
Metals & Mining: a sector under water pressure

Analysis for institutional investors of critical issues facing the industry

July 2013



Thanks to the support of



EurizonCapital



CDP has pioneered the only global system that collects information about corporate behaviour on water security, climate change and forest risk commodities on behalf of market forces, including shareholders and purchasing corporations.

Paul Simpson
CEO CDP



Contents

03

4 **Foreword**

6 **Introduction**

8 **Water is a material issue for institutional investors**
8 Financial impacts are already being felt
9 Water risks

10 **Mitigation strategies**
10 Carbon and water trade offs and linkages – addressing one issue to the detriment of the other?

12 **The importance of effective water governance**

13 **Water and profitability**

14 **Factoring water challenges in cash flow analysis**

15 **Conclusion**

16 **Appendix**

Important Notice

The contents of this report may be used by anyone providing acknowledgement is given to CDP. This does not represent a license to repackaging or resell any of the data reported to CDP or the contributing authors and presented in this report. If you intend to repackaging or resell any of the contents of this report, you need to obtain express permission from CDP before doing so. CDP has prepared the data and analysis in this report based on responses to the CDP information request. No representation or warranty (express or implied) is given by CDP as to the accuracy or completeness of the information and opinions contained in this report. You should not act upon the information contained in this publication without obtaining specific professional advice. To the extent permitted by law, CDP does not accept or assume any liability, responsibility or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this report or for any decision based on it. All information and views expressed herein by CDP is based on their judgment at the time of this report and are subject to change without notice due to economic, political, industry and firm-specific factors.

CDP and its contributors, their affiliated member firms or companies, or their respective shareholders, members, partners, principals, directors, officers and/or employees, may have a position in the securities of the companies discussed herein. The securities of the companies mentioned in this document may not be eligible for sale in some states or countries, nor suitable for all types of investors; their value and the income they produce may fluctuate and/or be adversely affected by exchange rates.

Carbon Disclosure Project and 'CDP' refer to Carbon Disclosure Project, a United Kingdom company limited by guarantee, registered as a United Kingdom charity number 1122330 © 2013 Carbon Disclosure Project. All rights reserved.

Cover image: Dietmar Down Under, Flickr Creative Commons under licence: <http://creativecommons.org/licenses/by/3.0/>



It is critical for metals and mining companies to integrate water into their current and future business strategies in order to develop more resilient business models that offer a long lasting business case to their investors.

Fresh water scarcity is threatening the stability of the global economy. With greater competition, the world's finite freshwater resources are a vital strategic concern for governments, investors and corporations. A cavalier approach toward water and taking its availability for granted is no longer an option. Nowhere is this being felt more acutely than by the metals and mining sector – a sector under water pressure.

According to United Nations research¹, more than half of the global population will be exposed to severe water scarcity within the next four decades. Further, “business as usual” water management practices will put approximately US\$63 trillion – 45% of projected global GDP – at risk in 2050².

The pressing questions are not whether we face water scarcity but how severe it will be, how soon and how frequently it will strike our society and production systems.

Eurizon Capital is one of 530 investor signatories with a total holding of US\$57 trillion in assets holding companies accountable for the economic, environmental and human consequences of their water use and management. Through CDP's water program, Eurizon Capital and the other investor signatories are calling for businesses to increase their resilience to water challenges. At the same time, CDP is promoting corporate transparency on the topic and is driving more companies to disclose business critical water-related information to the markets.

The long-term investment horizons of pension funds and other large institutional investors ensure their investment decisions result in sustained long-term economic growth. Such investors are consequently increasingly concerned with and involved in the sustainability of their portfolio companies. This makes them crucial in catalyzing more responsible behavior in their investment decision process.

Investors expect a concerted effort from the metals and mining sector to adopt sustainable practices to mitigate and adapt to fast growing water needs. The sectors requirement for large quantities of water and the high

polluting nature of its waste water makes metals and mining one of the sectors most exposed to water-related risks. Furthermore, many of the markets that these companies are targeting for growth are water-stressed countries, such as Chile, China, and the Middle East, where corporate water practices receive intense public and government scrutiny.

Smart investors and companies know how damaging inaction or delaying interventions can be. Flooding and droughts can severely reduce profits in a number of ways, including delays in securing licenses to operate, infrastructure damage and halts in production – reported losses were as high as 6.5% of EBITDA (FY 2011)³. It is therefore critical for metals and mining companies to integrate water into their current and future business strategies in order to develop more resilient business models that offer a long lasting business case to their investors.

Accounting for and valuing the world's natural capital is fundamental to building economic stability and prosperity. The global economy will favor 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.

