sink it. Water can be a significant driver for innovative and sustainable economic prosperity but its mismanagement can result in significant business failure.

Analysis indicates that current “business as usual” water management practices and levels of water productivity will put at risk approximately US\$63 trillion, or 45% of the projected 2050 global GDP (at 2000 prices), equivalent to 1.5 times the size of today’s entire global economy.¹

Business and economies globally have already been impacted by the increased frequency and severity of extreme water-related events. Poor harvests due to once-in-a-generation droughts have rocked the agricultural industry, with the price of grain, corn and soybeans reaching an all time high. In 2011, Intel issued a US\$1 billion profit warning and the Japanese automotive industry were expected to lose around US\$450 million of profits as a result of the interruption floods caused to their Thailand-based operations and value chain.

Encouragingly, additional research exploring the links between water and economic growth shows that every US\$1 invested in water infrastructure can deliver nearly US\$5 of wider economic benefits over the long term, in

addition to social and environmental benefits.²

This year’s CDP Global Water Report is a call to action for every company to treat water with the strategic importance it deserves; to consider the role they should play in tackling water challenges and to provide the leadership required to build a more resilient future. CDP has pioneered the only global system that collects information about corporate behaviour on water security and climate change, on behalf of market forces, including shareholders and purchasing corporations. Backed by 470 institutional investors, CDP’s goal of enabling better decision making by providing investors, companies and governments with high quality information on how companies are managing their response to natural resource constraints, has never been more important.

Accounting for and valuing the world’s natural capital is fundamental to building economic stability and prosperity and the global economy will favour businesses that take a pro-active approach to water stewardship. Companies that transform their business and work to safeguard valuable water resources have the potential for both short and long-term cost savings, sustainable revenue generation and a more resilient future.

Paul Simpson
CEO Carbon Disclosure Project

1. Finding the blue path to a sustainable economy, March 2011, a report by Veolia Water and IFPRI.

2. Exploring the links between water and economic growth, June 2012, a report for HSBC carried out by Frontier Economics.

NBI Foreword



The observations of participating companies confirm water as a critical issue for South African society to manage.

The question of whether South Africa faces a future water crisis will be answered by the ingenuity of all stakeholders (groups and individuals) and their willingness to engage and collaborate. The 2012 CDP's water program report for South Africa provides a barometer of company action as one important stakeholder within the world of water management.

If recognition by leading participating companies of the risk that water supply and quality poses to their operations and to the health of the economy is a measure of future action then we are in good hands. Most of the responding companies recognise the immediacy and the severity of water-related risk and there are excellent examples of how South African companies are leading the way in managing water-related risk.

These leading companies recognise water as both a global and local issue and are implementing effective operational interventions as well as looking beyond the fence to impacts on their supply and value chains. This year's report also highlights actual examples of how company's bottom lines are being impacted and provides an excellent base from which non-participating companies can learn.

There are however some significant areas of concern. While progress has been made on greater awareness and improved governance, many of the key findings from 2011 are emphasised again in this 2012 report. We still lack progress on implementing and attaining measurable targets; and water accounting is still not consistent, hampering benchmarking and comparable reporting. The response rate and the sophistication of the management of water-related risk seem at odds with the nature of the risk. Only half of a sample selected based on vulnerability to water-related issues (either directly or through supply and value chains) respond.

While we recognise the CDP's water program is not the only avenue for disclosure it does beg the question as to what the other half of the sample are thinking and doing. The apparent neglect of the social issues relating to water, especially given our recent history, and insufficient acknowledgement of water as a shared resource is worrying. There is no doubt that if we are to manage water effectively in South Africa we will have to do it together. Furthermore, the reluctance to move beyond mitigation to opportunities linked to innovation, technology and new goods and services is an area requiring deliberation.

The observations of participating companies confirm water as a critical issue for South African society to manage. It is an issue that impacts the lives of communities, rich and poor, and impacts on human rights, the cost of producing goods and the viability of the economy. It is clear that we need to consider water in a systemic manner and collaborate in managing a critical resource. The NBI encourages more companies to participate in the CDP's water program and to engage with greater ambition. We hope to build on the excellent examples in this report and work with our members over the coming year to make the identification and management of water risk easier, changing our paradigm to one of water as a business opportunity.

Joanne Yawitch
CEO National Business Initiative

2012 Signatory Investors

Signatories

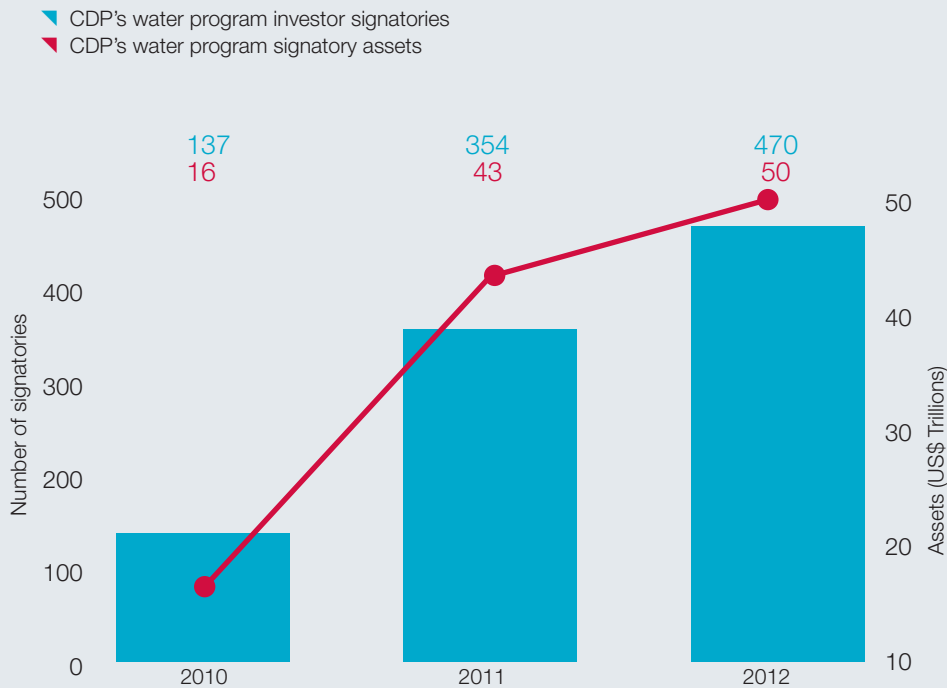
470 financial institutions with assets of US\$50 trillion were signatories to the 2012 CDP's water program information request dated February 1, 2012

Aberdeen Asset Managers
 ABRAPP - Associação Brasileira das Entidades Fechadas de Previdência Complementar
 Achmea NV
 Active Earth Investment Management
 Acuity Investment Management
 Addenda Capital Inc.
 Advanced Investment Partners
 Aegon N.V.
 AEGON-INDUSTRIAL Fund Management Co., Ltd
 AK Asset Management Inc.
 Alberta Investment Management Corporation (AIMCo)
 Alberta Teachers Retirement Fund
 Alcyone Finance
 AllenbridgeEpic Investment Advisers Limited
 Allianz Elementar Versicherungs-AG
 Allianz Global Investors Kapitalanlagegesellschaft mbH
 Allianz Group
 Altira Group
 AmpegaGerling Investment GmbH
 Amundi AM
 APG Group
 Apsara Capital LLP
 AQEX LLC
 Arisaig Partners Asia Pte Ltd
 ASB Community Trust
 ASM Administradora de Recursos S.A.
 ASN Bank
 Assicurazioni Generali Spa
 ATI Asset Management
 Australian Ethical Investment Limited
 AustralianSuper
 Avaron Asset Management AS
 Aviva Investors
 Aviva plc
 Baillie Gifford & Co.
 BaltCap
 Banca Monte dei Paschi di Siena Group
 Banco Comercial Português S.A.
 Banco do Brasil S/A
 Banco Nacional de Desenvolvimento Econômico e Social - BNDES
 Banco Popular Español
 Banco Sabadell, S.A.
 Banco Santander
 Banesprev - Fundo Banespa de Seguridade Social
 Bank of America Merrill Lynch
 Bank Vontobel
 Bankhaus Schelhammer & Schattera Kapitalanlagegesellschaft m.b.H.
 BankInvest
 Banque Degroof
 Banque Libano-Francaise
 Barclays
 Basellandschaftliche Kantonalbank
 BASF Sociedade de Previdência Complementar
 Bâtirente
 Baumann and Partners S.A.

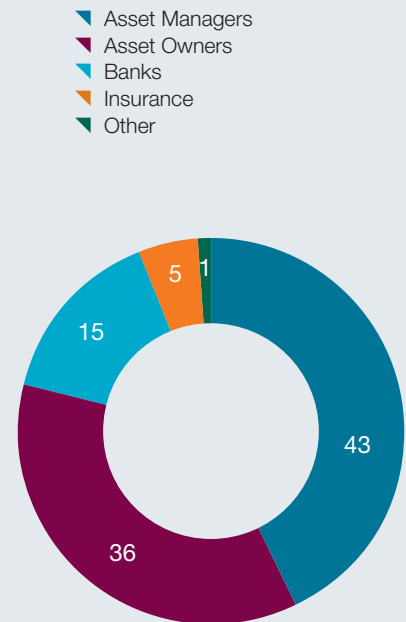
Bayern LB
 BayernInvest Kapitalanlagegesellschaft mbH
 BBC Pension Trust Ltd
 BBVA
 Bedfordshire Pension Fund
 Beetle Capital
 BEFIMMO SCA
 Berenberg Bank
 Blom Bank SAL
 Blumenthal Foundation
 BNP Paribas Investment Partners
 Boston Common Asset Management, LLC
 BP Investment Management Limited
 British Airways Pension Investment Management Limited
 British Columbia Investment Management Corporation (bcIMC)
 BT Investment Management
 CAAT Pension Plan
 Cadiz Holdings Limited
 Caisse de dépôt et placement du Québec
 Caisse des Dépôts
 Caixa Beneficente dos Empregados da Companhia Siderurgica Nacional - CBS
 Caixa de Previdência dos Funcionários do Banco do Nordeste do Brasil (CAPEF)
 Caixa Econômica Federal
 California Public Employees' Retirement System
 California State Teachers' Retirement System
 California State Treasurer
 Calvert Investment Management, Inc
 Canada Pension Plan Investment Board
 Canadian Labour Congress Staff Pension Fund
 CAPESEP
 Capital Innovations, LLC
 CARE Super Pty Ltd
 Catherine Donnelly Foundation
 Catholic Super
 CBRE
 Cbus Superannuation Fund
 CCLA Investment Management Ltd
 Celeste Funds Management
 Central Finance Board of the Methodist Church
 Ceres
 Change Investment Management
 Christian Brothers Investment Services
 Christian Super
 Christopher Reynolds Foundation
 Clean Yield Asset Management
 ClearBridge Advisors
 CM-CIC Asset Management
 Colonial First State Global Asset Management
 COMGEST
 Commlinsure
 Commonwealth Bank of Australia
 Commonwealth Superannuation Corporation
 Compton Foundation, Inc.
 Concordia Versicherungsgruppe
 Connecticut Retirement Plans and Trust Funds
 Co-operative Financial Services (CFS)
 Daegu Bank
 Daesung Capital Management
 Daiwa Asset Management Co. Ltd.
 Daiwa Securities Group Inc.
 Dalton Nicol Reid
 de Pury Pictet Turrettini & Cie S.A.
 DekaBank Deutsche Girozentrale
 Delta Lloyd Asset Management
 Deutsche Bank AG
 Development Bank of Japan Inc.
 Dexia Asset Management
 Domini Social Investments LLC
 Dongbu Insurance
 Earth Capital Partners LLP
 Ecclesiastical Investment Management
 Ecofi Investissements - Groupe Credit Cooperatif
 Edward W. Hazen Foundation
 EEA Group Ltd
 Elan Capital Partners
 Element Investment Managers
 Environment Agency Active Pension fund
 Epworth Investment Management
 Equilibrium Capital Group

equinet Bank AG
 Erste Asset Management
 Essex Investment Management Company, LLC
 ESSSuper
 Ethos Foundation
 Etica Sgr
 Eureka Funds Management
 Eurizon Capital SGR
 Evangelical Lutheran Church in Canada Pension Plan for Clergy and Lay Workers
 Evangelical Lutheran Foundation of Eastern Canada
 F&C Investments
 FAELCE - Fundacao Coelce de Seguridade Social
 FAPERS - Fundação Assistencial e Previdenciária da Extensão Rural do Rio Grande do Sul
 Fédérés Gestion d'Actifs
 FIDURA Capital Consult GmbH
 FIM Asset Management Ltd
 FIM Services
 FIPECq - Fundação de Previdência Complementar dos Empregados e Servidores da FINEP, do IPEA, do CNPq
 First Affirmative Financial Network, LLC
 Firstrand Group Limited
 Five Oceans Asset Management
 Florida State Board of Administration (SBA)
 Folksam
 Fondation de Luxembourg
 Forma Futura Invest AG
 FRANKFURT-TRUST Investment-Gesellschaft mbH
 Fukoku Capital Management Inc
 FUNCEF - Fundação dos Economistas Federais
 Fundação AMPLA de Seguridade Social - Brasileiros
 Fundação Atlântico de Seguridade Social
 Fundação Banrisul de Seguridade Social
 Fundação de Assistência e Previdência Social do BNDES - FAPES
 Fundação Itaipu BR - de Previdência e Assistência Social
 Fundação Promon de Previdência Social
 Fundação Rede Ferroviária de Seguridade Social - Refer
 Fundação Vale do Rio Doce de Seguridade Social - VALIA
 FUNDIÁGUA - Fundação de Previdência da Companhia de Saneamento e Ambiental do Distrito Federal
 Futuregrowth Asset Management
 Generali Deutschland Holding AG
 Gjensidige Forsikring ASA
 Global Forestry Capital SARL
 GLS Gemeinschaftsbank eG
 GOOD GROWTH INSTITUT für globale Vermögensentwicklung mbH
 Governance for Owners
 Government Employees Pension Fund ("GEPP"), Republic of South Africa
 GPT Group
 Greater Manchester Pension Fund
 Green Cay Asset Management
 Green Century Capital Management
 GROUPAMA EMEKLILIK A.Ş.
 GROUPAMA SIGORTA A.Ş.
 Groupe Crédit Coopératif
 Groupe Investissement Responsable Inc.
 GROUPE OFI AM
 Harbour Asset Management
 Harrington Investments, Inc
 Hauck & Aufhäuser Asset Management GmbH
 Hazel Capital LLP
 Healthcare of Ontario Pension Plan (HOOPP)
 Helaba Invest Kapitalanlagegesellschaft mbH
 Henderson Global Investors
 Hermes Fund Managers
 HESTA Super
 HIP Investor
 Holden & Partners
 HSBC Holdings plc
 HUMANIS
 Hyundai Marine & Fire Insurance Co., Ltd
 Hyundai Securities Co., Ltd.
 IBK Securities
 IDBI Bank Ltd
 Illinois State Board of Investment
 Ilmarinen Mutual Pension Insurance Company
 Impax Group plc
 Industrial Bank of Korea

CDP's water program investor signatories and assets (US \$ Trillion) against time



2012 Signatory Investor Breakdown (%)



Calvert views water as both a critical global sustainability challenge and significant investment opportunity. CDP data will help us evaluate company performance across our funds, including the Calvert Global Water Fund.

Bennett Freeman
Senior Vice President
Sustainability Research and Policy
Calvert Investments



Industrial Development Corporation	Newton Investment Management Limited	SNS Asset Management
ING Group N.V.	NGS Super	Social(k)
Insight Investment Management (Global) Ltd	NH-CA Asset Management Company	Socrates Fund Management
Instituto Sebrae De Seguridade Social - SEBRAEPREV	Nikko Asset Management Co., Ltd.	Solaris Investment Management
IntReal KAG	Nipponkoa Insurance Company, Ltd	Sompo Japan Insurance Inc.
Investec Asset Management	NORD/LB Kapitalanlagegesellschaft AG	Sopher Investment Management
Investing for Good CIC Ltd	Nordea Investment Management	SouthPeak Investment Management
Irish Life Investment Managers	Norfolk Pension Fund	SPF Beheer bv
JPMorgan Chase & Co.	Norges Bank Investment Management	Sprucegrove Investment Management Ltd
Jubitz Family Foundation	North Carolina Retirement System	Standard Chartered
Jupiter Asset Management	Northern Ireland Local Government Officers' Superannuation Committee (NILGOSC)	Standard Chartered Korea Limited
Kaiser Ritter Partner Privatbank AG	NORTHERN STAR GROUP	Standard Life Investments
KB Kookmin Bank	Oddo & Cie	State Street Corporation
KBC Asset Management	OECO Capital Lebensversicherung AG	StatewideSuper
KCPS Private Wealth Management	ÖKOWORLD	Strathclyde Pension Fund
KDB Asset Management Co., Ltd.	OMERS Administration Corporation	Stratus Group
Kennedy Associates Real Estate Counsel, LP	Ontario Teachers' Pension Plan	Superfund Asset Management GmbH
KEPLER-FONDS Kapitalanlagegesellschaft m. b. H.	OP Fund Management Company Ltd	Sustainable Capital
Keva	Oppenheim & Co. Limited	Sustainable Development Capital
KfW Bankengruppe	Opplysningsvesenets fond (The Norwegian Church Endowment)	Svenska Kyrkan, Church of Sweden
Killik & Co LLP	OPTrust	Swift Foundation
Kiwi Income Property Trust	Oregon State Treasurer	Swisscanto Asset Management AG
Kleinwort Benson Investors	Orion Energy Systems	Syntrus Achmea Asset Management
KLP	Osmosis Investment Management	T. SINA KALKINMA BANKASI A. .
Korea Technology Finance Corporation (KOTEC)	Parnassus Investments	TD Asset Management (TD Asset Management Inc. and TDAM USA Inc.)
KPA Pension	Pax World Funds	Telluride Association
Kyrkans pensionskassa	Pensioenfonds Vervoer	TerraVerde Capital Management LLC
La Banque Postale Asset Management	Pension Protection Fund	TfL Pension Fund
La Financiere Responsable	Pensionsmyndigheten	The Brainerd Foundation
Lampe Asset Management GmbH	Perpetual Investments	The Bullitt Foundation
LBBW Asset Management Investmentgesellschaft mbH	PETROS - The Fundação Petrobras de Seguridade Social	The Central Church Fund of Finland
LD Lønmodtagernes Dyrtdisfond	PFA Pension	The Children's Investment Fund Management (UK) LLP
Legal & General Investment Management	PGGM Vermogensbeheer	The Co-operative Asset Management
Legg Mason Global Asset Management	Phillips, Hager & North Investment Management	The Daly Foundation
LGT Capital Management Ltd.	PhiTrust Active Investors	The Environmental Investment Partnership LLP
Light Green Advisors, LLC	Pictet Asset Management SA	The Joseph Rowntree Charitable Trust
Living Planet Fund Management Company S.A.	Pioneer Investments	The Korea Teachers Pension (KTP)
Lloyds Banking Group	PKA	The Pension Plan For Employees of the Public Service Alliance of Canada
Local Authority Pension Fund Forum	Pluris Sustainable Investments SA	The Pinch Group
Local Government Super	PNC Financial Services Group, Inc.	The Russell Family Foundation
Local Super	Pohjola Asset Management Ltd	The Sandy River Charitable Foundation
Logos portföy Yönetimi A. .	Portfolio 21 Investments	The Sisters of St. Ann
London Pensions Fund Authority	PREVHAB PREVIDÊNCIA COMPLEMENTAR	The United Church of Canada - General Council
Lothian Pension Fund	PREVI Caixa de Previdência dos Funcionários do Banco do Brasil	The University of Edinburgh Endowment Fund
LUCRF Super	PREVIG Sociedade de Previdência Complementar	The Wellcome Trust
Lupus alpha Asset Management AG	Provinzial Rheinland Holding	Threadneedle Asset Management
MainFirst Bank AG	Prudential Investment Management	TOBAM
MAMA Sustainable Incubation AG	Psagot Investment House Ltd	Tokio Marine Holdings, Inc
Maple-Brown Abbott	PSP Investments	Toronto Atmospheric Fund
Marc J. Lane Investment Management, Inc.	Q Capital Partners Co. Ltd	Trillium Asset Management Corporation
Maryland State Treasurer	QBE Insurance Group	Triodos Investment Management
MATRIX GROUP LTD	Rabobank	Tri-State Coalition for Responsible Investment
McLean Budden	Raiffeisen Fund Management Hungary Ltd.	Union Asset Management Holding AG
Meeschaert Gestion Privée	Raiffeisen Kapitalanlage-Gesellschaft m.b.H.	Union Investment Privatfonds GmbH
Mercy Investment Services, Inc.	Rathbones / Rathbone Greenbank Investments	Unionen
Mergence Investment Managers	RCM (Allianz Global Investors)	UNISON staff pension scheme
Meritas Mutual Funds	Rei Super	UniSuper
MetalRente GmbH	RLAM	Unitarian Universalist Association
Metzler Asset Management GmbH	Robeco	United Methodist Church General Board of Pension and Health Benefits
Midas International Asset Management, Ltd.	Robert & Patricia Switzer Foundation	Universities Superannuation Scheme (USS)
Miller/Howard Investments	Rockefeller Financial (trade name used by Rockefeller & Co., Inc.)	Vancity Group of Companies
Mirae Asset Global Investments	Rose Foundation for Communities and the Environment	VCH Vermögensverwaltung AG
Mirae Asset Securities Co., Ltd.	Royal Bank of Canada	Veris Wealth Partners
Missionary Oblates of Mary Immaculate	Royal Bank of Scotland Group	Vermont State Treasurer
Mistra, Foundation for Strategic Environmental Research	RPMI Railpen Investments	Vexiom Capital Group, Inc.
Mitsubishi UFJ Financial Group	RREEF Investment GmbH	VicSuper
Mitsui Sumitomo Insurance Co.,Ltd	Russell Investments	Victorian Funds Management Corporation
Mizuho Financial Group, Inc.	SAM Group	VietNam Holding Ltd.
Mn Services	Sampension KP Livsforsikring A/S	Vinva Investment Management
Momentum Manager of Managers (Pty) Limited	Samsung Fire and Marine Insurance	Voigt & Coll. GmbH
Monega Kapitalanlagegesellschaft mbH	Samsung Securities	Waikato Community Trust
Mongeral Aegon Seguros e Previdência S/A	Sanlam Life Insurance Ltd	Walden Asset Management, a division of Boston Trust & Investment Management Company
Mountain Cleantech AG	Santa Fé Portfolios Ltda	WARBURG - HENDERSON Kapitalanlagegesellschaft für Immobilien mbH
MTAA Superannuation Fund	Santam	WARBURG INVEST KAPITALANLAGEGESELLSCHAFT MBH
Mutual Insurance Company Pension-Fennia	Sarasin & Cie AG	Water Asset Management, LLC
Natcan Investment Management	SAS Trustee Corporation	West Yorkshire Pension Fund
Nathan Cummings Foundation, The	Schroders	WestLB Mellon Asset Management (WMAM)
National Australia Bank Limited	Scottish Widows Investment Partnership	Westpac Banking Corporation
National Bank of Canada	SEB	WHEB Asset Management
National Grid Electricity Group of the Electricity Supply Pension Scheme	SEB Asset Management AG	White Owl Capital AG
National Grid UK Pension Scheme	Sentinel Investments	Winslow Management, A Brown Advisory Investment Group
National Pensions Reserve Fund of Ireland	SERPROS - Fundo Multipatrocinado	Woori Bank
National Union of Public and General Employees (NUPGE)	Service Employees International Union Pension Fund	York University Pension Fund
Nativus Sustainable Investments	Seventh Swedish National Pension Fund (AP7)	Youville Provident Fund Inc.
NATIXIS	Shinhan Bank	Zegora Investment Management
Nedbank Limited	Shinhan BNP Paribas Investment Trust Management Co., Ltd	Zevin Asset Management
Needmor Fund	Shinkin Asset Management Co., Ltd	Zurich Cantonal Bank
NEI Investments	Siemens Kapitalanlagegesellschaft mbH	
Nelson Capital Management, LLC	Signet Capital Management Ltd	
Neuberger Berman	Smith Pierce, LLC	
New Alternatives Fund Inc.		
New Mexico State Treasurer		
New York State Common Retirement Fund (NYSCRF)		