Gianluca Manca
Head of Sustainability
Eurizon Capital

Prof. Giulio Alessandro De Leo
Woods Institute for the Environment
Stanford University⁴

1 UNESCO, IMechE, IFPRI, Veolia
2 Finding the blue path to a sustainable economy, March 2011, a report by Veolia Water and IFPRI
3 See table 1
4 Chairman 2006 - 2012 of Eurizon Capital's Sustainability Committee

Metals and Mining

Response Rate⁵

63%
(36/57)

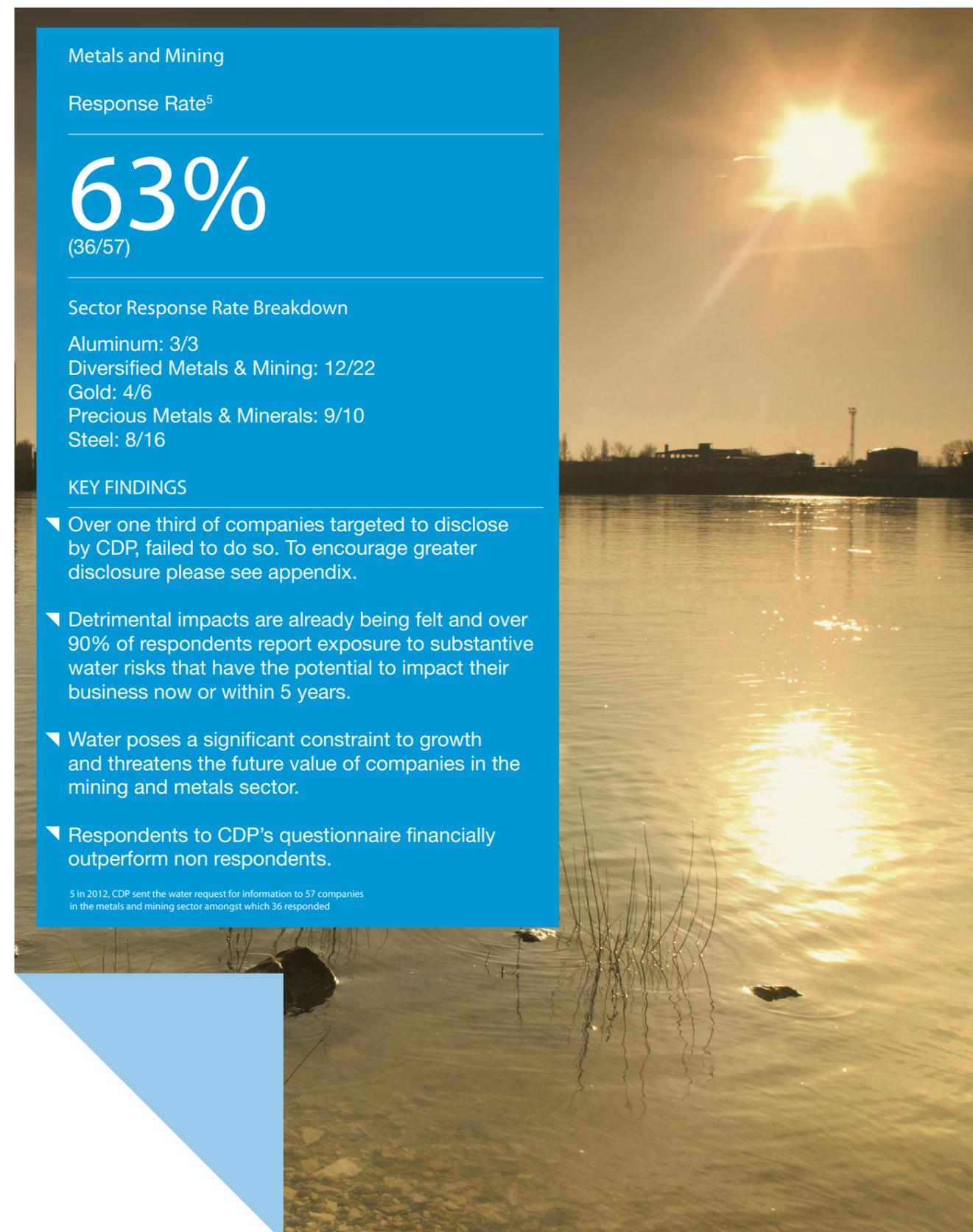
Sector Response Rate Breakdown

Aluminum: 3/3
Diversified Metals & Mining: 12/22
Gold: 4/6
Precious Metals & Minerals: 9/10
Steel: 8/16

KEY FINDINGS

- Over one third of companies targeted to disclose by CDP, failed to do so. To encourage greater disclosure please see appendix.
- Detrimental impacts are already being felt and over 90% of respondents report exposure to substantive water risks that have the potential to impact their business now or within 5 years.
- Water poses a significant constraint to growth and threatens the future value of companies in the mining and metals sector.
- Respondents to CDP's questionnaire financially outperform non respondents.

5 In 2012, CDP sent the water request for information to 57 companies in the metals and mining sector amongst which 36 responded



As we move towards an increasingly resource-constrained world, together with mounting pressure to reduce global carbon emissions, the metals and mining sector is already faced with substantial reputational, operational, regulatory and financial risks associated with water.

Mining corporations and their investors have significant responsibility 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.

For these companies, no water means no business. Water management is emerging as one of the pre-eminent sustainability issues within the metals and mining sector and the reason is straight forward. Water is a critical input in all mining developments and operations making this sector one of the most water intensive (Figure 1). This high dependency presents the sector with a variety of challenges. Future business growth depends increasingly on having access to adequate quality and volumes of water; action therefore must be taken to secure these resources.

Institutional investors are increasingly aware that the 21st century will be shaped by resource scarcity compounded by climate change and as such, investor interest and action in this area is rising. According to a report from the Natural Value Initiative⁶, in the past few years alone we have seen an increase in institutional investor actions linked to the ecosystem impacts of mining companies, including **Anglo American's** Pebble mine in Alaska⁷ and the withdrawal of investments in **Barrick Gold**⁸, **Freeport McMoran** and **Rio Tinto**⁹. Many investors

now realise that a company's social licence to operate rests largely on good environmental stewardship and stakeholder engagement.