As a pension fund entrusted with the retirement savings of more than a million South African public servants, we recognise the need for meaningful and systematic reporting on water use and its management by the companies in which we are invested. We congratulate CDP and its research partners on the achievement of making meaningful carbon and water data available to mainstream investors such as GEPF.

John Oliphant
Principal Officer
Government Employees Pension Fund (GEPF)

Executive Summary

This is the third successive year in which the CDP's water information request has been sent to the CEOs of South Africa's top listed companies, asking them to disclose their company's response to water-related risks and opportunities throughout their value chain. This year, the questionnaire was sent on behalf of 470 global investors, representing US\$50 trillion in assets, to 61 companies on the JSE 100 that are deemed to be in a water-intensive sector, or in a sector that is sensitive to water issues through their value chain.

South Africa is one of the first countries to participate in the CDP's water information request. This is due in part to a growing appreciation of the increasingly strategic value of water to businesses operating in the region. South Africa is one of the most arid countries in the world, with low rainfall and limited underground aquifers contributing to the need for significant water transfers from neighbouring countries.

Given the context of increasing pressure on water resources in South Africa, the high risk rating that most respondents have given to water-related issues, and the consistently high response rate to the CDP South Africa 100 Climate Change request (78% in 2012), the 49% response rate on water issues is lower than might be expected.

Much of the country's key economic activity occurs in areas with reduced water availability, there is concern regarding declining water quality (including from acid mine drainage), and there is a continuing legacy of unequal access to resources including water. A study³ has estimated that by 2030 South Africa will experience a supply shortfall of 3 billion m³ of water (representing 17% of anticipated water demand), highlighting that some tough trade-offs will be needed between domestic water use, agriculture, and key industrial activities such as mining and power generation. Compounding these various challenges are concerns regarding the quality of existing physical water infrastructure, the ability of institutions to respond effectively, and the potentially significant additional impact of climate change on water availability and distribution.

As the responses in this report highlight, the strategic value of water is already being felt by many of South Africa's largest companies, and almost all respondents anticipate that water-related issues will grow in significance in coming years.

Key findings

This year, 30 companies (of 61) answered the questionnaire, compared with 26 (of 56) in 2011. This gives a response rate in 2012 of 49%, slightly up from 46% in 2011. This response rate remains lower than the 60% response rate of the CDP Global 500 Water Report 2012, but is higher than the 2011⁴ response rate in Australia of 41%, and the 2012 response rate in the US of 41%. Of the 28 South African respondents, 26⁵ replied publicly, up from 20 last year.

South African companies appear to be particularly exposed to water-related risks

All but two of the respondents (93%) report material exposure to water-related risks, up from 85% in 2011 and substantially more than the 63% of respondents in the Global 500. Significantly, 71% of respondents report having already experienced financially-material water-related impacts in the last five years, a marked increase on the 58% who reported such impacts in 2011, and noticeably more than the 53% of respondents in the Global 500. Water stress or scarcity is the most reported risk, followed by declining water quality, flooding and higher water prices. Two-thirds of all the anticipated risks are seen to have the potential to impact the business's direct operations or their supply chains within the next five years. The significantly higher proportion of South African respondents that report exposure to recent water-related events and imminent risks, suggests a compelling case for immediate business action and strong engagement of investors in the JSE.

4. At the time of going to print the 2012 Australian data was not publicly available

5. This figure excludes Mondi Ltd (who reported via Mondi Plc) and ArcelorMittal (who reported as part of the Global 500 report)

3. 2030 Water Resource Group (2009) Charting Our Water Future

There is evidence of greater awareness and an improved governance response to water-related risks

The 2012 responses suggest a growing appreciation of the strategic value of water, as well as improved action and governance on water-related issues amongst the responding companies. This is evidenced, for example, by the increase in companies that have a water policy or strategy in place (75% as compared with 69% in 2011), that have board-level oversight of water-related issues (71%, up from 65%), and that are beginning to measure and manage their supply chain risks. There is also evidence of an improved understanding of the interrelationship between water, energy and carbon, with the majority of respondents reporting positive synergies, and some companies actively seeking to integrate those considerations into their strategy and decision-making.

Despite these improvements, the governance response does not appear to be sufficiently aligned with the magnitude of the reported risk

The much higher reported risk-exposure of South African respondents, compared with their Global 500 counterparts, is not matched by a similarly higher disclosure on management and response measures. Although 93% of South African respondents report material water-related risks, only 75% have a water policy or strategy in place, and only 57% have set quantitative⁶ targets or goals to manage water. By contrast, in the Global 500, where only 68% of respondents report material risks, 92% have a water policy or strategy, and 55% have quantitative targets or goals. Similarly, only 25% of South African respondents require key suppliers to report on water issues, compared with 39% of Global 500 respondents. This disconnect between the very high risk exposure, and the comparatively lower evidence of response measures, suggests that the South African corporate response is lacking the required urgency.

Few companies have measurable targets, and there is significant variability in the nature and ambition of these targets

The suggested lack of urgency is evidenced in particular by the low number of companies with water-related targets. Only 16 respondents have quantitative targets. Most of these are intensity targets, and range in ambition from 0% (retaining water intensity at its current level) to a 30% reduction in water intensity. Given the reported concerns regarding water quality in South Africa, it is also surprising that only two companies have targets relating to water quality. Other types of targets include commitments to improve water accounting, reduce freshwater intensity, and to improve the ratio of water recycled to high quality water consumed.

Most companies see opportunities to mitigate risk (value protection), but few identify new business opportunities (value creation)

Although 89% of respondents identified water-related opportunities with the potential to generate a substantive change in business (as compared with 77% in 2011, and 71% in the Global 500), the vast majority of these opportunities relate to activities to mitigate risks, rather than genuine new business opportunities. The most commonly cited opportunity relates to cost savings – associated, for example, with water-efficiency and recycling measures – followed by general reputational benefits. Only 10% of reported opportunities relate to the sales of new products and technologies to address water-related challenges.

Water accounting is not consistent and would benefit from consistent measurement approaches

The majority of respondents (93%) are able to report on quantitative water withdrawals, while 79% are able to report water discharges and 71% are able to report figures for recycling or reuse. These figures are lower than might be expected for such important components of a robust water management strategy. The water accounting data should be viewed with caution, as reporting methodologies and scope vary considerably between companies, undermining the ability for meaningful benchmarking of performance. While 79% of South African respondents are verifying their data, only four explicitly list some degree of external verification, rather than internal assurance. There is a clear need for consistent measurement approaches to facilitate investors' assessment of water management and to enable comparability between companies.

While there are some interesting examples of partnership initiatives there remains significant potential for more collective action to manage this shared resource

The majority of respondents (86%) report taking specific actions to manage water risk. Not surprisingly, most respondents (61%) focus on actions at their direct operations, but an increasing number are beginning to look beyond their operations and to engage with the community (46%) or their supply chain (25%). While it is encouraging that many respondents are beginning to consider community engagement, and some examples of exciting partnership-based initiatives exist, it is suggested that there remains significant scope for more organisations to act beyond their operations, particularly given the context of South Africa's social development needs and constraints.

Despite the growing recognition of the strategic significance of water, few companies are demonstrating the urgency and leadership in response that is required.

6. For the purposes of this report, quantitative targets or goals are equivalent to concrete targets or goals in the Global 500 report

1. Introduction: The South African water context

Water is increasingly becoming a strategic issue for business, presenting risks and opportunities that have material financial implications.

Globally, attention is focusing on the availability and quality of water, as well as on the water-related impacts of climate change. This has received increased prominence in the wake of recent droughts and heat waves (USA, July 2012), floods (Australia, March 2012) and storms (Hurricane Sandy, October 2012).

The World Economic Forum's Global Risks Report 2013⁷ highlights the significance of water issues: water supply is the second most important global risk, while other

7. World Economic Forum (2013) Global Risks 2013, Eighth Edition, World Economic Forum, Geneva, Switzerland.

water-related risks (food availability and extreme volatility in energy and agricultural prices) are also in the top five. Water availability, quality and sanitation are undermining development in many regions of the world, inflicting a human and economic cost, as well as affecting life-giving ecosystems. There are strong linkages between water and other sustainability challenges, such as food and energy security, land use, and social development. These inter-relationships are particularly important in South Africa, an energy-intensive economy where poverty is prevalent, water is scarce and vital water infrastructure is increasingly vulnerable, yet so critical to social and economic development.

GUEST COMMENT:

The physical water situation in South Africa

Dr Guy Pegram – Pegasys



Ensuring licence compliance, operational efficiency or even supply chain productivity for a business, may not be sufficient to prevent water-related problems from impacting on companies' operations, sales or input costs.

Over the past decade, global public, media and investor interest in water and the way it is used has increased exponentially. This has been related to awareness around climate change, together with the experience of greater water stress and degradation of rivers, wetlands and estuaries. South Africa is no exception to this trend and companies are increasingly aware of their risks and responsibilities related to water, as illustrated by this CDP's water report.

With more than 70% of companies reporting negative impacts from water, it is clear that business can no longer assume that acceptable quality water will be reliably provided, nor that waste water will be adequately collected and treated before it is discharged. This is symptomatic of the wider water situation in South Africa, and in many respects this situation is replicated in other parts of the continent and world.

While the occurrence of serious drought over the past decade has been isolated to the southern and northern parts of the country, this is largely related to a wetter than average period. A cursory look at the Department

of Water Affairs' assessment of the future development requirements for key urban centres indicates that the existing supplies in many of these systems may not meet the future demand of domestic and industrial users.

This threat has required various water conservation and infrastructure augmentation interventions, which will result in steadily increasing water supply costs across the country and an expectation for increased water use efficiency by companies. A greater than one in 50 year drought in the Vaal, Umgeni, Amatole or Western Cape systems could impose dramatic water restrictions in Johannesburg, Durban, East London or Cape Town respectively. However, in the absence of differentiated drought restriction rules, the process and financial implementations of severe blanket restrictions may cause serious challenges to companies that have already implemented water efficiency measures.

Even where water is available in rivers, dams and ground water, deteriorating infrastructure and poor municipal management increasingly imposes a risk of unreliable water supply or inadequate quality, as indicated by the widespread non-compliance reported in the Blue Drop Report 2012⁸. While this has potential supply and financial impacts on business, the inadequate water supply to poor residents has contributed to the proliferation of service delivery protests over the past couple of years. Thus far these protests have focused on political leaders and the public sector, but it is possible that any companies in these areas may be targeted.

A similar problem is prevalent in waste effluent treatment and discharge, with widespread non-compliance of municipal waste water discharge with effluent standards, as indicated by the Green Drop Report 2011⁹. The implementation of the waste discharge charge system during 2014 will transfer the costs of waste discharge and non-compliance onto municipalities and bulk industrial dischargers. Municipalities may act responsibly by improving treatment or may act irresponsibly by transferring these costs upstream onto effluent tariffs. Either way, the costs to business are likely to increase in line with the impacts they are currently having on downstream users.

Regulatory pressures and waste discharge charges on the mining sector, related primarily to acid mine drainage, are likely to force mines to further reduce their impacts or collaborate to treat mine decant or dewatering before it contaminates water resources. Agricultural supply chains are also under pressure from increasingly scarce water supply, deteriorating water quality and a need to redistribute agricultural water to historically disadvantaged farmers. Commercial agriculture may come under

increasing pressure around water if more progress is not made on water and land reform.

Physical water risks are not the only consideration for business. Good governance, effective management and adequate infrastructure can mitigate these risks. Whereas the enabling regulatory environment in South Africa is sound, the implementation practice has been uneven over the past few years, which has contributed to the aforementioned deterioration of the water situation in the country. However, there are signs that water use licensing backlogs are being addressed, the water supply assurance gaps may be closed, waste discharges may be controlled and environmental requirements may be achieved.

A sustained turnaround of the water sector will benefit from responsible engagement by business and civil society at local, catchment and national levels. This engagement must be an increasing focus of the business response to water in South Africa, because ensuring licence compliance, improving operational efficiency or even supply chain productivity for a business, may not be sufficient to prevent water related problems from impacting on companies' operations, sales or input costs.

This CDP's water report is an important part of the drive to ensure companies consider their vulnerabilities and frame their responses to water in a coherent and targeted manner. Various water footprint and life cycle assessment methods are traditionally applied and this understanding is a critical first step on the disclosure journey. Businesses should consider their water vulnerabilities associated with input supply chains, operations and possibly customer use of their products, and consider wider impacts in the places where these activities occur.

Water disclosure diverges from carbon disclosure in that it should reflect how a company relates to water at a local catchment scale. This provides the opportunity to engage with actors and initiatives at a local scale to address water-related risks. The financial institutions represented by CDP's water program are a critical lever to encouraging companies to consider social and ecological impacts of water use in their business and to explain how they will tackle any key challenges they face, within the factory fence, through their suppliers or in the local catchments in which they operate.

The opportunity of this report is for the financial sector to encourage business to engage in dialogue about the way in which water should be used in the South Africa economy and society, with government and civil society at national, catchment and local levels. This will be central to managing global perceptions and influencing water-related investment decisions in South Africa by international financial institutions who are increasingly aware of water and climate issues.

8. http://www.dwaf.gov.za/dir_ws/dwqr/subscr/ViewComDoc.asp?Docid=375

9. <http://www.dwa.gov.za/Documents/GD/GDIntro.pdf>

2. CDP's water program South Africa 2012: An overview

This is the third annual CDP water report for the South African business sector. In South Africa the CDP is run through a partnership between CDP headquartered in London and the National Business Initiative (NBI) in Johannesburg. The NBI manages the partnership with the CDP and all other stakeholders in South Africa, including businesses, government, investors, sponsors and the JSE.

Irbaris and Incite Sustainability undertook the background analysis and wrote this report. The report seeks to present an objective account of the corporate responses, allowing readers to make their own informed assessment of companies' understanding of, and strategic response to, water-related risks and opportunities. It provides the information in a manner that will assist investors, policy-makers, and other interested parties to undertake further analysis. The report strives to provide a broad indication of companies' performance on water-related issues and undertakes to provide a context for their activities, as well as critical commentary on the quality and nature of their performance. The publicly available responses can be downloaded from the CDP website for further analysis by interested stakeholders.

The JSE 100: 2012 Sample

In 2010, CDP launched its water programme to help better understand the risks and opportunities associated with water scarcity and other water-related issues. The initiative reflects a growing awareness within the corporate sector, as well as the broader investment community, as to the critical importance of water to business continuity.

The 2012 target sample in South Africa consists of 61 companies from the JSE 100 (as listed at 30 December 2011) that are deemed to be in a water-intensive sector, or in a sector that is sensitive to water issues through the supply chain (Table 1). This compares with a sample size of 56 companies in 2011. One of the 61 invited companies (*Mondi Ltd*) engaged in the process via a parent company also listed on the JSE 100 (*Mondi Plc*), while another company (*ArcelorMittal South Africa*) responded through *ArcelorMittal*, who had been invited separately through the Global 500 process and not as part of the JSE 100 sample. The response data from *Mondi Plc* has been included in the South Africa analysis, while the response from *ArcelorMittal* is addressed only in the CDP Global 500 Water Report and not in this analysis. For the purposes of the quantitative analysis throughout this report, and to avoid double-counting, we have assumed a sample size of 61 companies and responses from 28 companies (i.e.

excluding *Mondi Ltd*)¹⁰. As *ArcelorMittal* did not submit a questionnaire as part of the CDP South Africa process, their response has not been included in this analysis. The 2012 target sample does not include state-owned companies (such as Eskom or Transnet), nor does it include large water-users from non-listed private companies. In addition to the 61 companies that were approached, six organisations chose to participate voluntarily in the 2012 CDP's water program (Table 5).