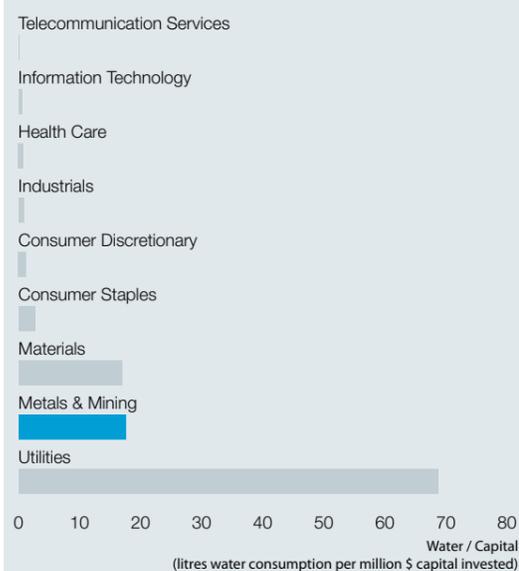
These corporations and their investors therefore have significant responsibility to treat water with the strategic importance it deserves, to consider the role they should play in tackling water challenges, and to provide the leadership required to build a more resilient future.

This short paper utilises the CDP data collected from 36 metals and mining companies with a total market capitalisation of US\$773 billion (€602.6 billion)¹⁰ that responded to CDP's 2012 Water Information Request.

The report analyses the critical implications of water for the sector and sheds light on how these companies have already been affected by water-related issues and how they are accounting for and valuing water, in order to build both short and long term resilience.

In order to facilitate effective dialogue and engagement between investors and companies, we have provided a snapshot of each company response alongside some suggestions of engagement topics for each targeted company. Thanks to the Sustainability Committee of Eurizon Capital, a leading Italian asset manager with assets of €177 billion (US\$230 billion), who made this study possible.

Figure 1: water intensity



Source: CDP and Bloomberg

6 Natural Value Initiative, Tread Lightly: Biodiversity and ecosystem services risk and opportunity management within the extractive industry www.naturalvalueinitiative.org
7 Trillium Asset Management (2011) Largest Open Pit Mine in North America Cause for Investor Concerns – Investors Representing USD170 Billion Urge EPA to Safeguard Alaska's Bristol Bay www.trilliuminvest.com
8 "New Zealand Superannuation Fund Excludes Barrick Gold and Subsidiary African Barrick Gold on Responsible Investment Grounds" www.nzsuperfund.co.nz, 13 May 2013
9 Investments & Pensions (2008) Norway excludes Rio Tinto over environmental damage. 09 September 2008
10 As of 03/04/2013

About CDP

CDP is an independent non-profit organization, which leverages the power of 530 investors with US\$57 trillion in assets to catalyse action on corporate water stewardship. 352 of the world's largest corporations responded to CDP's 2012 water information request, 36 of them from the metals and mining sector.

Institutional investor interest in water is rising significantly: the number of investor signatories to CDP's water program has almost quadrupled in the last three years. Assessing the materiality of water issues for corporations is essential for institutional investors' portfolio protection. However it is currently very difficult for investors to integrate water information into their investment decision-making process, primarily due to a lack of adequate and consistent information about corporate water issues. CDP's work aims to address this by providing the only global system for companies to measure, manage and disclose vital water-related information.

In 2013 CDP's water questionnaire was issued to 1,036 of the world's largest corporations. CDP now holds the largest collection globally of primary water risk and resiliency information. The data gathered sheds light on the water risks and opportunities companies are facing, their strategic responses to these alongside key water accounting information.

About Eurizon Capital

Eurizon Capital SGR is the asset management company of the Intesa Sanpaolo Group, specialised in products for retail and institutional customers. Eurizon Capital manages assets of around 177 billion Euros, and controls a market share of 14.9%¹¹, making it one of the largest Italian asset managers.

Eurizon Capital offers a wide range of products, under both Italian and Luxembourg law, differentiated by management philosophy, style, and risk/return profile. This enables Eurizon Capital to offer investment solutions to meet the different needs of its customers:

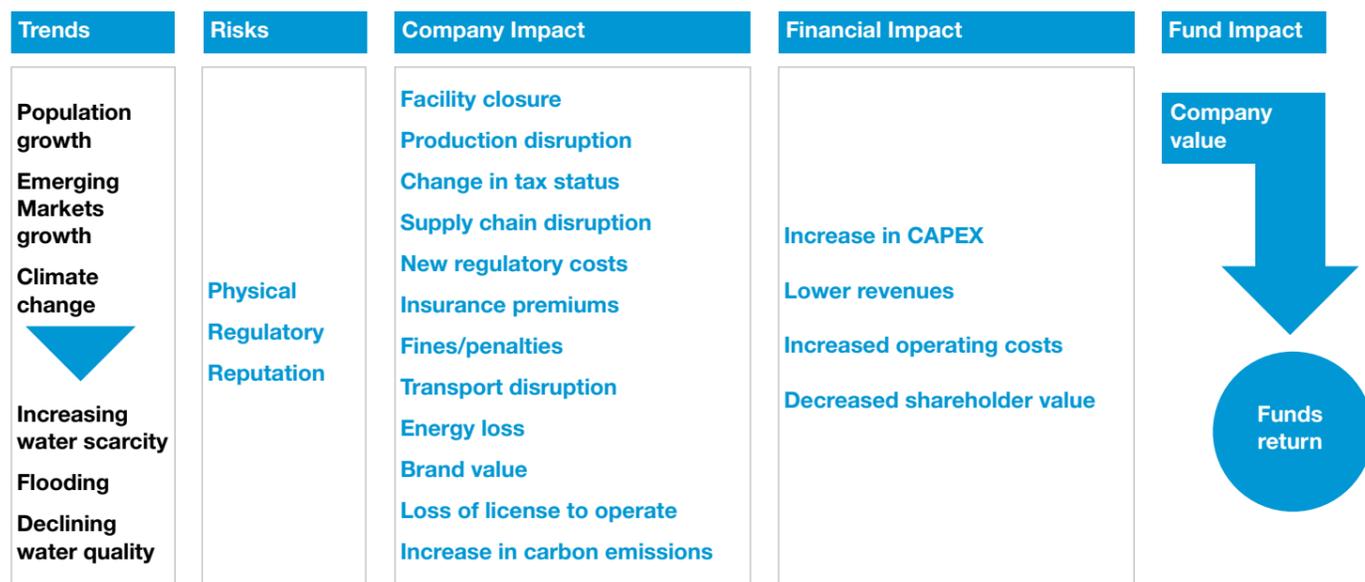
- Multi-asset, multi-style, and multi-product portfolios;
- LTE (Limited Tracking Error) products, managed by the Luxembourg-based subsidiary Eurizon Capital SA;
- Quantitatively managed structured products, managed by Epsilon SGR, a joint venture of Eurizon Capital SGR (51%), and Banca Imi (49%).

Eurizon Capital distributes its products on the retail market both through Intesa Sanpaolo Group and non-captive distributors. The company is also one of the most prominent institutional asset managers in Italy¹¹, through a dedicated structure formed by two closely integrated units: the Investment unit, and the Sales unit. Also, through a dedicated sales team Eurizon Capital offers fund-users its best management expertise in the institutional class.

Eurizon Capital is active in Eastern Europe with a network of asset management companies controlled with a 50.12% stake by Eurizon Capital SA. The network includes VUB Asset Management, one of the leading Slovakian firms in the industry, which controls the Hungarian asset management firm CIB Investment Fund Management, and Croatian firm PBZ Invest. Eurizon Capital is also active in Asia, through a 49% stake in Penghua Fund Management, one of the leading Chinese asset management companies, and through a commercial branch of Eurizon Capital SA in Hong Kong. Eurizon Capital has been led by Mauro Micillo since October 2009.

11 Source: Assogestioni, Mappa Trimestrale del Risparmio Gestito – First quarter of 2013. Data include duplicate and are referred to Eurizon Capital SGR and to subsidiaries Eurizon Capital SA and Epsilon SGR

Water is a material issue for institutional investors



There are a number of ways in which water can directly impact the value of a company and its ability to deliver a stable and successful rate of return. As **Anglo American** reports, "mining and mineral processing cannot take place without water" and that water related regulations are becoming more stringent throughout all regions in which they operate and the company recognises that "increased water scarcity has the potential to jeopardize existing operations and future growth as regulators may become more reluctant to grant water-use permits."

The diagram below highlights the reasons why water is no longer a resource that can be taken for granted, the implications of this for businesses alongside the impacts that this can have on the investment community

Financial impacts are already being felt
Almost two thirds of respondents (64%) have experienced detrimental water-related business impacts

in the past 5 years. Corporations such as **Anglo American, BHP Billiton** and **Rio Tinto** report that they have already experienced significant water impacts that have led to changes in their company practices.

Flooding, water shortages and decreasing water quality are the predominant causes of these impacts (Figure 2) which resulted in an increase in operating costs for more than half of those reporting detrimental impacts, and production or transport disruptions for more than a third.

With growing populations and increasing industrialization coupled with declining water quality respondents are facing significant competition for this scarce resource and impacts such as operational disruptions are predicted to continue. As we can see in the table below, metals and mining companies have already experienced financial losses that have impacted their profit margin, in some cases significantly.

Table 1: water-related financial loss

Company	HQ country	Water event	Financial impact (FY2011)	2011 EBITDA (million US\$)	Water related impact/ EBITDA
Exxaro Resources	South Africa	Water-related	Exxaro Resources reported several financial impacts resulting from water risks for a total of US\$0.55 million	531	0.1%
Gold Fields	South Africa	Flooding	US\$4.35 million for repairs and loss of production	1,873	0.2%
MAL Zrt ¹²	Hungary	Water quality	Was fined €472 million over a spillage of toxic sludge from its aluminium operations in 2010. Named as Hungary's worst chemical accident, ten people died and serious damage to the environment was caused by the leak	N/A	N/A

¹² Does not disclose to CDP's Water Information Request

Water risks

The metals & mining sector is exposed to a plethora of physical, regulatory and reputational risks which are resulting in significant threats to business continuity, social licences to operate and brand value. These risks are increasing as a result of greater demand for resources and extraction of mineral reserves in remote, often water-scarce locations where predictable access to adequate volumes of good quality water is no longer guaranteed and could jeopardize existing and future operations.

Almost all respondents (92%)¹³ identified some form of water risk that has the potential to generate a substantive change in their business operation, revenue or expenditure now or within the next 5 years.

A total of 12 distinct categories of risk were identified by responding companies (Figure 4). Increased water stress is the most commonly reported risk which is consistent with the finding that one third of respondents have the majority of their operations located in regions subject to water stress or scarcity. It should also be noted that a quarter of respondents have not considered other risk indicators beyond water scarcity such as increasing regulation, inadequate infrastructure or community opposition.

Flooding is the next most frequently reported risk, followed by declining water quality, which is notably the risk reported as most likely to impact business now (Figure 5). **Anglo American Platinum** takes this risk into consideration in their business planning, as poor water quality could lead to "production setbacks and social pressure due to local tensions".

As far as regulatory risks are concerned, respondents report these risks as predominantly mid- to long-term. Respondents identified five categories of substantive regulatory risks. Among these, tighter regulation of discharge water is the most commonly reported. **Teck Resources** reports that "more stringent discharge standards create operational challenges and may require temporary closure and production breaks."

Changes to water withdrawal rights and allocations is the regulatory risk that is most likely to impact now or within the next five years. This is certainly a risk that would greatly impact metals and mining companies if changes are not anticipated. In fact **Barrick Gold Corporation** reports that any changes would, at least temporarily, "reduce production at operating mines, and limit the development of new mines or mine expansion."

¹³ This is the highest awareness amongst all sectors targeted by the water program

Figure 2: companies reporting causes of detrimental impacts

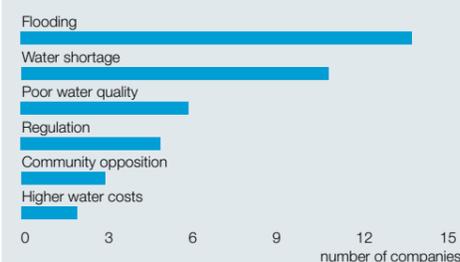


Figure 3: impacts already experienced by companies

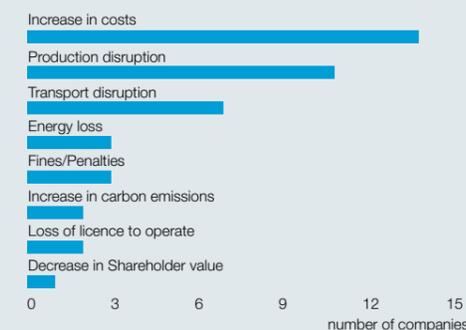


Figure 4: proportion of respondents reporting those risks

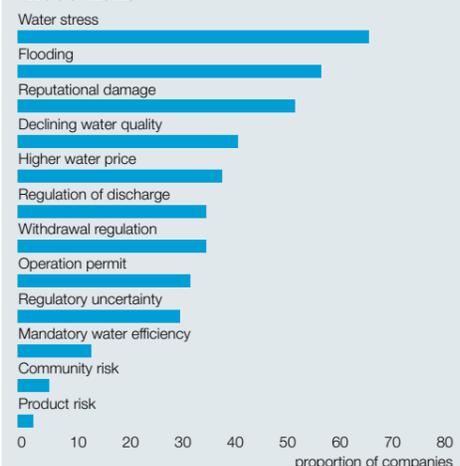
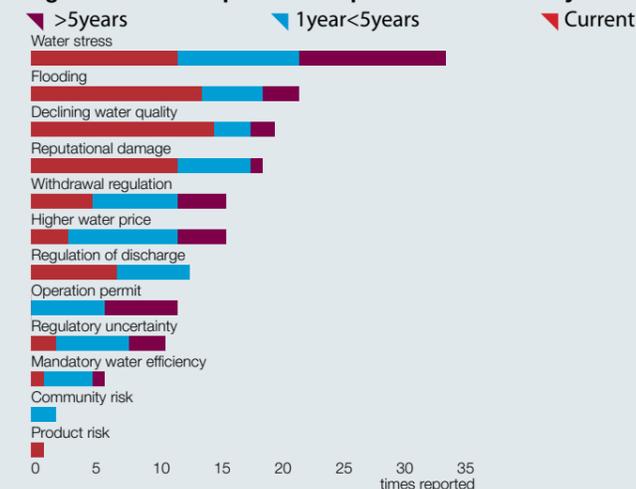


Figure 5: times respondents reported those risks by timeframe



Mitigation strategies

Given the risk exposure and water-related impacts already experienced by the sector, there is a clear and urgent need for companies to develop effective management responses in order to sustain business activities and ensure resilience in the face of water challenges.

Respondents report a variety of mitigation strategies and Table 1 summarises a selection of these:

Carbon and water trade offs and linkages

Addressing one issue to the detriment of the other?

Actions to mitigate water risks or adapt to water events such as droughts can sometimes have detrimental impacts on climate change which could then potentially compound the water risk. For example, a number of respondents report the use of hydraulic power in their operations. Unfortunately, when dams run dry thanks to drought, companies have to use replacement energy sources that emit greater volumes of Green House Gases.

In 2009, for example, **Gold Fields** had to increase its diesel consumption in Ghana by 250% as a result of a drought.

Another example is that of **Antofagasta**, who in the

face of water scarcity in 2010 at their Esperanza mine in the Atacama Desert, introduced a sea water pumping system to deliver water to the operation via a 145km pipeline. The company's mines in Chile have pioneered the use of non-desalinated sea water in the beneficiation of copper, such that sea water constitutes 40% of total water consumption. However while reducing demand on local and regional water sources, the use of sea water will increase the carbon footprint of each mine due to the need to pump to high elevations.