To facilitate sectoral analysis and to maintain comparability with previous years' reporting and with the CDP Climate Change South Africa report, the 2012 sample has been clustered into five sectors (Figure 1)¹¹. The sectors vary in terms of size (ranging from three companies to 24 companies), and have also changed in their composition between 2011 and 2012 (Figure 2). In contrast with the CDP Climate Change South Africa report, Consumer Staples and Consumer Discretionary have been combined into one sector; this is due to the very limited response from the Consumer Discretionary Sector, with only one public response from ten companies.

Response rates remain lower than the Global 500

This year, 30 companies (out of 61) answered the questionnaire, compared with 26 (of 56) in 2011, giving a response rate in 2012 of 49%, slightly up from 46% in 2011 (Table 1). This remains lower than the 60% response rate of the CDP Global Water Report 2012, but is better than the 2011¹² response rate in Australia of 41% (of the 54 ASX 100 companies invited to respond), and the 2012 response rate in the USA of 41% (141 companies of the 345 invited).

10. Except when referring to overall disclosure rates, the total number of direct/unique companies in the sample that are AQ (not including SA) is used as a denominator for calculating "% of responding companies". This is in line with the CDP methodology.

11. Figure 1 includes the IT sector, one company was asked to respond, but declined to respond. Figure 2 excludes the IT sector, no responses were received in 2011 or 2012.

12. At the time of going to print the 2012 Australian data was not publicly available.

Of the 28 respondents, 26 replied publicly in 2012, up from 20 in 2011. This includes four companies that declined to participate in 2011 (*Illovo Sugar*, *Lonmin*, *Kumba Iron Ore* and *Pick n Pay Holdings*), as well as two companies (*Barloworld* and *Impala Platinum*) who had chosen to make their response non-public in 2011.

Notwithstanding this welcome increase in public responses, there was also an increase in companies that did not respond at all (five as compared with three in 2011), while the number of companies that declined to participate remained static (26 companies in both 2011 and 2012). Unfortunately two companies who responded in 2011 (*Tiger Brands* and *Wilson Bayly Holmes-Ovcon*) declined to participate in 2012. Of the eight new companies in the sample that were not approached in 2011, only one answered the questionnaire (*Royal Bafokeng Platinum Ltd*, who did so publicly); three declined to participate and four did not respond at all.

Given the context of increasing pressure on water resources in South Africa, the high risk rating that most respondents have given to water-related issues, the growing investor interest in this issue, and the consistently high response rate (78% in 2012) that South African companies have provided in the annual CDP information requests on climate change disclosure, the response rate on water issues is lower than might be expected.

The Health Care sector had the highest response rate (60%) although from a small base of only five companies, followed by the Materials & Energy sector (62%), Industrials (43%) and Consumer Staples and Consumer Discretionary (36%) (Figure 1 and Figure 2).

Figure 1 Response rates by sector

The outside ring shows the number of companies invited to respond, and the inner ring shows the number that responded.

Companies Responding per Sector 2012		Companies Invited to Respond per Sector 2012	
8	Consumer Discretionary & Consumer Staples	22	Consumer Discretionary & Consumer Staples
3	Health Care	5	Health Care
3	Industrials	7	Industrials
0	Information Technology	1	Information Technology
16	Materials & Energy	26	Materials & Energy

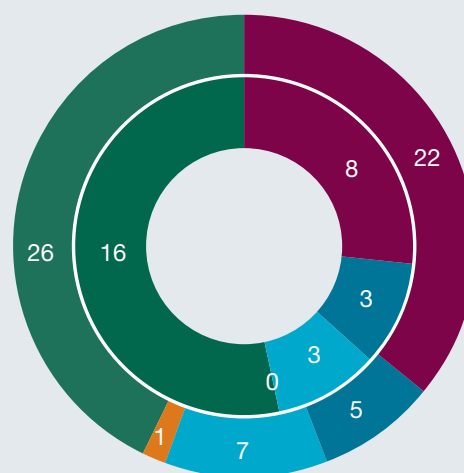


Figure 2 JSE 100 Response rate by sector and by year

2012		2011	
Public Respondents	Non-public Respondents	Public Respondents	Non-public Respondents

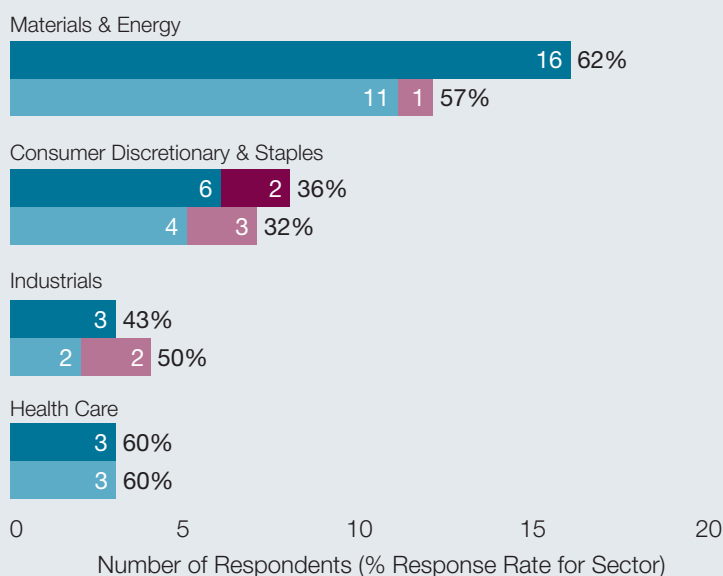


Table 1 Response to the CDP's water program (2012 and 2011) and CDP climate change program (2012)

Company	GICS	CDP's water response status 2012	CDP's water response status 2011	CDP climate change response status 2012
Adcock Ingram	Health Care	AQ	AQ	AQ
AECI Ltd	Materials	AQ	AQ	AQ
African Rainbow Minerals	Materials	DP	NR	AQ
Allied Electronics Corporation Ltd (Altron)	Industrials	AQ	AQ v	AQ
Anglo American	Materials	AQ	AQ	AQ
Anglo American Platinum	Materials	AQ	AQ	AQ
AngloGold Ashanti	Materials	AQ	AQ	AQ
Arcelor Mittal South Africa Ltd (See Arcelor Mittal in Global 500)	Materials	AQ (Global)	AQ (Global)	AQ
Aspen Pharmacare Holdings	Health Care	DP	DP	AQ
Assore Ltd	Materials	DP	DP	AQ (np)
Aveng Ltd	Industrials	DP	DP	AQ
Avi Ltd	Consumer Staples	DP	DP	DP
Barloworld	Industrials	AQ	AQ np	AQ
BHP Billiton	Materials	AQ	AQ	AQ
Bidvest Group Ltd	Industrials	DP	DP	AQ
British American Tobacco	Consumer Staples	AQ	AQ	AQ
Clicks Group Ltd	Consumer Discretionary	DP	DP	AQ
Compagnie Financiere Richemont SA	Consumer Discretionary	DP	DP	AQ (np)
Datatec	IT	DP	/	DP
Exxaro Resources Ltd	Materials	AQ	AQ	AQ
Foschini Group Ltd	Consumer Discretionary	AQ np	AQ np	AQ (np)
Gold Fields Limited	Materials	AQ	AQ	AQ
Harmony Gold Mining Co Ltd	Materials	DP	DP	AQ
Illovo Sugar Ltd	Consumer Staples	AQ	DP	AQ
Impala Platinum Holdings	Materials	AQ	AQ np	AQ
JD Group Ltd	Consumer Discretionary	DP	DP	DP
Kumba Iron Ore	Materials	AQ	DP	AQ
Lewis Group	Consumer Discretionary	DP	/	AQ
Life Healthcare Group Holdings Ltd	Health Care	NR	NR	DP
Lonmin	Materials	AQ	DP	AQ
Massmart Holdings Ltd	Consumer Staples	DP	DP	AQ
Mediclinic International	Health Care	AQ	AQ	AQ
Metorex Ltd	Materials	NR	/	AQ
Mondi Ltd (See Mondi Plc)	Materials	AQ sa	AQ sa	AQ
Mondi Plc	Materials	AQ	AQ	AQ
Mr Price Group Ltd	Consumer Discretionary	DP	DP	DP
Murray and Roberts Holdings Limited	Industrials	DP	DP	AQ
Nampak Ltd	Materials	DP	DP	AQ
Naspers	Consumer Discretionary	DP	DP	DP

Company	GICS	CDP's water response status 2012	CDP's water response status 2011	CDP climate change response status 2012
Netcare Limited	Health Care	AQ	AQ	AQ
Northam Platinum Ltd	Materials	AQ	AQ	AQ
Oceana	Consumer Staples	DP	/	AQ
Omnia Holdings Ltd	Materials	NR	/	DP
Optimum Coal Holdings	Energy	NR	/	DP
Palabora Mining Co Ltd	Materials	NR	/	DP
Pick n Pay Holdings Ltd	Consumer Staples	AQ	DP	AQ
Pioneer Foods	Consumer Staples	AQ np	AQ np	AQ np
PPC	Materials	DP	DP	AQ
Reunert	Industrials	AQ	AQ	AQ
Royal Bafokeng Platinum Ltd	Materials	AQ	/	AQ
Sappi	Materials	DP	DP	AQ
SABMiller	Consumer Staples	AQ	AQ	AQ
Sasol Limited	Energy	AQ	AQ	AQ
Shoprite Holdings Ltd	Consumer Staples	DP	DP	AQ np
Steinhoff International Holdings	Consumer Discretionary	DP	DP	AQ
The Spar Group	Consumer Staples	DP	DP	AQ
Tiger Brands	Consumer Staples	DP	AQ np	AQ np
Tongaat Hulett Ltd	Consumer Staples	AQ	AQ	AQ
Truworths International	Consumer Discretionary	DP	DP	AQ
Wilson Bayly Holmes-Ovcon Ltd	Industrials	DP	AQ np	AQ
Woolworths Holdings Ltd	Consumer Discretionary	AQ	AQ	AQ

Note: This table only lists the 61 companies on the JSE 100 that were invited to respond in the 2012 CDP's water program. It does not include the 2011 respondents who were no longer in the JSE 100 for the 2012 Project (as at 30 December 2011, namely Grindrod, Evraz Highveld Steel & Vanadium Ltd, Sun International and Imperial Holdings), nor does it include the 2012 voluntary respondents (see Table 5).

Key

AQ	Answered questionnaire (public)
AQ v	Answered questionnaire (voluntary)
AQ np	Answered questionnaire, but declined permission to make this public
AQ (Global)	Answered questionnaire via parent company not in the JSE sample
AQ sa	Answered questionnaire via parent company also in sample
DP	Declined to participate
NR	No response
/	Not included in JSE 100 sample

GUEST COMMENT:

An investor perspective on water in South Africa

John Oliphant – Principal Officer, Government Employees Pension Fund (GEPF)



GEPF has adopted an active approach to responsible investment that acknowledges environmental, social and governance (ESG) issues.

GEPF welcomes the release of the CDP's water report 2012 for South Africa. GEPF continues to be a proud investor and supporter of the CDP and its water disclosure projects.

We congratulate CDP and its research partners on the achievement of making meaningful carbon and water data available to mainstream investors such as GEPF. I also wish to thank those companies that made a concerted effort to report to CDP's water program on their water stewardship activities for the year under review.

As a pension fund entrusted with the retirement savings of more than a million South African public servants, we recognise the need for meaningful and systematic reporting on water use and its management by the companies in which we are invested. This is important so that investors and other stakeholders may understand how companies are addressing water use and water management across a company's local and international operations.

GEPF has adopted an active approach to responsible investment that acknowledges environmental, social and governance (ESG) issues, such as a company's carbon footprint and water use. These issues will increasingly dictate what, how and where GEPF invests when seeking risk-adjusted investment returns on behalf of our members and pensioners. Given that 90% of GEPF's investment portfolio is within South Africa, a water-scarce region, it is critically important for us to understand water use as a potential investment risk – and opportunity – to GEPF's portfolio returns over the short, medium and long-term.

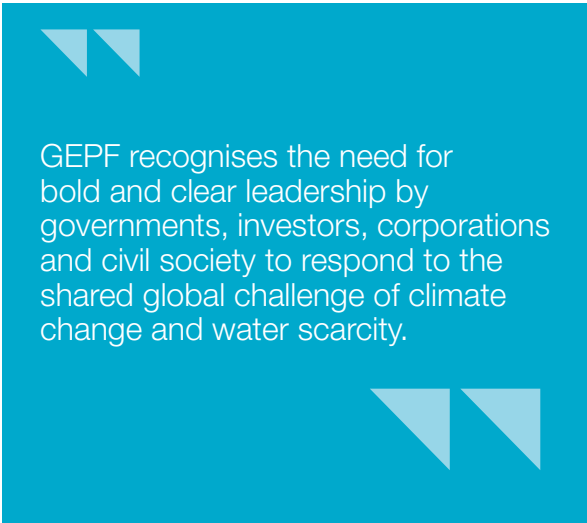
As an active owner and steward of GEPF member and pensioner assets, we will continue to collaborate with local and international investor peers to further develop responsible investment best practices. GEPF is committed through GEPF's Responsible Investment policy, launched in 2010, to exert influence on investee companies to appropriately manage material ESG risks and to report publicly on progress in managing such risks. Furthermore, GEPF is increasingly requesting fund managers to address carbon and water risks at company and portfolio level, and to report on how they have engaged portfolio companies on the management of material ESG risks.

The (2012) WWF report "Navigating Muddy Waters: securing investment returns under carbon and water constraints" highlighted the fact that South Africa is not only vulnerable to the impacts of climate change but, more importantly, its annual freshwater availability is less than 1,700m³ per capita. In addition, we have a limited average rainfall of 450mm per year and unevenly distributed water resources. South Africa's total water requirements by 2025 will face a shortfall of "between 2% and 13%" (some estimates suggest this shortfall "could be as high as 33% by 2025"). The WWF report argues that water and carbon risks, if not correctly managed, will materially impact on a company's operational costs, margins, revenues and, ultimately, investment returns.

GEPF partnered with WWF during 2012 to calculate the carbon footprint of the aggregated holdings in GEPF's South African equity and bond portfolios. The carbon footprint of GEPF calculated by Trucost was 72 tonnes of carbon per Rmn value. This was 9% less than the average carbon footprint of the FTSE/JSE Top 100 companies. The GEPF SA bond portfolio carbon footprint was measured against the benchmark Bond Exchange of South Africa (BESA) Corporate Credit Index and was established at 12 tonnes of carbon per Rmn – 17% more carbon efficient than the BESA Corporate Credit Index. This is due mainly to the relative carbon efficiency of debt holdings in the Basic Resources sector. The water footprint of the GEPF equity portfolio in South Africa is 6% less than that of the JSE Top 100 and the externalised costs of water attributable to GEPF's listed portfolio holdings totalled more than R8-billion. Clearly, carbon and water risks are material to GEPF investment returns.

Recent international research produced by the Asset Owners Disclosure Project¹³ (AODP) found that a typical fund has 55% of its assets in high carbon investments and only 2% in low-carbon assets. GEPF's Developmental Investment policy, launched in 2011, is geared towards addressing this imbalance and will see GEPF increasingly invest in renewable energy projects over the next years. The GEPF Board of Trustees has allocated 5% of GEPF's total portfolio to infrastructure investment projects with strong investment returns that will contribute significantly to a greener and more sustainable South Africa. Such projects will include renewable energy projects, clean technology and environmentally friendly infrastructure assets.

GEPF recognises the need for bold and clear leadership by governments, investors, corporations and civil society to respond to the shared global challenge of climate change and water scarcity. As a significant provider of financial capital in South Africa, and increasingly on the African continent, GEPF – and other institutional investors – should *and must* play an important role in shaping the continent's transformation towards a greener and more sustainable economy.



GEPF recognises the need for bold and clear leadership by governments, investors, corporations and civil society to respond to the shared global challenge of climate change and water scarcity.

13. The Asset Owners Disclosure Project is an independent not-for-profit global organisation whose objective is to protect members' retirement savings from the risks posed by climate change by improving the level of disclosure and industry best practice. See <http://aodproject.net/>

3. The South African response: Disclosure analysis

In South Africa, there is growing appreciation of the strategic value of water. South Africa is one of the driest countries in the world, with low rainfall and limited underground aquifers contributing to the need for significant water transfers from neighbouring countries. With increased demand projected, there is likely to be a supply shortfall, highlighting that some tough trade-offs will be needed between domestic water use, agriculture and key industry players such as mining and power generation.

South Africa in a global context

The overall picture from disclosing South African companies shows some differences to the responses of the Global 500 overall (Table 2). South African companies are behind on disclosure, as fewer of them respond, and the responses are comparable to or behind the Global 500 in terms of water-related management (such as targets and taking actions to manage water, requiring suppliers to report risks). Although they report better risk and opportunity awareness than the Global 500, they also report significantly more exposure to risk, and have experienced more detrimental impacts than the Global 500. The responses suggest that South African companies are experiencing more risks and are more aware of them, and yet are doing less to manage them.

It might be expected that recognition of water as a strategic risk is greater in South Africa than globally, for South Africa has a resource-based economy and is water-stressed, receiving approximately half the global average annual rainfall. There are good examples of global leading practice from South Africa, reflected by the fact

that two of the twelve case studies included in the Global 500 Report 2012 are from South African companies: *Sasol* and *SABMiller*, and there are other quotes from South African companies in the Global 500 Report.

In general, South African companies have improved in terms of their disclosure from 2011 (Table 2), and there has been an increased focus on water-related risk since 2011. There are, however, instances in which risk management appears to have declined, evidenced for example by the fewer respondents with quantitative targets or reported actions taken to manage water. Some of these differences may also be attributed to the difference in sample size and content between 2011 and 2012¹⁴.

Despite increasing recognition of the criticality of water, apart from a few leading companies, the general response to water risks seems to be lacking in urgency. The key indicators for this year's CDP's water responses are set out in Table 3 on the next page.

Table 2 Table comparing key indicators between CDP's water program South Africa 2011/2012 and the CDP's water program Global 500 2012

Key indicator	CDP's water program SA 2012	CDP's water program SA 2011	CDP's water program Global 500 2012
Response rate	49%	46%	60%
Experienced detrimental impacts	71%	58%	53%
Exposure to risk (direct operations)	93%	85%	63%
Able to identify risks in supply chain	79%	62%	71%
Requires suppliers to report on water risk	25%	19%	39%
Recognises opportunities	89%	77%	71%
Quantitative goals or targets	57%	58%	55%
Taking actions to manage water	86%	92%	97%
Water policy or strategy	75%	69%	92%
Identify linkages between water and energy	82%	65%	80%

14. These figures, which show unexpected trends, may be explained by the differences in samples between 2011 and 2012. For example, there are ten companies that have responded in one year and not in the other – four in 2011 that are not in 2012, and six in 2012 that are not in 2011.

Table 3 Summary of key indicators

Key Indicators	CDP's water program SA 2012 Respondents (%)	CDP's water program SA 2012 Respondents Absolute	CDP's water program Global 500 2012 (%)
Total companies invited to respond		61	318
Total respondents (includes respondents via parent co)		30	191
Response rate	49%		60%
Total public respondents (includes respondents via parent co)		28	156
Total non-public respondents		2	35
Total declined to participate (includes "information provided" (IN) for Global 500)		26	60
Total number that gave no response		5	67
Responses analysed (excludes respondents via parent co)		28	185
Water Management & Governance			
Respondents with a water policy, strategy or plan	75%	21	92%
Respondents with board-level oversight of their policy, strategy or plan	71%	20	58%
Respondents with quantitative goals or targets	57%	16	55%
Respondents reporting actions, goals or targets to manage water	86%	24	97%
Respondents requiring key suppliers to report water use, risks and management	25%	7	39%
Risks & Opportunities			
Respondents able to identify whether their operations are located in water stressed regions	89%	25	95%
Respondents with the majority of operations located in regions at risk	57%	16	15%
Respondents with key inputs or raw materials from regions subject to water-related risk	68%	19	43%
Respondents able to identify whether or not they are exposed to risk in direct operations	100%	28	96%
Respondents exposed to risks in direct operations	93%	26	63%
Respondents able to identify whether or not they are exposed to risk in supply chain	79%	22	71%
Respondents exposed to risks in supply chain	61%	17	37%
Respondents exposed to risks in either direct operations or supply chain	93%	26	68%
Respondents that have experienced water-related business impacts in the last five years	71%	20	53%
Respondents that identify opportunity	89%	25	71%
Respondents able to identify linkages or trade-offs between water and carbon	82%	23	80%
Water Accounting			
Respondents that report water withdrawals	93%	26	97%
Respondents that verify the majority of water withdrawal data	79%	22	55%
Respondents that report water recycling/reuse	71%	19	63%
Respondents that report water sources significantly affected by their withdrawals	14%	4	9%
Respondents able to identify discharges by destination, treatment type and quality	79%	22	85%
Respondents that paid penalties/fines for significant breaches of discharge regulations	18%	5	17%
Respondents that report water bodies/ habitats significantly affected by their discharges or runoff	14%	4	10%

Understanding risks and opportunities

Water-related impacts continue to grow

South African companies appear to be particularly exposed to, and increasingly aware of, water-related impacts. Seventy-one per cent of respondents report having experienced detrimental impacts in the last five years, an increase on the 58% of respondents who reported such impacts in 2011, and noticeably more than the 53% of respondents in the Global 500. This increasing exposure of South African companies to water impacts correlates with the 82% of South African respondents who report exposure of their business to water-related risks within the next five years.

While calculating the financial impact of water risks is difficult, some respondents (including, amongst others, *Sasol*, *Gold Fields* and *Netcare*) cite significant financial impacts and resultant changes in practice or adaptation. The most commonly reported impacts relate to water scarcity or shortages in supply. For example, *Tongaat Hulett* and *SABMiller* both report having suffered production losses or interruptions due to water shortages, while several others (such as *Impala Platinum*, *AngloGold Ashanti*) have had to make investments in water storage capacity due to disrupted municipal water supply. Some companies (such as *Sasol*, *Anglo American* and *Gold Fields*) report significant production losses due to flooding, while others (such as *Exxaro Resources*) have suffered financially due to pollution incidents. In addition, 18% of respondents have had to pay regulatory fines or penalties.

Water-related risks are significant

There has been a marked increase in the number of companies reporting exposure to water-related risks. This year, 93% of respondents report that they are exposed to such risks in their direct operations, up from 85% in 2011. This compares with 63% of respondents in the Global 500 (Figure 3).

Case Study

Suffering a material financial loss from flooding

In 2011, *Gold Fields'* Teberebie pit was flooded six times, with mining activities having to be halted each time to allow the pits to be dewatered and cleaned up. As a result, 161,359 budget tonnes of ore (equivalent to 5,000 ounces of gold) were not mined; income was reduced by R53.2 million (using an average gold price of R10,642 / ounce); and a profit of approximately R32.5 million was lost. In addition, R6.7 million was spent on managing this risk, by installing high lift pumps and accessories.

Tongaat Hulett South Africa reported a loss of R7 million in 2011 due to drought in KwaZulu Natal.

Tongaat Hulett

During 2010 a portion of the Sasol Synfuels plant was flooded resulting in a plant trip that resulted in production losses of about R130 million. Changes brought about include improved housekeeping of the inside ash handling area to ensure that the factory can better respond to such an occurrence.

Sasol

It is suggested that this higher risk rating amongst respondents reflects the fact that South African businesses are particularly vulnerable to (and increasingly aware of) water-related issues, which could be expected given the water-stressed nature of the country and of many of the other regions in which these locally-listed companies operate. It is important also to recognise, however, that this comparatively higher risk percentage could be a function of the lower response rate in South Africa (with only the higher-risk companies responding), or could reflect that local respondents have simply been prompted by all the options provided in CDP's water information request. Although, the South African respondents to CDP's climate change information request have similarly shown a much higher risk percentage than their international peers.

Of the three broad categories presented in the questionnaire – regulatory, physical and “other” – the most commonly reported water-related risks are physical, many of which are perceived to be near-term (Figure 4). The 93% of respondents who believe they are at risk report a total of 251 risks (189 to direct

Figure 3 Exposure to water risks in direct operations and supply chain: JSE 100 versus Global 500

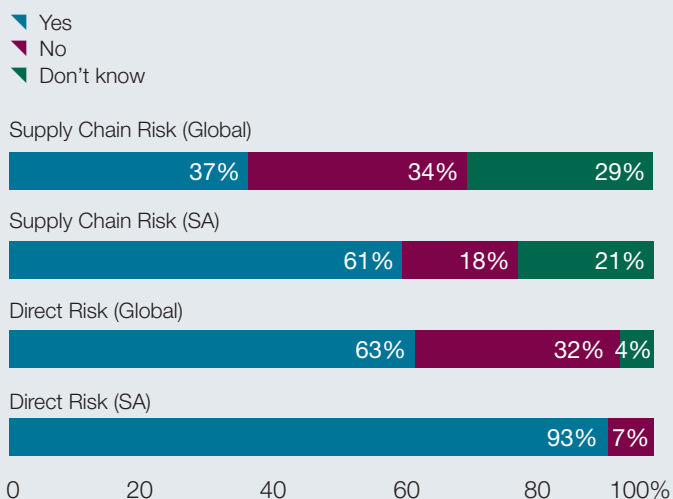
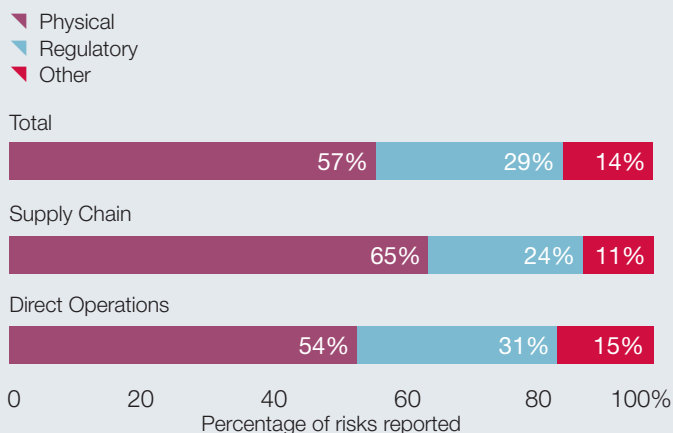


Figure 5 Types of material risks reported in direct operations and supply chain



Note to Figure 4

* Includes the risk: Increased water stress or scarcity (leading to e.g. disruption to operations, higher commodity/energy prices)

Figure 4 Numbers of reported water-related risks (direct operations and supply chain) and their timeframes



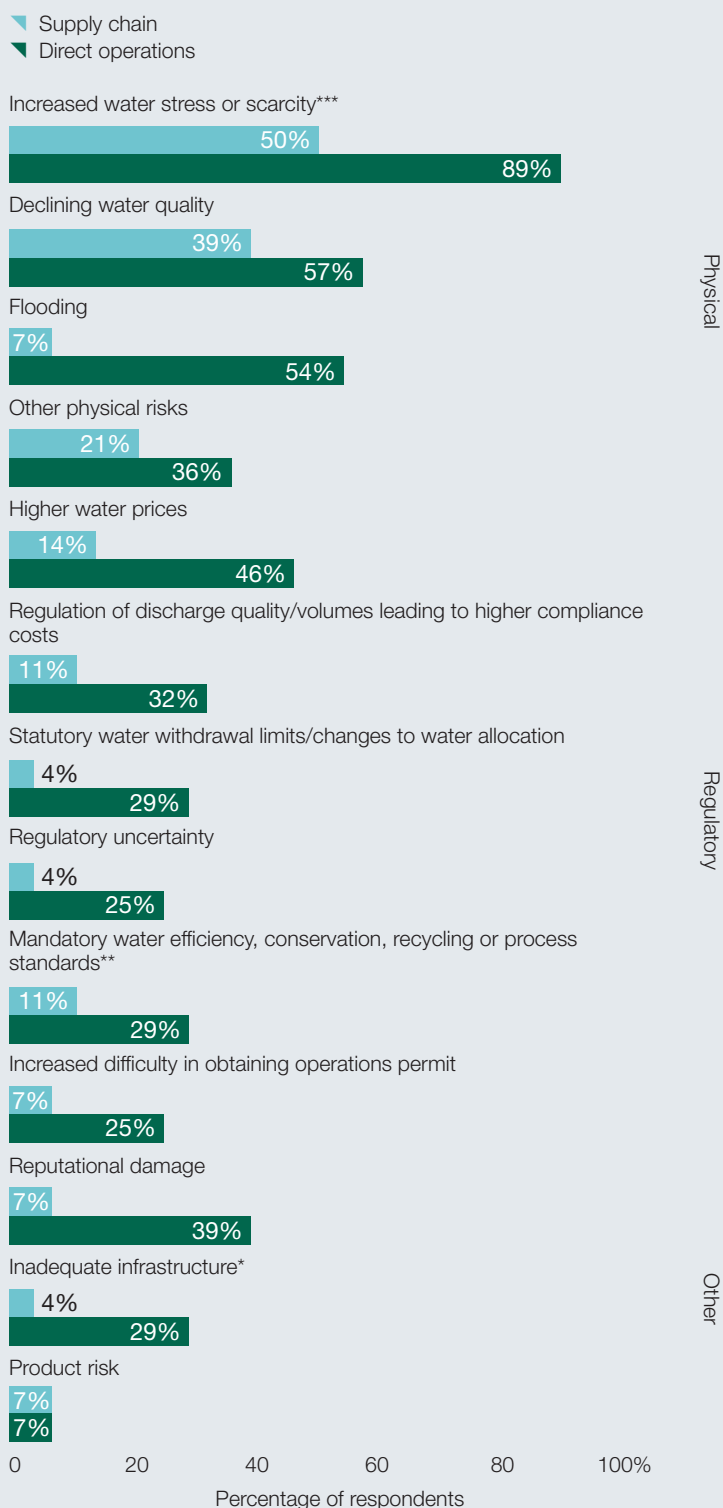
operations and 62 to supply chain) that have the potential to generate a substantive change in direct business operations and supply chain. Only two of the respondents do not consider that their operations or supply chain are exposed to water-related risks.

The majority of the reported risks are physical (57% of all risks), with more companies (25) perceiving water stress or scarcity to be a risk than any other (Figure 5). Water stress was also the most reported risk in the 2011 South African report and the 2012 Global 500 (Table 4). This

is followed by declining water quality (perceived to be a risk by 16 respondents) and flooding (15 respondents) (Figure 6). In the 2012 sample respondents reported declining water quality and flooding considerably more than in 2011. This may be because external events – such as the 2010/2011 summer floods¹⁵ and increasing reports of acid mine drainage – have left their mark.

15. <http://www.reuters.com/article/2011/01/24/us-safrica-floods-idUSTRE7ON2ON20110124>

Figure 6 Percentage of respondents reporting types of water-related risks in direct operations and supply chain



Note: *Includes the risk: Ability of local government to provide adequate infrastructure to supply water

**Includes the risk: Mandatory water efficiency, conservation, recycling or process standards (leading to higher costs)

***Includes the risk: Increased water stress or scarcity (leading to e.g. disruption to operations, higher commodity/energy prices)

Water shortages may lead to an increase in operational costs as reliance will be placed on municipal suppliers. Should water shortages become more prevalent, water costs could be impacted by between 20 – 30%, directly affecting the group's revenue.

Allied Electronics

Regulatory risks are also common, comprising 29% of all reported risks. Key concerns include higher water prices and increased compliance costs associated with discharge quality requirements and statutory changes to water allocation (Figure 6). Reputational damage was cited by 11 respondents.

Very few responses highlight social issues linked to water. Although there is mention of reputational risk and stakeholder engagement by some companies (e.g. *BHP Billiton*), given the importance of social issues in the South African context there is surprisingly little discussion of the social development side of water and the associated risks.

Water-related risks are near-term issues

The majority of the risks are perceived as short-term: 66% of all the reported risks (both supply chain and direct operations) have the potential to impact business now or within five years (Figure 4 and Figure 7). Most of the risks reported as current are physical risks, whereas regulatory risks are reported as occurring in the near future (one to five years). The most reported risks (water stress, declining water quality, flooding and higher water prices) tend to be described as risks with short-term impacts. Risks to direct operations are seen as short-term (within five years), while risks to the supply chain are seen as slightly longer-term (Figure 7). It is difficult to know whether the reported difference in timing between direct operations and supply chain is real (and because suppliers are not located in South Africa), or perceived (and suggests lack of understanding that supply chains will be hit at the same time as direct operations to the extent that they are in the same area). The high proportion of risks being faced currently or in the near future suggests that there is some urgency and provides compelling evidence of the need for immediate action.

There were several protests relating to Twickenham Platinum Mine (Twickenham) in 2011. The protests hinged on allegations regarding loss of water and access to land. The mine is working with the community and the local authorities to ensure that the communities around Twickenham Platinum Mine have access to water. AMPLATS have supplied water through boreholes in the communities near Twickenham. The reputation of our business in how it interacts and uses critical resources is important to local, national and international stakeholders. A damaged reputation can affect our ability to operate in certain locations and to expand in other projects.

Anglo American Platinum

Water quality impacts may require us to incur clean-up costs or to develop treatment facilities at our own cost to provide safe drinking water.

Woolworths Holdings

Supply chain risks remain marginalised

Respondents still recognise water-related risks to their direct operations much more than to their supply chains (Figure 6). All the respondents are able to identify whether they are at risk in their direct operations, whereas 21% are not able to identify whether their supply chain is exposed (Figure 3). This uncertainty is not surprising given that only seven respondents (25%) require suppliers to report on their own water-related issues. However, these figures show an improvement on 2011, in which 38% of respondents could not identify whether their supply chain was exposed, and only 19% of respondents required supplier reporting.

The most reported risks facing supply chains are water stress or declining quality, leading to increased costs for products purchased by the respondent. Half the risks faced in the supply chain are expected in the near term (less than five years) (Figure 7).

Figure 7 Timeframes for water risks: JSE 100 vs. Global 500

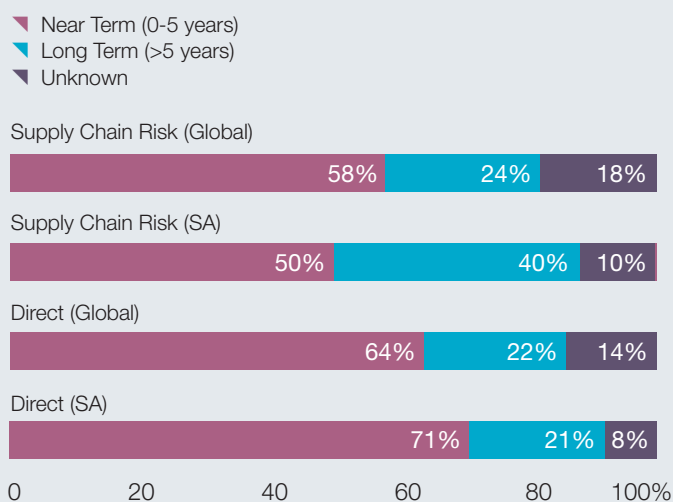


Table 4 Comparison of the risks at direct operations reported by respondents between the CDP's water program South Africa 2012 and 2011 and Global 500 2012

Type of risk	No of respondents	% CDP's water program SA 2012	% CDP's water program SA 2011	% Global 500 2012
Increased water stress or scarcity	25	89 (up 4%)	85	35
Declining water quality	16	57 (up 15%)	42	20
Flooding	15	54 (up 16%)	38	32
Higher water prices	13	46 (up 4%)	42	19
Reputational damage	11	39 (up 8%)	31	15
Rising discharge compliance costs	9	32 (up 1%)	31	23
Tightening water withdrawal limits	8	29 (down 2%)	31	20

Case Studies

Addressing supply chain risks

In 2011 *Anglo American Platinum* assessed water risks for a sample of suppliers using a tool developed by the WBCSD. It found that a majority of suppliers operate in water stressed regions, and that this could lead to supply issues. As part of supply chain management, suppliers are also assessed against a set of pre-defined sustainable indicators that cover water. Key suppliers are audited annually, with 20 audits carried out in 2011. Any problems identified during the audits are raised as findings at the end of each audit process. Suppliers who display major or serious failings are requested to provide improvement plans detailing how they would address the findings raised.

Building capacity in suppliers

SABMiller has initiated a number of programmes within its agricultural supply chain aimed at addressing water-related challenges. This includes agricultural extension services provided to *SABMiller* smallholder farmers in South Africa, Uganda, Zambia, India and Tanzania. The project involves agricultural officers working with these smallholder farmers to improve water management through improved soil management, pesticide and fertiliser management, and crop varieties choice. To date, numerous successes have been seen in South Africa. For example, farmers have reduced irrigation amounts by over 30% over three areas. *SABMiller* has also worked with its partners to assist large commercial farmers to identify opportunities to effectively manage and reduce water consumption. An example of this kind of partnership is the work done through a relationship with The Nature Conservancy.

Seeking benefits through effective supply chain management

Woolworths has implemented a supply chain programme called 'Farming for the Future' with farmers who supply the company with locally grown fresh produce. It is a holistic approach that manages the entire farming process systematically in order to maximise production while minimising negative impacts on the environment. Like organic farming, Farming for the Future starts with caring for the soil and ensuring soil fertility by adding compost. Unlike organic farming, it allows farmers to use conventional chemicals (but only when necessary) to correct levels of plant nutrients or control insects or disease. It also encourages biodiversity and helps conserve water resources. In addition, food grown this way costs no more than conventionally farmed produce. In trials *Woolworths* has already seen significant savings in the use of water, as well as in pesticides and chemical fertilisers. As farmers become more proficient in managing minerals, microbes, pests and plant health, these benefits are set to increase.

At least four of the companies that cannot identify whether their supply chain is at risk report undertaking initiatives to better understand their supply chain. For example, *Royal Bafokeng Platinum* is conducting a climate risk and vulnerability assessment, while *Exxaro* is building a model to envision its own Sustainable Supply Chain approach including a supplier portal where suppliers have to report on their own material stewardship. While only two companies state that they are not at risk in their direct operations, eight respondents report that they are not at risk in their supply chain. These respondents gave reasons that included supplier diversification and the ability to find alternatives, as well as being primary producers and therefore not dependent on suppliers.

It is submitted that the low disclosure of supply chain risk is a result of lack of awareness and lack of understanding of the supply chain vulnerabilities. The disclosures suggest that companies who have invested time and effort in understanding potential exposure in their supply chain are finding water risks in these supply chains; with the exception of *BHP Billiton*, all those companies that state they are not at risk, do not appear to have undertaken any assessment of their supply chain.

While most of the responses discuss the upstream supply chain, only *Barlows* and *Woolworths* refer to downstream risk with their consumers, highlighting the potential for changes in demand for products, and increased costs being passed down to consumers from transport.



Flooding and drought events in our food supply chain have affected the availability of particular products, especially fresh produce, and in some cases have driven up the cost of these products. The resulting lost sales in store due to the non-availability of these products is material. Where possible we have looked at developing a broader range of suppliers in different geographical areas, for a range of fresh produce products, and are working with the CSIR to analyse South African arable areas that are likely to struggle with water scarcity.

Woolworths



The Challenge of Water Supply in South Africa

South Africa is facing a gap between water supply and demand

South African business uses a large proportion of the total reliable water yield in the country, which recent estimates¹⁶ place at between 14 and 15 billion m³. Aggregate demand for water in South Africa in 2030 is projected to be 18 billion m³, of which 46% will be agriculture, 19% industry and 35% municipal and domestic use, leaving a gap between supply and 2030 demand of 17% (or 2.7 billion m³)¹⁷.