It is essential therefore that any actions taken to mitigate water risks are assessed in a holistic manner to avoid mitigating one risk but leaves a company exposed to another.

Table 2: risk mitigation strategies

	Company	Region	Risk type	Mitigation Strategy/Action
Physical risks	Northam Platinum	South Africa	Water stress	"We implemented a closed water circuit that ensures around 90% of water used is recycled on an annual basis."
	Exxaro Resources	South Africa	Flooding	"We built a strategy that includes: • Continuous research and industry participation to investigate and quantify impacts to ensure mitigation initiatives are current and effective. • All drainage and sumps run-off capacity is constantly reassessed for containment in extreme flooding events. • A redesign investigation is in process to determine capacity to withstand a 1-in-100 year flood event to prevent flooding related work stoppages."
	Cia. Siderurgica Nacional	Brazil	Water quality	"We led studies of alternative water supply systems. We ensure to have an active participation on the CEIVAP(Comitê da Bacia do Rio Paraíba do Sul) committee to follow the plans and projects proposed for the government to prevent leakages and foster pollution control on the Paraíba do Sul River river."
Regulatory risks	Rio Tinto	Global	Regulation of discharge	"At Rio Tinto we created a water standard which requires all operations and new projects to develop and implement criteria on water abstraction, dewatering, effluent/discharge or water quality when government regulations are absent, insufficiently protective or ambiguous to ensure protection of surface water and ground water resources. The criteria must have formal approval from the operation's managing director and be consistent with internationally accepted limits, thresholds, guidelines and methodologies."
	Royal Bafokeng Platinum	South Africa	Higher water prices	"We are increasing the amount of recycled water used at the mine by building a water retreatment plant, which will be in operation by mid-2013. By using more recycled water, we will rely less on potable water, which will be at a higher price, thus sustaining our profitability."
	Anglo American	United Kingdom	Mandatory water efficiency	"We participate in a number of global policy processes in order to influence outcomes. There are multiple fora and processes where we are involved from ICMM to the Alliance for Water Stewardship to WBCSD. Platforms like COP17 in Durban and the RIO+20 conferences will have a good Anglo American presence. In addition we actively participate in a number of international conferences on water and in some cases sponsor these where policy makers are part of the target audience and participants i.e. Sponsorship of the South African Water and Energy Forum (SAWEF) conference in 2012, papers presented on water at the Global Mining Conference in USA in 2011 and at the Water In Mining Conference in Chile."
Reputational risks	Lonmin	South Africa	Reputational damage	"To manage the stakeholder relationships we have developed the Lonmin Stakeholder Engagement Protocol that is based on industry best practice. Stakeholder concerns are raised in a number of different ways ... We also consider the interests and expectations from stakeholder engagement initiatives ... when preparing the content of our annual Sustainable Development Report. Our Environmental team engages with the communities in which we operate. Communication around non-routine activities at the Smelter is communicated through various forms of media. Air quality monitoring data is shared and presented at the bi-annual environmental stakeholder forums. Community members have also undertaken a site visit to our tailings facilities, which has empowered them to gain an improved understanding of our successes and challenges in this regard."

The importance of effective water governance

Given the fundamental importance of water to the sector, robust water governance is essential. One of the first steps for companies should be to undertake a detailed water risk assessment of all current and future operations. The assessment should account for local variances and involve a wide range of stakeholders including the communities in which operations are located.

Encouragingly, water issues appear to be gaining the strategic attention they deserve, with the majority of respondents reporting board-level oversight of water issues (86%). In addition, with regards to measuring and monitoring progress, almost all respondents (92%) report having some sort of water target with a strong bias towards the reduction of water intensity across operations. This indicates that many respondents are using the same logic for setting water targets as carbon targets and are focusing on reductions in their total water usage. This is good practice for a sector that is heavily reliant on large volumes of water; therefore it is essential that companies set meaningful targets that help them to measure what

matters. In relation to water, however, target setting is much more complex than carbon. A focus on global or product water intensity targets should indicate where efficiencies and reduction opportunities may lie, but it says little about the impact a company is having without being set in the context of where and when the water is consumed. Focusing on efficiency also neglects the issue of quality and the impact that a mining company may have as a result of its waste water.

There are a number of companies, including **Anglo American, Exxaro Resources** and **Rio Tinto**, taking a strategic, holistic approach to water governance, including engagement with communities in which they operate, proactive transparency and integrated water management informed by local water basin priorities. These companies are finding that being known as a company that does the right thing by stakeholders makes it easier to access new projects and raise capital. There are others, however, who have yet to move beyond basic legislative compliance.



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

Anglo American

Water and profitability

It is possible that company financial statements could be affected by water issues. Respondents often report making additional voluntary or regulatory-driven investment in technologies, materials and systems in order to build longer-term resilience into their operations. Such investments will increase the capital expenditure (capex) and consequently the fixed assets on the balance sheet.

A company's income statement could be impacted by two elements: a decrease in revenue due, for example, to transport and production disruptions; and an increase in operating costs due to repairs and higher variable costs (water pricing for instance). Eventually both will decrease the net income and therefore the profitability of metals and mining companies.