While this gap is considerable, it is likely to be an underestimate, as it excludes the uncertain impacts of climate change, which is anticipated to affect the variability, location and nature of rainfall, and also excludes the issue of non-revenue water (approximately 500 million m³ per year¹⁸). It also excludes the additional pressure placed on available water supply by declining water quality as a result of contamination and pollution. According to the National Climate Change Response White Paper (2011), South Africa will exceed the limits of economically viable land-based water resources by 2050.

The situation is made worse by underfunding of water infrastructure

Businesses will need to anticipate supply disruptions, face higher water bills, and more regulation. According to the Department of Water Affairs (DWA), the current national budget for water infrastructure is approximately half of what will be required over the next decade (total is R670 billion)¹⁹. The National Water Resources Strategy (2012) states that total losses from municipal systems are estimated at 33% of system input. Given this context, and high-profile concerns about the current state of water infrastructure, it is interesting that infrastructure risk was mentioned by only eight respondents, which might suggest a lack of awareness by companies.

16. Muller, M. et al. (2009). Water security in South Africa. Development Planning Division. Working Paper Series No.12, DBSA: Midrand.

17. 2030 Water Resources Group (2009) Charting Our Water Future

18. Creamer Media (2012) Water 2012: A review of South Africa's water sector

19. DWA (2012) Statement by Minister of Water and Environmental Affairs Mrs Edna Molewa at the announcement of the gazetting of the Second Draft National Water Resources Strategy. Pretoria, 27 August 2012

Our local subsidiary has developed a sustainable 'small grains' toolkit, which it is rolling out to local farmers and working with them in understanding the key issues. In addition, we have an active barley research farm that trials new farming technologies and new cultivars which may be more suitable for dry land environments.

SABMiller

Recognising the need for infrastructure investment, the government has proposed strengthening regulation of the water sector and revising water pricing, including removing a cap on water price increases and exemption for some users from a "return on asset" tariff²⁰. There is therefore potentially a large role for private financing and construction of water infrastructure. As a result, the DWA is considering handing over the building and running of some wastewater treatment plants to the private sector.

The gap between supply and demand is bigger in key industrial areas

There are significant variations in the balance of water demand and supply across South Africa, and the basins with the largest gaps between supply and demand are centres of industrial water demand. For example, the Waterberg in the Limpopo has 40% of South Africa's coal resources, yet insufficient water could prove the biggest constraint to mining these resources. This provides an argument for protecting critical catchments to avoid having to deal with stranded assets in the future. In 2030, some estimates suggest that in the Upper Vaal, where 44% of the water demand comes from industry, demand will exceed supply by 33%, while in Olifants (near Johannesburg) the gap will be 39% of demand²¹. Meeting water demand for power generation is likely to prove a significant challenge, as much of the additional power capacity will come from coal, yet water supply is typically insufficient for both coal mining and power generation.

20. DWA (2012) Strategic Plan (Annual Performance Plan) 2011/2012 – 2013/2014

21. 2030 Water Resources Group (2009) Charting our Water Future

Climate Change and Adaptation

Climate change has a direct link to water

Water is the primary medium through which climate change will affect ecosystems, and in turn people's livelihoods and their wellbeing. Climate change's impact on water is arguably already being felt in South Africa in the form of changes in rainfall distribution that are altering the severity and frequency of drought and flood events. Given the large-scale systemic risk that climate change presents to the economy, and its close linkages with water-related impacts, it is surprising how few of the 2012 water responses explicitly refer to climate change as a water-related risk.

Some companies recognise the risk

While three of the respondents specifically state that they are at risk due to climate change in the medium to long term (*Illovo Sugar*, *Anglo American* and *Impala Platinum*), ten of the respondents in total refer to climate change as a risk, including *AECI*, *Exxaro Resources*, *Altron*, *Lonmin*, *Northam Platinum*, *Woolworths* and *BHP Billiton*. These companies recognise the role of climate change as a 'threat multiplier' that exacerbates other risks and increases uncertainty. Uncertainties associated with climate change projections mean decisions need to be robust and flexible. While many companies are beginning to see that responses to extreme weather events and shocks are important, in our experience working with companies in this area,

the focus generally tends to be at an operational level on individual assets at risk, rather than on collective business value.

Companies need to understand their vulnerability to climate change and build resilience to it


The limited response to the 2012 water information request suggests that not enough thought is being applied to the real risks from climate change. While there was recognition of the direct impacts of climate change in terms of floods or droughts, there was almost no recognition of the indirect impacts, such as the effect on, and response of, end-users or consumers, nor of other dependencies such as transport, access, or electricity provision. Only two companies (*Woolworths* and *Impala Platinum*) mention climate change as it might affect their supply chain.

While all companies will need to adapt to a changing climate, some sectors will be significantly more affected than others. It is anticipated that the agricultural industry, which is directly dependent on climatic variables, will be hardest hit by climatic changes, but all businesses will be impacted. Businesses will need to adapt individual assets as well as plan how to cope with impacts across their value chain. Financial institutions also need to assess the risks to their investments and incorporate these issues in their credit risk processes.

Case Study


Feeling the impacts of climate change

Anglo American's global operations have been affected by water-related impacts, specifically extreme weather events. During the 2010-2011 wet season in Central Queensland, Australia, its metallurgical coal operations received over 1,000 mm of rain. The capacity of pumping and pipe systems was exceeded and it was unable to pump water from the mine into the local watercourse due to environmental legislation. The company's ability to function was severely impacted. Anglo American responded to this event by launching the "Rain Immunisation Project", a climate adaptation project that seeks to decrease the environmental risks and production time loss caused by high variability in precipitation. This provided the basis for wet weather plans and drought scenarios at all operations. Additionally, the company engaged with the Queensland water regulator, making it easier for their operations to meet water quality criteria, especially in emergency situations.




The effect of climate change on water has far reaching consequences and is a major cost item for mining companies as fresh water supplies are increasingly constrained ... Given its strong demand for water, the mining and mineral processing industry could be more vulnerable to fluctuating water availability, precipitation patterns, altered groundwater levels and changing stream flow patterns brought about by climate change.

Impala Platinum


In Southern Africa climate change is expected to result in a 2 to 3°C rise in temperature, coupled with lower and more variable rainfall. Projections indicate that there may also be an increase in extreme weather events such as drought, heat waves and floods. Repercussions on the sugarcane industry could be significant, with possible shifts in climatically optimal growth areas and changes in yield likely over the next few decades.

Illovo Sugar

Lonmin has identified extreme weather events as a risk to the operations.... In order to gain an improved understanding of the potential financial impact of physical weather impacts pertaining to climate change... a desktop analysis of existing climate change projections and historic weather data applicable to our Marikana operations was executed. From this, future climate scenarios for determining 'what-if' impacts were developed. High, medium and low scenarios were customised. Risks pertaining to physical events and applicable to various business units are incorporated into the operational risk registers, where dedicated action plans and tracking of the measures are undertaken.

Lonmin

Unprecedented heavy rains in February and March 2011 in Australia flooded the Sunrise Dam Gold Mine and forced a temporary shutdown of operations. The flood event impacted underground production for approximately four months and open pit production for approximately six months. The considerable remedial work required adversely impacted cash costs per ounce and the impact of the flood event and the pit wall failure together significantly reduced planned production at the plant.

AngloGold Ashanti



The company is consistently looking at ways to adapt to and mitigate risks. New crop varieties are being tested which are drought resistant. Sustainable farming practices are being looked at with greater determination.

Tongaat Hulett

The operating philosophy of effluent holding dams servicing key operations in South Africa that were designed to manage a one in 50 year flood scenario are being revised. This is based on recent experiences with the handling of high rainfall events, which placed these systems under extreme pressure. The company has embarked on a comprehensive programme aimed at mitigating such future risks.

Sasol

Most companies see opportunities in terms of performance improvement or risk mitigation, but a few are seeing genuine opportunities for new business or enhanced revenue

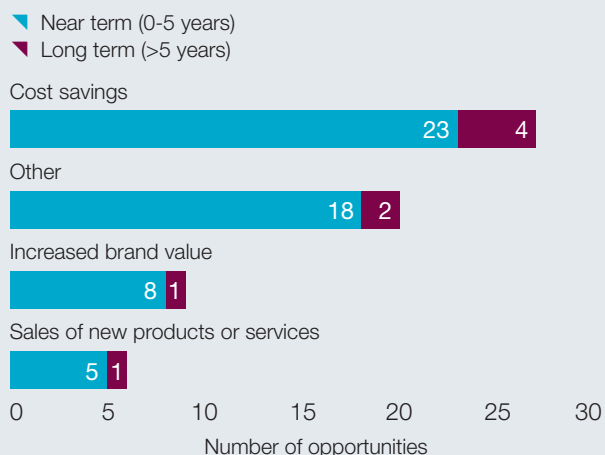
Eight-nine per cent of respondents identified water-related opportunities with the potential to generate a substantive change in business, as compared with 71% of respondents in the Global 500. The vast majority of the opportunities (87%) have the potential to impact business now or within five years, suggesting incentives for businesses to act immediately.

In the 2012 water data, respondents identified far fewer opportunities (62) than risks (251). The vast majority of these opportunities relate to activities to mitigate risks, rather than genuine new business opportunities. This might suggest that most companies are focusing on short-term adverse impacts, rather than strategic opportunities, or it could be that there are fewer real business opportunities for some of the companies due to the nature of their business sector.

The most commonly cited opportunity is cost savings (44% of opportunities) (Figure 8). These include savings associated with water-efficiency measures (*Netcare Limited*), reducing water consumption, (*British American Tobacco*), and using recycled water (*Impala Platinum*). The next most commonly reported opportunity is increased brand value (15% of opportunities) associated with enhanced reputation (*AECI*), improved competitive advantage (*Exxaro Resources*), increasing brand loyalty (*Pick n Pay Holdings*), and better relationships with communities (*Anglo American*). Sales of new products represents 10% of opportunities reported, including new products to address water issues, (*Tongaat Hulett* and *Woolworths*), and new technologies for water (*Anglo American* and *Gold Fields*).

'Other' opportunities account for 32%, and include a wide variety of items, including: capacity building (*AngloGold Ashanti*), carbon mitigation (*Impala*

Figure 8 Reported water-related opportunities and their timeframes



Water from sugar cane is purified and sold to local municipalities as potable water.

Tongaat Hulett

Platinum and *Exxaro Resources*), improved social licence to operate (*Gold Fields*), supporting consumers to live sustainably (*Pick n Pay Holdings*) and attracting investors (*Kumba Iron Ore*).

Growing recognition of the water – energy nexus

There is evidence of an increasingly sophisticated appreciation of the interrelationship between water, energy and carbon. Indeed, only five respondents report that they have not identified any linkages between these issues. The majority of respondents report positive synergies. *SABMiller*, for example, reports that its water projects will bring about energy savings, while *Illovo Sugar* notes that water efficiency brings fewer carbon emissions as there is less energy used in pumping water. Other examples of reductions in both water and carbon use include *Gold Fields* and *AngloGold Ashanti*, both of whom have changed their cooling processes in their underground mines, and *Exxaro Resources* is investing in dry processing for coal to save both energy and water. The majority of respondents appear to be making a simple connection between water and energy – noting that water efficiency measures are likely to save energy. A few appear to be going further in seeking to understand the potential trade-offs and synergies, and in trying to integrate those considerations into strategy and decision-making. For example, *Sasol* is conducting a study to determine the relationship between energy and water usage for alternative cooling technologies, while *Anglo American* now considers trade-offs between water and energy more systematically when new initiatives are proposed.

Few respondents referred to links between water and biodiversity and ecosystems in their responses. However, where it is referred to, companies have reported projects that provide examples of leading practice, such as *Mondi Plc*.

Being a responsible water user is an opportunity for us – it helps build stronger relationships with local communities and governments and enhances our social licence to operate. Being responsible makes it easier for us to do business.

Anglo American

Case Studies

Seizing opportunities through the product life cycle

Kumba Iron Ore has a “value in use” department that seeks to understand the value of Kumba’s products to its customers and develop new products. The physical properties of Kumba’s iron ore have allowed it to create niche products that enhance the operational efficiencies of its steelmaking customers. Kumba can tailor its products to its customers’ specific needs, so that they can in turn reduce their energy, water and processing materials’ consumption as well as their operational emissions.

Realising opportunities from by-products

Gold Fields’ Liquid Gold Project, initiated in 2008, focuses on achieving a technical solution for the treatment of good quality fissure water and contaminated process water to produce water of potable quality. By-products generated during the water treatment process will be utilized in secondary processes, such as being sold-off as fertilizer feedstock. In the long term the water treatment process is intended to provide a sustainable, institutional solution in the form of a water utility that focuses on zero discharge from the mines with managed closure liabilities with respect to water. This opportunity is expected to create an additional source of income (potable water), create reputational advantage and reduce liabilities.

Kumba has an opportunity to market itself as a company that recognises the risk of water scarcity and is taking appropriate action, one of which is attractiveness to investors to invest in our growth projects. Kumba has ambitions to grow their mining footprint into the rest of Africa. By improving on its energy and water efficiency credentials, Kumba may attract additional investors thus helping them realise their growth strategies.

Kumba Iron

Case Studies

Recognising energy/water trade-offs

SABMiller has identified a number of inter-linkages between water and energy and this has resulted in cost savings for the company's operations. An example of this interaction is the renewable energy derived from wastewater treatment. Several of the company's operations are now capturing methane generated from wastewater treatment to the extent that this can account for up to 10% of a plant's energy mix, saving a significant amount of money. SABMiller also uses full cost accounting for water, recognising that by reducing water consumption its facilities require less energy for the treatment, heating and cooling of water required for different stages of the brewing process. In terms of trade-offs, as the incoming water quality to the company's facilities declines, so more energy is required to treat it to an acceptable standard for the brewing process. This often involves processes such as reverse osmosis and membrane filtration, both of which are energy intensive processes.

Realising water benefits from energy initiatives

Kumba Iron Ore is focusing on reducing its water footprint as well as mitigating the risk of electricity supply. Kumba is undertaking a feasibility study for a renewable energy project with the potential of generating 2.9 million carbon credits over a ten year period. There are water-related advantages to this, including reducing dependence on the national grid and therefore Kumba's largest raw material supply risk; and reducing the national water used in electricity.



Our material high-quality water consuming and GHG-producing assets are required to maintain water use reduction and GHG abatement cost curves. The cost curves provide a platform for our businesses to determine the most cost-effective means of reducing water use and greenhouse gas emissions across our operations. We are encouraging businesses to consider these interactions in the development of their greenhouse gas and water use reduction cost curves.

BHP Billiton



Implats has developed a Group Water and Energy Conservation and Efficiency Strategy, which includes investigating opportunities to reduce water usage and associated energy use. Impala has committed to increasing both water-use efficiency and energy efficiency, thus decreasing the operational intensity of energy and water usage. This includes investigating a fuel switch project to reduce the carbon emissions intensity associated with water usage in Implats' operations.

Impala Platinum



Ecosystem Services and Water

Every person and every business depends on the services provided by ecosystems: they provide food, water and raw materials; they regulate the air we breathe and water we use; and they provide places of aesthetic beauty, recreation and cultural and spiritual importance.

Ecosystems provide regulated flows of good quality water

Water is arguably the most important resource for sustaining ecosystems and the services they provide for human health and wellbeing²². Water flows connect and link different ecosystem services (ESS) across a landscape, with precipitation falling onto it as rainfall and then flowing through it in rivers, the soil, and aquifers. Ecosystems regulate water flows, with catchments storing water, biodiversity inhibiting flooding, and wetlands supplying clean water. These water flows sustain various ESS that support human wellbeing, societies and economies at various scales.

Wetlands are especially important and are particularly at risk in South Africa

Wetlands make up only 2.4% of South Africa's land area, representing high-value ecological infrastructure that provides critical ESS such as flood regulation, water cooling and water purification. They provide natural infrastructure that can help meet a range of policy objectives. Beyond water availability and quality they are invaluable in supporting climate change adaptation, health as well as livelihoods, local development and poverty eradication²³. Despite this, South Africa's National Biodiversity Assessment 2011²⁴ found that wetlands are the most threatened of all SA's ecosystems, with 48% of wetland ecosystem types critically endangered (65% are threatened), and more than 70% not protected.

Investment in wetlands can provide significant economic benefits

Maintaining and restoring wetlands in many cases can also lead to cost savings when compared to man-made infrastructure solutions. But despite the collection of services provided by wetlands, incorporating the value of wetlands into economic and developmental policies is mostly not done, often resulting in them being degraded by urbanization, pollution, intensive agriculture and poor infrastructure. This in turn leads to a loss of critical (yet undervalued) ecosystem services²⁵.

There are various examples that highlight the real value of the ESS provided by wetlands:

- ▶ The Mhlathuze municipality underwent a catchment assessment that highlighted ESS such as nutrient cycling, waste management and water supply. The monetary value of the services was valued at R1.7 billion (USD\$200 million)²⁶.
- ▶ The economic benefits of water treatment by wetlands in the Fynbos Biome has been estimated at USD\$12,385/ha per year²⁷.
- ▶ The value of wetlands was also considered by the Working for Water programme, which calculated the value of livelihood benefits from the degraded wetland at just 34% of the rehabilitated one. The programme invested €86,000 (USD\$134,000) in the Manalana wetland (Mpumalanga), with the result that the total economic benefits from the rehabilitated wetland was estimated at €182,000 (USD\$285,000) in net present value and that provision services alone had an economic value of €297/householder per year (USD\$460)²⁸.

Water is increasingly considered a corporate strategic issue, but ecosystem services need to be part of the management agenda. Rather than creating separate frameworks, ESS should be considered together with water and biodiversity. Integrated Water Resources Management is an approach often used to govern the complexity of upstream-downstream water-dependent ESS, because water links multiple ESS as well as multiple users of ESS.

22. UNEP (2009) Water Security and Ecosystem Services: The Critical Connection

23. Russi D., ten Brink P., Farmer A., Badura T., Coates D., Förster J., Kumar R. and Davidson N. (2013) The Economics of Ecosystems and Biodiversity for Water and Wetlands. IEEP, London and Brussels; Ramsar Secretariat, Gland

24. Driver, A., Sink, K.J., Nel, J.L., Holness, S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L., and Maze, K. (2012) National Biodiversity Assessment 2011: An Assessment of South Africa's biodiversity and ecosystems. Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria

25. Russi et al (2013)

26. Russi et al (2013)

27. Turpie, J. (2010) Wastewater treatment by wetland, South Africa, <http://www.eea.europa.eu/atlas/teeb/water-quality-amelioration-value-of/view>

28. Pollard S. R., Kotze D. C. and Ferrari G. (2008). Valuation of the livelihood benefits of structural rehabilitation interventions in the Manalana Wetland, in D. C. Kotze and W. N. Ellery (eds) WET Outcome Evaluate: An Evaluation of the Rehabilitation Outcomes at Six Wetland Sites in South Africa, WRC Report No TT 343/08, Water Research Commission, Pretoria. (Note, exchange rate to USD based on 1 June 2008)

There is a clear link between water and other environmental risks (biodiversity, land use, climate change). The key linkage for our business relates to the interactions that need to be considered when making decisions around energy intensive alternative water supply options such as desalination or enhanced water recycling.

BHP Billiton

Case Study

Appreciating the value of wetlands

Mondi works in partnership with WWF South Africa and the Wildlife & Environment Society of SA (WESSA) to support the Mondi Wetlands Programme (MWP) and the Mondi Ecological Network Programme, which are leading developments in wetland conservation and ecological networks. The MWP includes future work on wetlands in poor rural neighbouring communities and incapacitated municipalities. In South Africa, around 5% of Mondi land has been removed from forestry production to encourage the recovery of natural fresh-water resources. In 2011, *Mondi* spent about €17.3 million on activities for the protection and restoration of wetlands in South Africa, including the “New Generation Plantation” project with WWF developing best practice plantations for wood, energy and non-timber products, and a High Conservation Value Resource Network to develop a high conservation value methodology for the delineation and protection of ecosystems, including forests and wetlands applicable to plantations and natural forests.

Addressing water governance

Water accounting is not consistent and would benefit from consistent measurement approaches

The majority of respondents (93%) are able to report on quantitative water withdrawals, while 79% are able to report water discharges and 71% are able to report figures for recycling or reuse.

Only 14% of respondents report that their withdrawals significantly affect water sources, and only 14% report that their discharges/run-off significantly affect water sources. This seems surprisingly low, given South Africa’s water-stress, but it may depend on definitions. For example, where abstraction or discharge is within water licences or permits, then the response might reasonably conclude there are no effects on the water sources. However, this presupposes that the regulatory requirements are sufficient and are not placing any demands on water sources that cannot be met, which is not necessarily the case.

The water accounting data should be viewed with caution, as reporting methodologies and scope of reporting vary considerably between companies, undermining the ability for meaningful benchmarking of performance. While 79% of respondents are verifying their withdrawal data, only four of the respondents explicitly report some degree of external verification, rather than internal assurance.

There is a clear need for standardised accounting rules, to facilitate investors’ assessment of water management, and to enable comparability between companies. Recognising this need, *BHP Billiton* is working with the Mineral Council of Australia to develop the Water Accounting Framework, an industry-wide approach to establishing a nationally consistent reporting and accounting framework.

The magnitude of the risk and the nature of the governance response are not well aligned

There appears to be a mismatch between the awareness of risks and the governance in place to manage those risks. While 93% of respondents report exposure to water-related risks, only 75% have a water policy or strategy in place, and 71% have board level oversight of water risks. Although the majority of respondents are taking actions in relation to water (86%), just over half the respondents (57%) have quantitative targets or goals to manage water use in place. Since water stress and declining water quality are reported as the most dominant risks for South African companies, it is concerning that few businesses in South Africa have measurable or quantitative targets to manage water. There is significant variability between the nature and ambition of the targets and the baselines to which they relate, such that they cannot be compared between companies. Sixteen

Reduction in water consumption, on an intensity basis, by 25% by 2015 against a 2008 baseline.

SABMiller

respondents reported quantitative targets, most of which relate to achieving intensity reductions in water use or consumption. Other types of targets include: *AngloGold Ashanti's* target to improve water accounting, *Lonmin's* commitment to improving freshwater intensity, and *BHP Billiton's* goal of improving the ratio of water recycled to high quality water consumed. Interestingly, there are only two reported targets (from *Exxaro Resources* and *Mondi Plc*) relating to water quality, which is concerning given the status of water quality in South Africa. Most respondents report that they are making good progress against the targets, with some respondents (such as *Barloworld* and *Lonmin*) having exceeded their target early. Further details on these targets are provided in Appendix 1.

Companies appear to be doing more to understand and manage their water risks, even if they do not all yet have targets in place, as many responses refer to initiatives that are only just being implemented or are about to be implemented. For example, three companies are in the process of setting targets (*Gold Fields*, *Netcare* and *Pick n Pay*). In addition, *Mondi Plc* is undertaking detailed water impact assessments of all mills during 2012 and 2013, and water impact assessments of plantations have been conducted. *Lonmin* has recently developed its water conservation and demand management strategy, and *SABMiller* is commissioning a new water risk assessment toolkit which will ensure consistency of water risk management across the group and ensure water risks are communicated through all relevant functions within the group.

Water-related issues are not accorded the same level of management as carbon, despite the relative immediacy of water risks. For example, in the CDP Climate Change Report 2012, 96% of respondents (73 companies) have board level oversight of carbon²⁹, and 57 companies (75%) have quantitative emission reduction targets, as compared with 16 companies that have quantitative water targets. While it may be expected that carbon targets would be more prevalent – given the international focus on climate change and the fact that it has been a public issue for longer than water – the immediacy of water issues should mean that water is given similar attention, particularly in a water-stressed country like South Africa.

Case Study

Developing an effective management response

In 2011, *Anglo American* finalised and approved a new Group technical standard for water management. This new mandatory technical standard includes detailed requirements on target setting, water monitoring, site management and water action plans (WAPs). All operations have WAPs in place and have set water targets through the implementation of the Anglo water efficiency target tool (WETT). Anglo also approved a more detailed set of water parameters for performance monitoring and reporting, which include water abstraction by source, water quality, water discharge by source and water costs. Anglo American has a proposed strategic objective of “zero net water” consumption by 2030. To this end, Anglo has defined a water technology roadmap to identify technology solutions and is working with stakeholders to clarify the full implications of the commitment. Technology options are being explored relating to water efficiency, water recovery, pollution prevention and water security. The implementation of WETT has already had beneficial impacts, such as reducing *Anglo American Platinum's* water intensity by 10% overall and assisting in decreasing the use of new water. As part of *Anglo American Platinum's* water supply strategy, it has designed water-supply scenarios for 2018 onwards. To ensure the long-term security of water availability for their operations and surrounding communities, they have also developed a bulk water strategy and infrastructure plan to protect, manage and maintain the water supply.

We will promote conservation, reuse and recycling practices to reduce specific contact water consumption by 10% by 2015, against a 2010 base year. We will reduce our effluent load into the environment, either directly or indirectly discharged, by 10% in 2015 against a 2010 base year.

Mondi Plc

29. CDP South Africa 100 Climate Change Report 2012

Recognising the Strategic Value of Water

Water is not properly valued

Investments in water efficiency or risk mitigation activities present unique problems for companies. While water is a scarce and valuable resource, the price of water rarely reflects its value. Although water prices are rising, they still remain a small proportion of most businesses' operating costs, which reduces the economic incentive for management to take action to reduce or manage direct water use. As a result, the value of water is not properly reflected in most corporate risk assessments. The absence of a true value for water and the fact that it is a shared resource presents particular challenges. For example, a low/no price for water makes investments difficult to justify; many benefits are not easily valued in financial terms; and it may be more difficult to invest in shared infrastructure (despite it being more beneficial) or in another user's facilities than in one's own assets.

Some companies are using Water Abatement Curves

SABMiller and *BHP Billiton* are the only responding companies that report "valuing" water and they both use a water abatement cost curve. A cost curve was produced for South Africa by the Water Resources Group (WRG)³⁰. The top five abatement measures include: three relating to agriculture, one on paste tailings in the mining industry, and one on improved pressure management in urban water supply systems. In South Africa, most solutions have cross-sectoral trade-offs. In order to reduce the supply/demand gap in South Africa, the WRG suggested measures across supply (closing 50% of the gap), agricultural efficiency and productivity improvements (closing another 30%) and industrial and domestic levers (closing the remaining 20%).

30. 2030 Water Resources Group (2009) Charting our Water Future

Value is not the same as price or cost

The value of water is not just the price or the cost, but also the value that can be created. Companies that want to grow profits and already face limits on water resources will need to increase the profit earned for every unit of water used. There can be wide variations in the dependence on water in different parts of a business, and understanding the link to value can lead to better business strategies and better management of water resources. In particular, the biggest user of water may not be the biggest financial risk or opportunity. In times of scarcity, more efficient use of water may be less important than changing product/usage mix.

Techniques other than just Net Present Value are required

The typical Net Present Value (NPV) appraisal can fail to capture the real value of water to the business and the cost of risks associated with water use. Alternative approaches that are being developed and adopted by leading companies include:

- ▶ Return On Resources – assessing the financial benefit per use of water;
- ▶ Multi-Criteria Analysis – considering multiple (financial and non-financial) criteria and incorporating expert and stakeholder views; and
- ▶ NPV using Shadow or Threshold Prices – introducing an estimate of the 'true' cost of water or value of water used.

A few businesses in South Africa and internationally are beginning to consider how to prioritise investment spend across multiple sites and other users, considering trade-offs between multiple investment opportunities, the needs of different stakeholders, and the different nature of benefits for different stakeholders. All companies need to decide what the value-maximising combination of instruments might be, and how to justify investment relative to investment in non-water related projects.

As water is a relatively inexpensive commodity at the moment the impact on the bottom line is not yet significant. This will most probably change in future when the true value of water is realised.

Impala Platinum

Water scarcity will be an increasingly prominent issue in SA and lead to a situation in which water is valued with the same strategic value as the metals we mine.

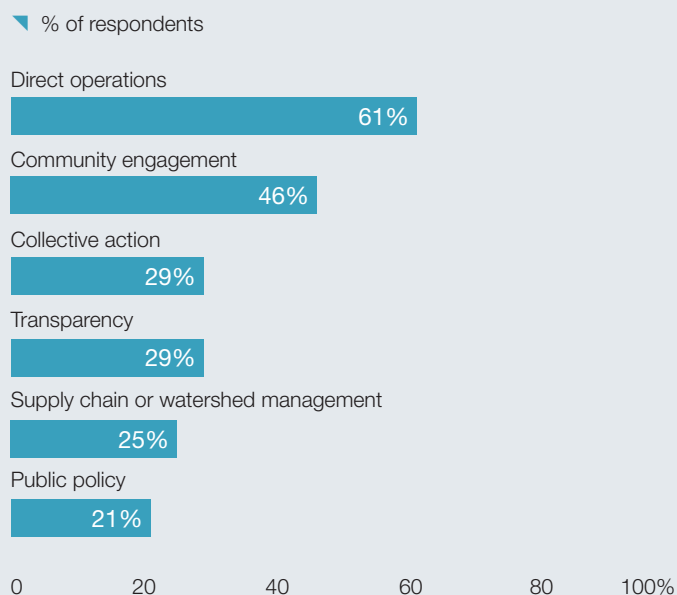
Anglo American Platinum

Water is still not managed as a shared resource

The majority of respondents (86%) report taking specific actions to manage water risk. Not surprisingly, most respondents (61%) focus on actions at their direct operations, but an increasing number are beginning to look beyond their operations and to engage with the community (46%) or their supply chain (25%) (Figure 9). There may be considerable variation between respondents' interpretation of actions; some may define "community engagement" as simply informing the local community of actions the company has taken, while others could see it as entailing more active engagement of the community.

While it is encouraging that many respondents are beginning to consider community engagement and that there are some examples of exciting initiatives (see case studies), it is suggested that there remains significant scope for more organisations to act beyond their operations, particularly given the context of South Africa's social development needs and constraints.

Figure 9 Actions being taken by JSE 100 Respondents in relation to water risks



The Vaal River Eastern Sub-system VRESAP pipeline investment has increased the price of water delivered to the Sasol Secunda complex by 30%. While this is a significant price increase it is still a relatively small contribution to total operating costs.

Sasol

SABMiller has undertaken an in-depth analysis of water use within its facilities. This has been accomplished by, amongst other initiatives, the development of water abatement curves (WAC) at both group and business unit level. The WAC identifies all initiatives that can be implemented to reduce the quantity of water used in breweries. It shows the amount that can be saved by each and the cost against implementing it. Breweries will create their annual water site reduction plan based on the opportunities contained in their own Water Abatement Curve. This will ensure correct prioritisation and maximise the savings. Importantly, we have considered the full costs of water (raw water cost, water treatment costs, energy usage to pump/heat/cool water within the process and final effluent treatment costs), which enables us also to evaluate the full cost benefits of each m³ of water saved.

SABMiller

Case Study

Seeking solutions through industry cooperation

Lonmin is a member of the Western Limb Producers Forum. The Forum aims to improve mining sustainability, generally. In line with this aim, it is working according to a water conservation and water demand management model. This encompasses a number of water conservation projects currently being undertaken on mines on the Western Limb of the Bushveld Igneous Complex. Through the Olifants River Joint Water Forum established in Limpopo, Lonmin has joined with other mining houses to pursue effective water savings in mining practices. This Forum participates in the Olifants River Water Resource Development Project (ORWRDP), which is working to ensure a sustainable supply of water for mining, as well as commercial and public use.

Establishing effective partnerships

Together with WWF and GIZ (the German government's development agency), *SABMiller* has helped to establish the Water Futures Partnership. This initiative aims to enable shared learning and promote better watershed management. The partnership is active in nine countries. All programmes have a common approach, consisting of three specific phases. The first phase enables understanding of problems and planning for solutions. Water footprinting techniques are applied to assess the water dependencies consumed by different parts of the SABMiller business, and a business plan is then developed, working with our partner to mitigate the risk. The second phase involves engagement with local stakeholders to put the plans into action. At this stage, the focus moves to implementation, working with local partners to secure commitment and resources. The third phase entails sharing experience and knowledge gained to promote wider change. Finally, case studies, tools and methodologies are developed to feed into the global debate, working through the United Nations Global Compact CEO Water Mandate and the World Economic Forum Water Initiative.

We have partnered with FLOW (For Love of Water) an NGO that increases public awareness on water issues. We have also introduced water awareness at all our public events and include water conservation messaging at the bottom of our product advertisements.

Pick n Pay Holdings

We will continue to work with our partners WWF and WESSA to support the Mondi Wetlands Programme (MWP) in South Africa and will involve local communities in educational, restoration and conservation activities where reasonable... Our business and ecosystem services are inextricably linked. Cooperation with nearby companies and/or communities may result in an optimisation of energy and treatment costs.

Mondi Plc

Woolworths is the first retailer to join the World Wide Fund for Nature's (WWF) Water Balance Scheme.

Woolworths Holdings Limited

We have established a Forum on Corporate Responsibility to seek input and insight from external experts. The Forum brings together representatives of our senior management team, the leaders of several key NGOs and community opinion leaders to discuss and debate social and environmental matters relevant to the Group.

BHP Billiton

Voluntary respondents

In addition to the 61 companies from the JSE 100 that were approached by the CDP's water program, six organisations from outside the target sample chose to participate voluntarily: *Eskom*, *Grindrod Ltd*, *The Industrial Development Corporation*, *Nedbank Ltd*, *Sanlam* and *Sun International Ltd*, three of which made their responses public (Table 5). Although not part of the JSE 100 sample, and therefore not included in the aggregate analysis, their responses are interesting in terms of giving an indication of the water-related activities of other companies and sectors.

Table 5 Voluntary respondents to the CDP's water program SA 2012 and their status in 2011 and CDP 2012

Company	GICS Sector	CDP's water program SA response status 2012	CDP's water program SA response status 2011	CDP response status 2012
Eskom	Utilities	AQ v	AQ v	/
Grindrod Ltd	Industrials	AQ v	AQ	AQ
Industrial Development Corporation	Financials	AQ v np	-	/
Nedbank Limited	Financials	AQ v np	AQ v	AQ
Sanlam	Financials	AQ v	-	AQ
Sun International Ltd	Consumer Discretionary	AQ v np	-	AQ np

Note: This table only lists the six companies that chose to respond voluntarily in the 2012 CDP's water program. While it shows the status of these companies in 2011, it does not include those companies that chose to respond voluntarily in 2011, but not in 2012.

Key

AQ v	Voluntary response
AQ	Answered questionnaire
AQ np	Answered questionnaire but declined permission to make this public
-	No voluntary response
/	Not included in JSE 100 sample (CDP 2012)

Case Study

Partnering for the future

Sanlam's joint venture with the World Wide Fund for Nature South Africa (WWF), the WWF Sanlam Living Waters Partnership, has driven several successful projects over the last three years. This partnership promotes the effective management of aquatic ecosystems and resources, and seeks to address the issue of water scarcity in South Africa by using the company's resources and influence to effect systemic shifts in water use and management in the country. By the end of 2011, the company had invested a total of R15,196 000 in the partnership. During 2012, Sanlam and WWF instigated a new three-year partnership phase (2012-2015) worth an additional R16 million. The programme has also contributed positively in terms of skills development and job creation.

Managing the relationship between water and carbon

Eskom relies substantially on coal for electricity generation, with the bulk of Eskom's coal-fired power stations situated in water-stressed catchments. The company recognises the important linkages between coal and water, and its potential supply chain exposure to water-related issues. Poor coal quality impacts the thermal efficiency, which in turn can result in higher water usage. In contracting for coal supply, coal quality is considered to be one of the key requirements when making a decision to accept coal from a potential supplier. However, there is a general decline in the coal quality received, which remains a concern. At the same time, significant rainfall events can impact on the supply and distribution of coal. Eskom is implementing a water conservation and water demand strategy aimed at reducing its water footprint. In addition to building power stations with dry-cooling technology, it uses sea water for its nuclear power station and is investigating further options for desalination. The company has signed a Memorandum of Agreement with the Water Research Commission (WRC) to undertake joint research on water-related projects. Calculated investments have been made in long-term infrastructure needs to secure 'future water' requirements. An example of this has been the Vaal River Eastern Sub-system Augmentation Project (VRESAP), which will supplement the water supply to at least 75% of Eskom's current generating capacity.

GUEST COMMENT:

A view of water in South Africa

Richard Garner –

Group Manager Water: Anglo American

Anglo American embeds the principles of sustainable development throughout its operations: from the moment we identify a possible exploration site, through to a mine's closure. Water is a vital input to our operations and the security of its supply is of strategic importance both to us and the communities in which we operate. The threat posed by climate change and variability has also required us to look at new approaches to managing water in our operations, many of which are located in water-stressed regions.

At the heart of our water strategy, approved in 2010, is our aim to demonstrate leadership within our water basin areas. We believe that this will unlock value in our current operations, safeguard future projects and bring benefit to the environment and our communities. The strategy is a three-stage journey phased over 10 years, including a commitment to make our operations water-resilient, invest in water treatment and relevant technology innovation, where feasible use our water infrastructure to benefit others and proactively partner with key stakeholders.

Nature of the South African water challenge

Water is at the core of all socio-economic activities in South Africa and the challenge is complex. There is the need to expand and grow our economy, alleviate poverty, address water rights and create wealth – all of which require water resources. This need must be balanced with the necessity of sustaining the water resources within our care. This is a challenge of supply and demand. The former is focused on efficient use of resources, while the latter focuses on developing and protecting the resource. Historically our greatest focus has been on supply with investment in dams, inter-catchment transfer schemes, pump storage systems, reservoirs and more recently desalination. All indications are that South Africa has almost reached the limits of expanding supply, with future developments being both expensive and with marginal yield and water security benefits. The focus has thus shifted to demand management, using less to deliver more.

The situation today

Although the situation is challenging, South Africa has good legislation and infrastructure that, if maintained, will continue to deliver. This is accompanied by an increasing focus on water by civil society, and the public and private sector. There have also been several significant developments within the water arena that will drive improvement:

- ▶ **Technology** – the increasing availability and affordability of water treatment technologies. Anglo American has led the way with the eMalahleni

As South Africa grows, this is an extremely vulnerable time when water resources become a constraint to job creation and future economic growth.

Water Reclamation Plant, which currently treats up to 30ML/d of Acid Rock Drainage; this is being expanded to treat up to 55ML/d by 2014.

- ▶ **Performance** – water efficiency targets and best practices are emerging from all major water use sectors. In Anglo American we have a programme called WETT (Water Efficiency Target Tool), through which every site has set a water reduction target. Each operation has calculated its projected water demand and identified water savings projects. When implemented these projects must then be formally verified.
- ▶ **Planning and partnering** – the development of the second National Water Resource Strategy, although ambitious and controversial in places, has been consultative and includes considerations other than just traditional technical aspects. The increased willingness and proliferation of Public Private Partnerships on water is also a sign of a developing maturity, but one that will be challenging due to varied priorities, skills and views in its application over the next five years.

As South Africa grows, this is an extremely vulnerable time when water resources become a constraint to job creation and future economic growth. It is the management of this through carefully formulated strategies, solid policy based on science, held together by good leadership that will make it happen and secure our future. This, in essence, is the water challenge for South Africa. Working together we have the ability to overcome this challenge. It all starts with the need to make a difference, trust, an open mind and dialogue.

GUEST COMMENT:

A view on the South African water situation

Andre Fourie –

Head of Sustainable Development: SABMiller

A strategic look at the water future quickly reveals that even progressive water stewardship by corporations will not deliver security of supply.



There is increasing concern about the quality and quantity of water supply in South Africa. Given that the brewing and bottling businesses are by nature very dependent on water, it is no surprise that South African Breweries (SAB) has taken proactive steps to understand the water risks facing the company and initiated projects demonstrating water stewardship.