Table 3: respondents investments to mitigate water risks and costs caused by water-related events

Company	HQ country	Water event	Investment (FY2011)	Capex (million US\$)	Water investment capex
Freeport-McMoRan	USA	Water stress	US\$300 million investment to construct a desalination plant and pipelines near the Pacific Ocean	2,534	11.8%
Newmont Mining ¹⁴	USA	Water stress	US\$200 million investment for larger water reservoirs to get back its licence to operate (Peru)	2,787	7.2%
Anglo American	United Kingdom	Water stress / Flooding	US\$82 million to build pumps and piping network	6,203	1.3%

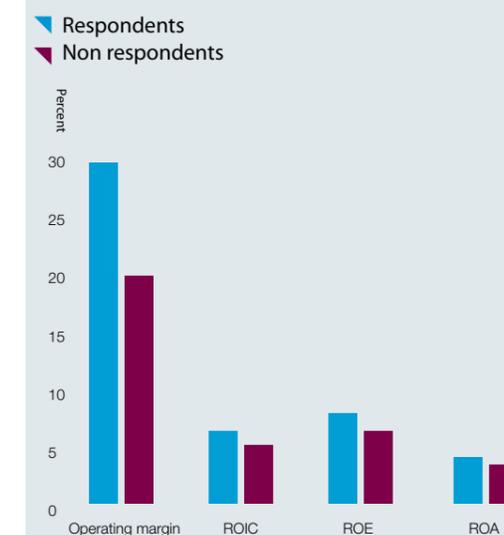
Source: CDP and Bloomberg

Figure 6 illustrates that companies disclosing business critical water information through CDP have better financial results than targeted non-responders with respondents operating margin being, on average, 50% higher than non-respondents. Similarly, respondents have a return on invested capital (ROIC) 25% higher than non-respondents. This could indicate that respondents invest in more profitable projects, including water-related investments, which could be partially responsible for this higher return.

Higher profitability also impacts the return on equity (ROE), and among targeted companies, respondents manage to get a ROE 25% higher than non-responders.

Although we can't at this point make a direct correlation between a company responding to CDP and its financial performance, we believe that companies taking a proactive approach to measuring, managing and disclosing vital water-related information are likely to be those that have recognized that the real value of water is not adequately reflected in its cost but instead resides in protecting brand value, and securing licenses to operate and business continuity, and this should be reflected in better financial valuations.

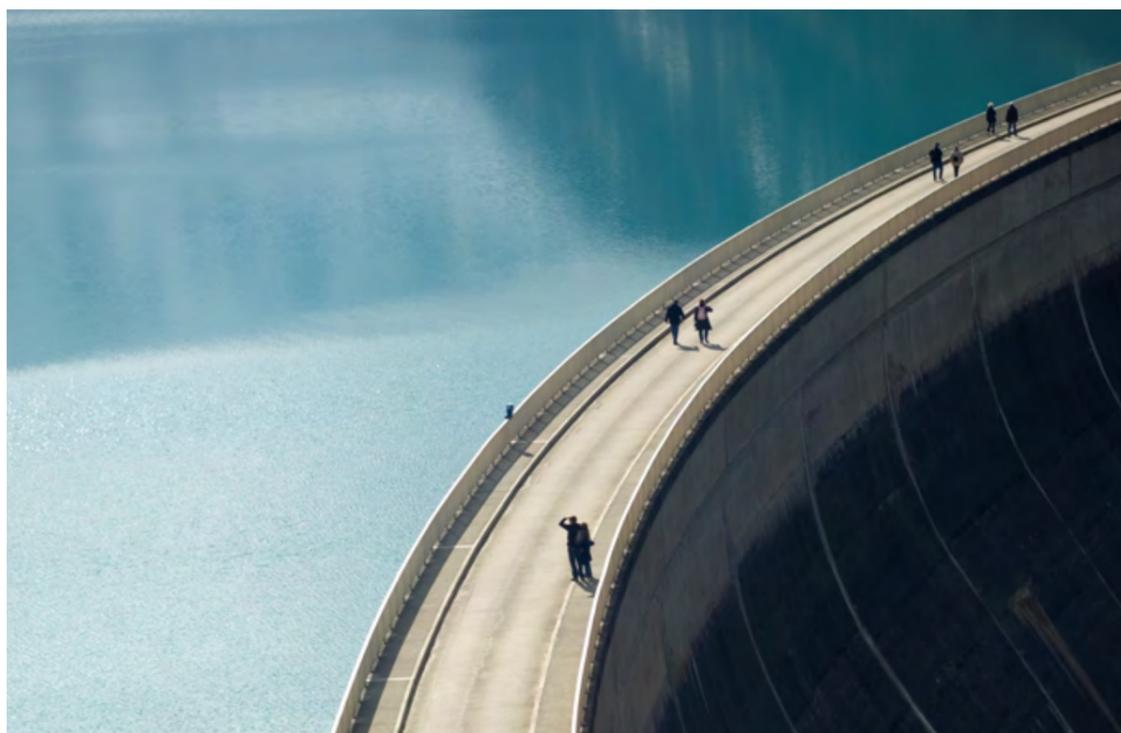
Figure 6: financial return - responders vs. non responders



Source: CDP and Bloomberg

¹⁴ Mariluz, Omar, and Terry Wade. "Peru's Humala Says Water Guaranteed near Newmont Mine." Reuters 23 June 2012: n. pag. Print

Factoring water challenges in cash flow analysis



Barrick's operations could face higher water prices; regulation of discharge quality/volumes leading to higher compliance costs; statutory water withdrawal limits/changes to water allocation; and/or increased difficulty in obtaining operations permits. [Further], reputational risks could lead to higher costs of capital (e.g., ratings agency downgrade) or decreased share price and loss of social license to operate leading to business disruption.