The company was one of the first to develop a comprehensive water footprint, which revealed that 95% of the water used in making a beer is used in the agricultural supply chain. It is therefore clear that leading corporations need to look beyond the water risks facing their operations to understand the potential disruptions of their supply chains.

A strategic look at the water future quickly reveals that even progressive water stewardship by corporations will not deliver security of supply. In addition, it is evident that no sector of society can deliver water security over the coming decades. Indeed, it will take concerted effort from all levels of government, large and small business as well as communities and NGOs to secure the water resources required in the country.

It is therefore necessary for corporations to develop a view on the water situation in the country as a platform for engagement with other stakeholders. SAB has developed a detailed water risk map of the water issues facing the company and its supply chain. The company does not share the popular notion that the country is facing a water crisis that is systematically developing around the country. However, there is no doubt that companies and communities face significant risks regarding the quantity and quality of water supply over

the next decades. Domestic use will increase as the population rises from 48 million to 53 million by 2025 – and addressing basic service backlogs can be expected to be prioritised by government. With increased demand for water from industry, agriculture and mining, competition for water cannot be ruled out.

This competition will vary between various geographic localities, and is based on the intersection of projected company demand for water, the increased need for water by a growing population, the uncertainty regarding water availability and the impact of climate change, and concerns about the quality of infrastructure and water supply services.

While, in our view, South Africa is not facing an immediate, systems-wide water crisis, demand for water is increasing while the supply infrastructure is ageing. The country is reaching the limits to which water can be transferred between major water basins. It is important to recognise that the country has experienced a decade of good rainfall and just a few years of drought will place immediate pressure on the system.

The longer-term impact of major new energy investments by Eskom and others will increase demand for water. The growing need for food and agricultural expansion will require additional water and energy. New water infrastructure requires energy and needs to be carefully allocated in terms of use for new human settlements, agricultural irrigation or industrial growth. This “nexus” of water, energy and food requires integrated and long term planning, with all sectors of society sharing a common vision rather than a short-term scramble for water.

4. Sector Analysis

Understanding the sector context in which each company operates enhances the assessment of company disclosure and performance, and facilitates more meaningful comparison between companies. This section reviews the 2012 water results in the context of the following four sectors and associated sub-sectors:


- ▼ *Consumer Staples and Discretionary* – comprising Multiline Retail; Speciality Retail; Food Products; Food & Staples Retail; Beverages; and Tobacco
- ▼ *Health Care* – comprising Pharmaceuticals; and Health Care Providers & Services
- ▼ *Materials & Energy* – comprising Metals & Mining; Oil, Gas & Consumable Fuels; Chemicals; and Paper & Forest Products
- ▼ *Industrials* – comprising Construction & Engineering; Electrical Components & Equipment; and Industrial Conglomerates

Due to the small number of respondents from the Consumer Discretionary sector (two), this sector has been combined with Consumer Staples. As the only company in the IT sector that was approached did not respond, the IT sector has not been included. No companies in the financial services sector were approached this year, although Sanlam and Nedbank responded voluntarily.

Each of these “sector snapshots” contains:

- ▼ A summary of the sector response rate, compared with the 2012 Global 500 response rate and with the 2011 Global and South African responses;
- ▼ A brief review of key findings;
- ▼ An overview of reported risks exposure, some examples of specific recent impacts, and a summary of any identified water-related business opportunities;
- ▼ Examples of leading company practice; and
- ▼ A summary table of respondents’ disclosure on selected water management, governance and accounting parameters.

Details on companies’ water-related targets are presented in Appendix 1.



Understanding the sector context in which each company operates enhances the assessment of company disclosure and performance, and facilitates more meaningful comparison between companies.

Consumer Staples and Consumer Discretionary

36%

JSE100 Response Rate (8/22)
(46% in 2011 for Consumer Staples only,
compared with 50% in 2012 for Consumer
Staples only)

61%

Global 500 response rate (55/90)
(56% in 2011)

Key findings

- There was a very low response rate for the sector, with only eight of 22 companies responding, two of which were non-public responses. The response rate for Consumer Staples is higher than in 2011, but the overall response rate for the combined sectors is lower because of the lower response rate from Consumer Discretionary. The combined response rate for Consumer Discretionary and Consumer Staples (61%) from the Global 500 continues to be much higher.
- Most of the respondents in this sector come from Consumer Staples (6/12), where water-related issues are seen to have a higher potential impact than for Consumer Discretionary (2/10).
- All of the respondents identify potentially significant vulnerability to water-related impacts, both on their direct operations and through their supply chain, with several companies citing recent specific instances of high profile impacts. Notwithstanding the higher response in Consumer Staples, and the significant potential risk exposure identified by most of these respondents, there are several high profile companies in this sector that have chosen not to engage on this issue through the CDP.
- Most of the respondents report having a water strategy and action plan in place; four of the six public respondents report having quantitative water reduction targets.
- During the reporting period, three of the responding companies paid penalties or fines for significant breaches of discharge agreements or regulations.

Reported risk exposure

- All respondents recognise potential disruptions to their operations and their supply chains associated with increased water stress or scarcity, and declining water quality.
- Risk exposure in the supply chain is reported as being of particular concern. Key water-related risks in the supply chain include potential reductions in crop yields, interruptions to the growing season of certain foods, the relocation of growing areas and increases in production costs.
- Several respondents identify concerns with higher operational costs associated with escalating water tariffs, as well as increasing compliance costs arising from a greater focus on regulatory enforcement.
- Some companies highlight the potential for

reputational damage associated with poor water management practices. *Woolworths* states that the growing environmental awareness of consumers and the media has resulted in a significant increase in media and customer queries on water quality issues. They anticipate an increase in consumer demand for less water-intensive products, which would require shifts in their supply chain.

Recent impacts

- Illovo Sugar* and *Tongaat Hulett* both report significantly reduced sugar cane supplies from the drought conditions in KwaZulu-Natal during the 2010/11 season, with one temporarily closing a sugar mill for the season.
- SABMiller* reports that it has faced financially material water risks in three separate areas: i) some of their breweries have had water supply to their plants constrained due to water availability, resulting in disruption to production and requiring investment in new water supply infrastructure; ii) some plants have experienced declining water quality, with additional capex required for new water treatment systems; and iii) several sites have experienced material increases in water prices that has impacted on operational expenses.
- Woolworths* reports that it has been affected by both flooding and drought events in its supply chain, which has impacted the availability and costs of certain products. It reports that the resulting lost sales in store due to the non-availability of such products has been financially material.

Realising new business opportunities

- While most respondents identify various opportunities (or initiatives) for saving water, very few identify new business opportunities arising specifically from water-related issues.
- Woolworths* highlights growing customer awareness of water and other sustainability issues. The company believes that good communication and marketing of its activities will help to attract and retain 'ethical' consumers, a group they believe is likely to grow in South Africa. It is anticipated that a new range of water efficient products – or products from water efficient suppliers in foods, home and clothing – will create new sales opportunities.

Examples of leading practice

- SABMiller* uses water abatement curves (WAC) at both group and business unit level to develop annual water reduction plans. The company has initiated various programmes in their agricultural supply chain, including extension services to smallholder farmers throughout Africa to improve water management through better soil management practices, improved pesticide/fertiliser management, and crop varietal choice. In South Africa, farmers have reduced irrigation usage by over 30% in some areas.

SABMiller is also working with governments, NGOs and other stakeholders to realise water savings. One example is through the Water Futures Partnership, which SABMiller helped to establish with WWF South Africa and GIZ (the German government's development agency) in nine countries. In addition to developing internal action plans, the company shares lessons learnt through various case studies, tools and methodologies, working with initiatives such as the UN Global Compact, the CEO Water Mandate, and the World Economic Forum Water Initiative.

- **Woolworths** has engaged with WWF's Water Balance Programme. Launched in association with the government's Working for Water programme, the

initiative encourages companies to become water neutral. The programme has multiple objectives of reducing the impact of invasive alien plants on water supplies, improving the productive potential of land, restoring biodiversity and creating jobs and economic empowerment for workers. Woolworths is investing in the water neutral programme by eliminating invasive water-thirsty alien plants on supplier farms and in protected areas, such as the Tankwa Karoo National Park. The project releases enough water into South Africa's water system to offset the water used by Woolworths' operations each year, ultimately making the company water neutral.

Consumer Staples and Consumer Discretionary Sector Summary

Company	Sub-Sector	Report exposure to significant water risk in operations	Experienced material water-related impacts in last 5 years	Water policy, strategy or plan	Board-level oversight	Concrete goals or targets	Supplier requirements on water disclosure	Able to provide data (measured or estimated) on withdrawals	Verification (more than 75% of data)
British American Tobacco	Tobacco	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Illovo Sugar	Food Products	Yes	Yes	No	Not reported	No	No	Yes	No
Pick n Pay Holdings	Food & Staples Retailing	Yes	No	Yes	Yes	Int	No	Yes	Yes
SABMiller	Beverages	Yes	Yes	Yes	Yes	Int	No	Yes	Yes
Tongaat Hulett	Food Products	Yes	Yes	Yes	Yes	Qual	No	Yes	Partial (SA municipal water use)
Woolworths	Multiline retail	Yes	Yes	Yes	Yes	Int	Yes	Yes	Yes

The Foschini Group and Pioneer Foods answered the questionnaire, but their responses are not public. Avi, Clicks Group, Compagnie Financière Richemont SA, JD Group, Lewis Group, Massmart Holdings, Mr Price Group, Naspers, Oceana, Shoprite Holdings, Steinhoff International Holdings, The Spar Group and Truworths International all declined to participate.

Key:

Abs: The company has quantitative absolute targets

Int: The company has quantitative intensity targets

Qual: The company has qualitative goals

We are closely linking water and carbon in the soil, in our measurement of progress of our Farming for the Future initiative. We are tracking the opportunities for soil carbon increases based on efficiency of water usage and reduction of pesticides and fertilisers in our Farming for the Future programme.

Woolworths

Health Care

60%

JSE100 Response Rate (3/5)
(60% in 2011)

77%

Global 500 response rate (23/29)
(79% in 2011)

Key findings

- ▼ The sector retained its comparatively high response rate of 60%, with the same three companies responding as in 2011, all of them publicly. While admittedly from a small base, this high response rate is similar to that in the Global 500, where Health Care has the highest sector response rate.
- ▼ All of the respondents identify a mix of physical and regulatory water-related risks that are having a material impact on their operations. They all anticipate a potential increase in operational costs associated with tariff increases, as well as greater regulatory intervention and enforcement of water conservation and discharge requirements.
- ▼ *Netcare* and *Mediclinic* have each developed a specific water-related strategy, and have set, or will set, quantitative water reduction targets, an improvement on last year's performance.
- ▼ None of the companies paid penalties or fines for significant breaches of discharge agreements or regulations.

Reported risk exposure

- ▼ All three companies foresee increases in operational expenses associated with rising water prices and potential mandatory water efficiency, conservation, recycling or process standards.
- ▼ *Netcare* and *Mediclinic* both highlight the potential impact associated with varying water supply and declining water quality, with both companies citing recent instances of financially material water supply constraints.
- ▼ Interestingly, none of the companies mention the potential effects associated with the potential increased spread of waterborne diseases or the health impacts of drought and malnutrition.

Recent impacts

- ▼ The disruption of municipal water supply in the coastal regions (mainly Kwa-Zulu Natal), with isolated incidences in Gauteng, meant that *Netcare* had to purchase additional water via tankers, and use bottled water for patients' consumption. This prompted the development and implementation of the Emergency Water Conservation Plan to ensure that all hospitals have at least 48 hours' worth of water supply stored. Water tanks were installed at the hospitals at a cost of R12 million over two years.
- ▼ *Mediclinic* similarly reported water shortages at their George, Geneva and Neuro operations, due to severe drought. *Mediclinic* Welkom had no water for seven days, following which contingency measures and awareness-raising initiatives have been implemented.

Realising new business opportunities

- ▼ While each of the respondents identifies the potential for further cost savings through water efficiency initiatives, none of them identify specific new business opportunities arising from water-related concerns.

Examples of leading practice

- ▼ *Netcare* has initiated various water saving projects. These include the installation of low flow showerheads, flow restrictors on taps, and various water recycling programmes; they are planning to investigate the installation of water-saving urinals. The company has developed a water management plan to optimise grey and black water usage and to minimise clean water usage.
- ▼ *Adcock Ingram* has implemented various measures with respect to water efficiency and runoff water. The water purification process at their Aeroton plant has been changed to ensure better efficiency and recovery of waste for use in effluent. At their Clayville operations, a reverse osmosis system is being implemented to recover 10,000 litres per hour; the recovered water will be used for domestic and garden consumption. Rainwater harvesting takes place at the head office in Midrand.

Health Care Sector Summary

Company	Sub-Sector	Report exposure to water-related risk in operations	Experienced material water-related impacts in last 5 years	Water policy, strategy or plan	Board-level oversight	Concrete goals or targets	Supplier requirements on water disclosure	Able to provide data (measured or estimated) on withdrawals	Verification (more than 75% of data)
Adcock Ingram	Pharmaceutical	Yes	No	No	No	No	No	Yes	No
Mediclinic International	Health Care Providers & Services	Yes	Yes	Yes	Yes	Int	No	Yes	Partial (primarily municipal water)
Netcare Limited	Health Care Providers & Services	Yes	Yes	Yes	Yes	Qual	No	Yes	No

Aspen Pharmacare Holdings declined to participate.
No response was received from Life Healthcare holdings.

Key

Abs: The company has quantitative absolute targets

Int: The company has quantitative intensity targets

Qual: The company has qualitative goals

We have developed and implemented an Emergency Water Conservation Plan to ensure that all hospitals have at least 48 hours of water supply stored in the event of a loss of water supply. Water tanks were installed at the hospitals at a cost of R12 million over two years.

Netcare Limited

Industrials

43%

JSE100 Response Rate (3/7)
(this sector was not reported in 2011)

47%

Global 500 response rate (18/38)
(48% in 2011)

Key findings

- ▼ The response rate from the South African Industrials sector is similar to that for the Global 500, although from a much smaller sample.
- ▼ One of the companies suggests that water-related issues do not pose a material risk to their operations.
- ▼ None of the construction companies in the sample chose to respond.
- ▼ Only one of the three JSE 100 respondents reports having a water response strategy and targets in place (*Barloworld*).
- ▼ None of the companies paid penalties or fines for significant breaches of discharge agreements or regulations.

Reported risk exposure

- ▼ While one of the respondents (*Reunert*) identifies no specific water-related risks facing its operations or supply chain, both of the other respondents cite material concerns relating to increased water scarcity, declining water quality, and increasing regulatory measures on water-related issues, including changes in water allocation, as well as stricter requirements relating to wastewater and discharge standards.
- ▼ *Barloworld* raises concerns regarding the deteriorating water infrastructure in South Africa, as a result of which certain areas are experiencing unscheduled water cuts.
- ▼ Although there is broad recognition of the potential for water-related risks in their supply chain, none of the companies identifies specific existing examples of such risks. *Altron* is planning to examine the sustainability of its supply chain through further engagement with key suppliers and to understand and address potential risks in terms of resource dependence, including water.

Recent impacts

- ▼ *Altron* reports having experienced water-related financial impacts in Port Elizabeth, where water restrictions were imposed and the operations had to pay more for excess water.

Realising new business opportunities

- ▼ *Barloworld* and *Altron* identify various opportunities for cost savings associated with reduced water use and increased water reuse and recycling, although the nature of these savings “cannot yet be quantified.”
- ▼ *Barloworld* has identified the potential to supply new products and services, associated with the infrastructure development required to alleviate shortages in water stressed areas.

Examples of leading practice

- ▼ *Barloworld: Barloworld Equipment Southern African* has installed technology in several of its operations to reach its target of a 30% improvement in water use efficiency by 2014 on a 2009 baseline. The division has installed a water recycling plant at its new site in Maputo, Mozambique. *Automotive's* three new motor vehicle dealerships all have water recycling and rainwater harvesting plants, while three other dealerships have installed “permanent waterless car-wash facilities”, saving around 130 litres (86%) of water per car wash. *Avis Rent a Car* recycles up to 88% of water used which is cleaned to 90% clarity and has significantly reduced the need for municipal water from over 220 litres to around 20 litres per car washed. The Avis water management process now saves some 75 million litres of water per annum. Efficient and technologically advanced car wash systems have been implemented at the airport branches at Durban, Cape Town and Johannesburg. These new facilities wash a vehicle in 45 seconds, using less water; used water is channelled, filtered and re-used in the system.

Industrials Sector Summary

Company	Sub-Sector	Report exposure to significant water risk in operations	Experienced material water-related impacts in last 5 years	Water policy, strategy or plan	Board-level oversight	Concrete goals or targets	Supplier requirements on water disclosure	Able to provide data (measured or estimated) on withdrawals	Verification (more than 75% of data)
Allied Electronics Corporation (Altron)	Capital Goods	Yes	Yes	No	No	No	No (pending)	Yes	No
Barloworld	Capital Goods	Yes	No	Yes	Yes	Int	No	Yes	Yes
Reunert	Capital Goods	No	No	No	No	No	No	Yes	No

Aveng, Bidvest Group, Murray & Roberts, and Wilson Bayly Holmes-Ovcon all declined to participate.

Key:

Abs : The company has quantitative absolute targets

Int : The company has quantitative intensity targets

Qual : The company has qualitative goals

We continually review possible business opportunities as part of the group's integrated strategic planning process. In doing so we consider products and services that may assist customers in addressing their respective water constraints. The group is mindful of the opportunities that exist in renewable energy generation and these are incorporated into its strategic planning process.

Barloworld

In 2011 Altron started to engage with its top suppliers in one-on-one meetings to identify any potential environmental risk. We will be intensifying this process in future to identify water risk, with an initial focus on internal operations and a long-term focus on our supply chain.

Altron

Materials & Energy

62%

JSE100 Response Rate (16/26)
(Materials – 55% in 2011 (11/20); Energy – 100% in 2011 (1/1))

74%

Materials Global 500 response rate (31/42)
(Materials – 72% in 2011)

44%

Energy Global 500 response rate (25/57)
(Energy – 47% in 2011)

Key findings

- ▶ The sector had the second highest response rate (after Health Care), with 16 of 26 companies responding. This is lower than the Global 500 Materials response rate (74%). The vast majority of the Materials & Energy responses are from mining companies, with one response from a paper and forest products company, one from a chemicals company, and one from an energy company.
- ▶ All the respondents identify potentially significant vulnerability to water-related impacts, both on direct operations and in the supply chain; all but two respondents, perceive their supply chain to be exposed. Water scarcity is most commonly cited, but companies report significant losses from flooding. Seventy-one per cent of the Materials & Energy sector have suffered impacts already.
- ▶ Two respondents paid penalties or fines for significant breaches of discharge agreements or regulations.
- ▶ All the respondents, apart from one, have a water policy in place; 12 respondents report concrete goals or targets related to water management, seven of which are quantitative.
- ▶ The respondents in the sector are taking action to manage a variety of water-related risks, 50% of respondents in the sector report at least three actions they are taking, compared with 43% of the non-Materials & Energy sector respondents.

Reported risk exposure

- ▶ All the respondents report exposure to water-related risks in their direct operations, and all but two respondents report exposure to risks in their supply chain. The most commonly cited risks to direct operations are physical risks, in particular, increased water stress leading to water shortages that might disrupt production or higher water prices and changes in water withdrawal licences. The risk of flood events leading to production disruption and risks associated with water quality such as liability for acid mine drainage and pollution or changes to discharge permits are also reported.
- ▶ Overall, the Materials & Energy sector recognised a variety of risks, most of the respondents reporting at least five separate risks. Seventy-five per cent of risks reported by the Materials & Energy sector are

seen as near-term (within five years).

- ▶ The sector views its supply chain as less exposed than its direct operations, because they are at the front of the supply chain, with key inputs only being energy and mining equipment. Three respondents reported that their supply chains are not exposed (*Sasol*, *Mondi* and *BHP Billiton*) and four respondents were not able to report whether or not their supply chains were exposed.

Recent impacts

- ▶ Seventy-one per cent of the respondents have experienced detrimental water-related impacts. Impacts include: production losses due to water and power shortages; increases in expenditure on water retention capacity, pollution prevention and supply efforts over the past five years; and clean-up costs and associated impacts to shareholder value. For example, *Exxaro* has recorded 17 water-related environmental incidents in 2010 with damage per incident of between R50,000 and R500,000.
- ▶ *Anglo American* reports variability in rainfall as being its biggest challenge, and the need to adapt to extreme weather events, such as heavy rainfall and floods in Queensland, Australia, which have resulted in production closures. *Gold Fields* suffered from floods in South Africa, reporting a loss of income of R53.2 million in 2011 due to flooding in one pit, and costs of additional pumping at one shaft for increased water decanting due to heavy rains of R27,200 per day (and increased energy costs). *Sasol* has suffered detrimental impacts from flooding. In 2010, a portion of the Sasol Synfuels plant was flooded resulting in a plant trip that resulted in production losses of about R130 million. Changes brought about include improved housekeeping of the inside ash handling area to ensure that the factory can better respond to such an occurrence.

Realising new business opportunities

- ▶ With the exception of one respondent (*Northam*) all the respondents identify opportunities from water. These are mainly opportunities from risk mitigation rather than new business opportunities, for example, nine respondents identifying cost savings from reduced water consumption, reduced production losses and reduced water charges. Eighty-three per cent of the opportunities reported by this sector are expected to be realised in the near term (within five years). Five respondents identify brand value as an opportunity, in terms of competitive advantage and providing a licence to operate.
- ▶ Fewer respondents report new business opportunities related to water, but some companies are seeking to enhance revenue. *Gold Fields'* Liquid Gold initiative focuses primarily on achieving a technical solution for the treatment of good quality fissure water and contaminated process water to produce water of potable quality. *AngloAmerican*

Platinum is working with academics to develop new technologies, including zero waste technologies.

Kumba Iron Ore is developing new products and alternative ways of using existing products, tailoring its products to the specific needs of customers, such that their customers are able to reduce their energy, water and processing materials consumption.

- Two respondents expressly identify reduced carbon emissions and energy reduction as opportunities (*Kumba Iron Ore* and *Impala Platinum*).

Examples of leading practice

- Anglo American* is working to adapt to climate change, and initiated a 'Rain Immunisation Project', that seeks to decrease the environmental risks and production time loss at sites in Australia caused by high variability in precipitation. The project includes extensive pump and piping networks, improved flood protection infrastructure, road crossings and road-sheeting works on semi-permanent roads, and upgrades to underground mines, drainage network, storage and dewatering capacity. This work provided the basis for detailed wet weather plans at each operation, which also take into account possible drought scenarios.
- AngloAmerican Platinum* has reduced water usage through collaboration with the municipality in the Rustenburg area to manage the increased demand for potable water. The company signed an off-take agreement to use 15 millilitres per day of treated sewerage effluent from the Municipality's sewage treatment plant and commissioned a R15-million water-treatment plant at their Rustenburg operations in November 2011 to improve the quality of the treated sewage water introduced into its water-reticulation system. The substitution of treated sewage water for potable water has resulted in the conservation of significant amounts of potable water.
- At *Gold Fields'* South African operations, 90% of water withdrawn is recycled and reused. Losses are due to discharge to prevent the build up of total dissolved solids due to evaporation.
- Exxaro Resources* is involved in public policy, engaging with the government on integrated water licences, and supporting academic and business co-operatives, such as sponsorship of environmental chairs at South African universities to encourage research and dialogue.
- Mondi Plc* is sponsoring biodiversity projects, such as the Mondi Wetland Project (MWP) and the Mondi Ecological Network Programme (MENP), which are leading developments in wetland conservation and ecological networks. Mondi spent €17.3 million in 2011 on a number of efforts to protect biodiversity, including identifying and protecting areas of high conservation value, and developing best practice plantations through its New Generation Plantation projects with WWF.
- Sasol* has concluded three multi-stakeholder partnership agreements to help reduce physical losses in the catchment areas within which its main operations are located. This is being done through water conservation partnerships with local municipalities, by supporting a programme which repairs household water leaks as well as leakages from distribution pipelines. Sasol has committed R8 million to support these partnerships, with a committed leveraged partner funding of R9 million. Sasol plans to use these partnership projects as case studies for the development of a national water-offsetting model in collaboration with the South African Department of Water Affairs.

Materials & Energy Sector Summary

Company	Sub-Sector	Report exposure to significant water risk in operations	Experienced material water-related impacts in last 5 years	Water policy, strategy or plan	Board-level oversight	Concrete goals or targets	Supplier requirements on water disclosure	Able to provide data (measured or estimated) on withdrawals	Verification (more than 75% of data)
AECI Ltd	Chemicals	Yes	Yes	No	No	No	No	Yes	Yes
Anglo American	Metals & Mining	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Anglo American Platinum	Metals & Mining	Yes	Yes	Yes	Yes	Abs and Int	Yes	Yes	Yes
AngloGold Ashanti	Metals & Mining	Yes	Yes	Yes	Yes	Quant	No	Yes	Yes
BHP Billiton	Metals & Mining	Yes	Yes	Yes	Yes	Int	No	Yes	Yes
Exxaro Resources	Metals & Mining	Yes	Yes	Yes	Yes	Abs and Int	No	Yes	Yes
Gold Fields Limited	Metals & Mining	Yes	Yes	Yes	No	Qual	No	Yes	Yes
Impala Platinum Holdings	Metals & Mining	Yes	Yes	Yes	Yes	Qual	No	Yes	Yes
Kumba Iron Ore	Metals & Mining	Yes	No	Yes	Yes	Int	No	Yes	Yes
Lonmin	Metals & Mining	Yes	No	Yes	Yes	Int	No	Yes	Yes
Mondi Plc	Paper & Forest Products	Yes	Yes	Yes	Yes	Int and Quant	Yes	Yes	Yes
Northam Platinum	Metals & Mining	Yes	No	Yes	Yes	Int	No	Yes	Yes
Royal Bafokeng Platinum	Metals & Mining	Yes	No	Yes	Yes	Quant	No	Yes	Yes
Sasol	Oil, Gas & Consumable Fuels	Yes	Yes	Yes	Yes	Int	No	Yes	Yes

Arcelor Mittal and Mondi Ltd are included in the Global 500 response. African Rainbow Minerals, Assore, Harmony Gold Mining Co, Nampak Ltd, Pretoria Portland Cement and Sappi all declined to participate. Metorex, Omnia Holdings, Palabora Mining Co and Optimum Coal Holdings – no response received.

Key:

Abs : The company has quantitative absolute targets

Int : The company has quantitative intensity targets


Quant: The company has quantitative targets that are not absolute nor intensity

Qual : The company has qualitative goals



71%

of respondents in the Materials & Energy sector have experienced detrimental water-related impacts. These impacts include: production losses, due to water and power shortages; increases in expenditure on water retention capacity, pollution prevention and supply efforts over the past five years; and increased clean-up costs with associated impacts on shareholder value.



5. Closing Commentary

The strategic value of water is increasingly being recognised by the business and investment community, both in South Africa and internationally. The business risks associated with the quality and availability of water have become more apparent in many regions and industries in the past year. In its 2013 Global Risks Report, the World Economic Forum identified “water supply crises” as one of the top global risks in terms of impact and likelihood. The strategic importance of water, and the reactions of South African companies to water-related challenges, is clear from many of the responses to the CDP’s water questionnaire.

What the responses tell us

There are examples of real leadership among South African companies

Some South African companies are among the global leaders on managing water-related risk and are demonstrating approaches that are both innovative and comprehensive. These include, for example, the establishment of partnerships between businesses, NGOs and local communities, the engagement of suppliers in water management initiatives, and the implementation of ambitious internal monitoring, reporting and target-setting programmes. Leadership demonstrated by some of the South African listed companies is reflected by the inclusion of case studies from South Africa in the 2012 Global 500 water report. This South African water report has identified further specific case studies of actions being taken by South African companies that many other businesses could learn from.

Notwithstanding these various examples of leadership, there is clearly scope for most companies in South Africa to improve their own management of water-related risks and to learn from others, both in South Africa and from the international business community.

Water is a systemic risk, yet companies still consider it in isolation

The message of the 2012 Global 500 water report was that water is a shared resource and requires collective action to drive truly effective stewardship. The 2012 responses imply that despite its importance, true ‘collective action’ is not as widespread as it should be. Water is a systemic risk. Not only are there multiple users of water, but water has multiple uses and is critically linked to energy and food, as well as to health and social development. While more companies are beginning to appreciate the links between carbon

and water, it is surprising that the responses made so little mention of other issues linked to water, such as inadequate infrastructure, linkages with biodiversity and ecosystems, or climate change impacts. The social dimension of water, as it relates to poverty and social development, does not appear to be fully appreciated or managed by most companies. Risks to the supply chain are still thought about far less than those to direct operations, and impacts on the whole value chain, including end markets and consumers, are infrequently mentioned.

More ambition is needed to meet the scale of the water challenge in South Africa

Overall, the responses indicate that most companies are largely taking a ‘business-as-usual’ approach. While there are some admirable examples of initiatives to reduce water use or to manage risks, and there is a sense of an emerging effort to manage water, this is seen to fall short of what is needed. Given what is known of the scale of the challenge in South Africa, and what companies are reporting in terms of risks faced and impacts felt, there is a compelling case for a more ambitious effort.

There are also few examples of extensive thought about what a business needs to do to operate in a severely water-constrained world. This environment will create space for new products, services and ways of doing business. It will also mean that some products and services will be constrained or even fall out of favour either directly or as a result of losing access to water in preference to more pressing needs. While companies are recognising the opportunities that water risks may present, not enough businesses appear to be thinking deeply and coherently about how they will operate in the near future.

What the process tells us

Disclosure is driving more companies to think about water

Comparing the responses from 2012 to 2011, it is clear that there have been improvements; the number of companies reporting has increased and disclosure itself is broadly improving. Awareness of water as a corporate risk appears to be growing and several companies have disclosed non-South African examples of risk and response, clearly demonstrating the benefit of putting such questions to companies with operations in more than one watershed.

Comparability is difficult

There are challenges associated with comparing companies' responses and actions to manage water, which makes specific engagement with companies by investors all the more important. The 2011 and 2012 response samples have been significantly different (ten companies were included in one year and not the other) making it difficult to be conclusive about precise changes from year to year. In addition, the sample size is small meaning that comparing companies or sectors is potentially misleading.

Response quality varies significantly

There are distinct and often large differences in the quality of disclosure across the responses submitted by companies. Some companies provide considered and thoughtful responses while others answer simplistically. These differences may be lost in the summary statistics provided in this report but these differences matter and may ultimately be reflected in the performance of the companies. There is often a significant level of judgement employed in the interpretation of company responses. For example, there is an overlap between actions described as 'collective action' and those described as 'community engagement', and while engaging with the community might mean informing the community of a company's actions to one company, it could mean full participation to another. There is no easy way to deal with this: water is a complex issue and there will always be a myriad of different approaches employed by companies.

CDP is working on a water scoring methodology to pilot in 2014 to feedback to companies on the quality of their responses; in the meantime companies should learn from the responses of their peers and investors should be wary of drawing broad conclusions.

What investors should be doing

Investors should be concerned with how a company manages its water-related risks as much as, or more than, the specific water-related risks the company faces. Effective corporate water management and stewardship is ultimately what is required, which means more than simply effective assessment of site-level water issues or avoidance of water stressed areas. Investors should seek to engage with companies and test the strength of their ability to manage water risks across the entire business.

Questions investors should put to companies include:

- ▼ How will medium and long-term business goals affect water use directly and indirectly?
- ▼ How does a company decide when and how to mitigate water-related risk?
- ▼ How is the value of water factored into business planning and investment decisions and how does it affect the choices made?
- ▼ How does the company integrate water into business strategy and financial planning?
- ▼ How will business plans affect water use across its value chain?
- ▼ How does a company consider its customers and markets, and how does the company invest in new product design and delivery opportunities that address water risks?
- ▼ What is the company doing to collaborate with stakeholders?

Concluding remarks

Although we can question whether current action is adequate to manage the significant water challenges South Africa faces, it is important to acknowledge and encourage the growing response of companies to CDP's water program. This report aims to inform companies of what others are doing, to share best practice, and to give investors an insight into how some of the largest South African water-intensive and water sensitive companies are approaching water management. The increased awareness and data that is gathered from these responses is contributing to a shift in understanding and management of how we use such a critical natural resource. We hope this report will be a good starting point for any company, investor or other stakeholder to understand how the business community in South Africa is responding to its water challenges.

Appendix 1: Company targets by sector

Consumer Staples and Discretionary

Company	Sub-sector	Target	Progress
British American Tobacco	Tobacco	To reduce our water use to 4.2 m ³ per million cigarettes equivalent by end of 2012 (13.4% lower than our 2007 baseline). This target is Group wide, covering water consumption at all business units where we have 50% or more ownership. It excludes water consumed by suppliers	In 2011, our water use performance result was 3.89 m ³ per million cigarettes equivalent, thus bettering our 2012 target by 7.4%. Our water use is currently 19.8 % lower than our 2007 baseline. The increase in water efficiency was largely due to an increase in production volume resulting from the inclusion of our 2010 acquisition in Indonesia, without incurring the associated rise in water use. Although our target does not relate to water consumed by our suppliers, we are actively engaged with key suppliers on water management, particularly leaf growing suppliers.
Pick n Pay Holdings Ltd	Food & Staples Retailing	20% relative reduction in water usage for operations by 2020 (2011 benchmark)	This remains work in progress
SABMiller	Beverages	To reduce water consumption, on an intensity basis, by 25% by 2015 against a 2008 baseline.	This remains work in progress
Woolworths Holdings Ltd	Multiline Retail	30% relative reduction in water usage for operations by 2012 (2007 benchmark)	We have exceeded our targets already for head office operations and are on track for stores and distribution centres.

Health Care

Company	Sub-sector	Target	Progress
Mediclinic International	Health Care Providers & Services	Consumption figure for water in litres at an intensity per bed day sold	The majority of the 52 hospitals are within 10% margin of the consumption intensity figure.

Industrials

Company	Sub-sector	Target	Progress
Barloworld	Trading Companies & Distributors	Although the overarching water policy currently does not specify water-related efficiency targets for the Group, divisions can implement their own targets where appropriate. Barloworld Equipment South Africa has implemented an aspirational efficiency target of 30% by 2014 on a 2009 baseline.	As at September 2011, an efficiency improvement of 18% had been achieved against the 2009 baseline, measured by R'm intensity. As at March 2012 an efficiency improvement of 31% has been achieved off the same baseline, measured by R'm intensity

Materials & Energy

Company	Sub-sector	Target	Progress
Anglo American Platinum	Metals & Mining	For 2012, our water consumption target is set to 41.2 million m ³ . Our water intensity target for 2012 is 10.6 m ³ per refined ounce of PGMs and gold.	In 2011, Anglo American finalised and approved a new Group technical standard for water management. This new mandatory technical standard includes detailed requirements on target setting, water monitoring, site management and water action plans. All operations have set water targets. During 2011, we consumed 36.3 million m ³ of new water, against a total usage of 33.8 million m ³ in 2010. The anticipated 2011 water consumption was 37.0 million m ³ calculated using our water target methodology, which resulted in a 2% saving in water consumption against the set target. Our potable-water-use intensity improved by 1%, from 5.40 m ³ /oz precious metal in 2010 to 5.36 m ³ /oz precious metal in 2011.
AngloGold Ashanti	Metals & Mining	To maintain water accounting accuracy of 90% or better.	Initial data will be available at the end of 2012.
BHP Billiton	Metals & Mining	We have a Group-wide target for a 10% improvement in the ratio of water recycled / reused to high quality water consumed between FY2007 and FY2012.	Our water use index is currently tracking at 8% improvement on our FY2007 base year.
Exxaro Resources Ltd	Metals & Mining	Absolute target A 5% reduction in absolute potable water use across all business units by end of year 2012 from baseline year 2010. The target is applicable to the South African Coal operations, Mineral sands and Base metals operations and includes the Rosh Pinah operation in Namibia.	Improved Water Accounting has shown that one coal mining business unit consumed 52% of the total potable water consumption of the business. Potable water was being used for underground operations and a project was put in place to filter underground water for operational use. Specific targets for each business unit were calculated to reduce the use of potable water.
		Quality of discharges The Exxaro Water Management Standard stipulates that all operations must have a water and salt balance target as described under the Best Practice Guidelines. Each operation will have individual water quality targets and timelines based on the issuing of their Integrated Water Use Licence.	Environmental Performance Indicators are included in each operational plan to encourage adherence to quality targets. The quality measures and goals are central to operational performance assessment and reporting.
Kumba Iron Ore	Metals & Mining	Every site has set a water efficiency target with a 2020 horizon which they are pursuing. A new water efficiency target tool is being implemented across all operations to help drive water efficiency and resilience; as a result, each managed site has, for the first time, set a measurable and comparable water savings target.	In 2010, the Group predicted an improvement of 2.2% in water-use intensity; the outcome has surpassed all expectations.
Lonmin	Metals & Mining	To reduce our aggregate fresh water intensity by 15% per unit of production (2007 baseline year) by 30 September 2012.	We achieved a 33% reduction of fresh water intake per unit of production from the 2007 baseline.

Materials & Energy continued

Company	Sub-sector	Target	Progress
Mondi Plc	Paper & Forest Products	We will promote conservation, reuse and recycling practices to reduce specific contact water consumption by 10% by 2015, against a 2010 base year.	In 2011, 330 million m ³ of water was discharged by Mondi's operations. Total water input amounted to 309 million m ³ . Included in our water discharges is the waste water taken over from third parties and treated at our waste water treatment plants. The waste water from third parties (about 37 million m ³ for 2011) is not reflected in our total water input figure reported above.
		We will reduce our effluent load into the environment, either directly or indirectly discharged, by 10% in 2015 against a 2010 base year.	Good progress was made in reducing COD emissions by 34% between 2005 and 2010. In 2011 COD tracked at 47,047 tonnes (this figure excludes Mpact). The improvement of waste water treatment in Swiecie and Syktyvkar resulted in a reduction of COD emissions by 5,000 tonnes in 2011. The Group's volume of COD lies within the Best Available Technique (BAT) range.
Northam Platinum Ltd	Metals & Mining	Northam's target is to maintain water consumption per ounce of platinum produced at current levels. Further, the company is committed to optimising the level of recycling at its operations and has a recycling target of between 85 and 90% of total water usage.	There is little scope to reduce water usage at the mine and plant as water is used as an integral part of production operations, for energy-generation and cooling. The company is in a growth phase and absolute water consumption will increase with a rise in production. A key objective is for the company to optimise the level of recycling.
Royal Bafokeng Platinum Ltd	Metals & Mining	To reduce the volume of potable water received from Magalies Water and to increase the volume of recycled water used by the operations. We estimate that we will be able to reduce the amount of potable water used by the operations by about 50%.	We are conducting a full Environmental Impact Assessment (EIA) prior to constructing a water recycling plant. The EIA will be completed in early 2013 depending on the approval from the authorities and the construction of the plant will commence immediately thereafter. The plant will be in operation during 2013.
Sasol Limited	Energy utilities	Set water use efficiency targets for the main operating facilities in Sasolburg and Secunda.	Sasol Synfuels at Secunda has a target to improve water use intensity (cubic metres of water used per ton of product) by 5% by 2015, against a 2010 baseline. Sasol Infrachem at Sasolburg is targeting a 15% improvement by 2015 against 2010 baseline.

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Printing



Triple Green products are produced from sustainable resources (waste sugar cane fibre) and are recyclable and biodegradable.

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For further information on how you may become involved in the NBI's
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