Barrick Gold

As stated earlier in the report, companies in the metals and mining sector have already experienced detrimental impacts from water-related issues, and the vast majority are facing a number of substantive water risks that are likely to impact their business now or within the next five years indicating that water could pose a significant constraint to future growth. Traditionally, a company is valued based on the potential future cash flow and for companies in the metals and mining sector, up to 40% of a company's value is based on the company's commodity reserve and its ability to exploit this.

When establishing a company's value, analysts usually take into consideration economic and commodity cycles¹⁵. Valuation models currently do not account for the uncertainty in a company's ability to access adequate volumes of good quality water. As we have seen in figure 3, water issues have a direct impact on both revenue and costs. And, in the metals and mining sector profit is much more sensitive to a change in revenue than a change in costs because of the high fixed cost nature of the business. Therefore production disruption, and temporary or permanent mining sites closures, would impact drastically the profit margin of the metal and mining companies, and thus the future cash flows.

With such a large part of metals and mining companies' valuation being based on the ability to exploit future commodity reserves, consideration should be given to the implications of water availability that could jeopardize critical business activities and thus the ultimate valuation of a company.

Conclusion

It is encouraging to note that the metals and mining sector has made progress and the advances in corporate water stewardship, governance and disclosure have supported this. However there is still some way to go:

- ▶ Over one third of the companies requested to respond to CDP's 2012 water information request (36%) failed to do so, which is highly disappointing given the weight of investor interest in this issue and the significant financial risks and opportunities facing the sector.
- ▶ Water-related impacts are already being felt and are predicted to continue and yet there are still some respondents focused purely on basic legal compliance. Given the criticality of water to this sector, companies must move rapidly beyond their legal obligations and strive towards good water stewardship with regular engagement with key stakeholders to collaboratively manage this shared resource.
- ▶ Access to adequate volumes of good quality water is reported as a serious constraint to growth and yet the depth and quality of responses, both to the CDP questionnaire and strategically to water challenges can be startlingly different across the sector.

The appendix of this report presents a snap shot of each company response to CDP as well as providing some suggestions for engagement topics.

Disclosing and sharing water-related information not only enables a company and its investors to better understand the risk exposure of a company and the appropriateness of the governance responses to these but can also increase resiliency to water challenges and thus avoid value destruction.

Accounting for and valuing the world's natural capital is fundamental to building economic stability and prosperity. The global economy will favor businesses that take a proactive 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.

Understanding the value of water: We aim to integrate financial and non-financial values of water into our business decisions including social, cultural, environmental and economic aspects.

Rio Tinto

Appendix: overview of company responses and suggestions for engagement

Company name	Response status ⁱ	Public response ⁱⁱ	Country	GICS Sub sector ⁱⁱⁱ	Market cap mUSD ^{iv}	Operating margin ^v	Detrimental impacts ^{vi}	Water strategy ^{vii}	Water targets ^{viii}	Identifies water risks ^{ix}	Fine for significant breaches of discharge ^x	Engagement topics
African Rainbow Minerals	DP		South Africa	Diversified Metals & Mining	4,387	30.20						Respond to CDP water questionnaire
Alcoa Inc.	AQ	Yes	USA	Aluminum	9,079	2.36	Yes	Yes	Yes	Yes	No	Push for board responsibility concerning water strategy/policy
Allegheny Technologies Incorporated	NR		USA	Steel	3,413	8.32						Respond to CDP water questionnaire
Alumina	AQ	Yes	Australia	Aluminum	3,251	N/A	No	Yes	Yes	Yes	No	Increase transparency: disclose detrimental impacts and their financial impacts
Anglo American	AQ	Yes	United Kingdom	Diversified Metals & Mining	36,100	18.75	Yes	Yes	Yes	Yes	No	Reduce their withdrawal impacts on local stakeholders
Anglo American Platinum	AQ	Yes	South Africa	Precious Metals & Minerals	11,275	0.63	Yes	Yes	Yes	Yes	Yes	Increase transparency as they paid fines while they state their activities do not impact other stakeholders
AngloGold Ashanti	AQ	Yes	South Africa	Gold	9,023	24.07	Yes	Yes	Yes	Yes	No	Track the use of recycled water and require suppliers to report on water use, risk and management
Antofagasta	AQ	Yes	United Kingdom	Diversified Metals & Mining	14,896	49.85	Yes	Yes	Yes	Yes	No	Increase transparency on goals and targets and describe them precisely
Aquarius Platinum	AQ	No	Bermuda	Precious Metals & Minerals	366	-13.52						Reply publically, Increase transparency
Arcelor Mittal	AQ	Yes	Luxembourg	Steel	21,480	2.15	No	Yes	Yes	Yes	Yes	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Arcelor Mittal South Africa Ltd	AQ(SA) <small>(See Arcelor Mittal)</small>	NA	South Africa	Steel	1,409	-1.49						N/A
Assore Ltd	DP		South Africa	Diversified Metals & Mining	4,947	37.93						Respond to CDP water questionnaire
Atlas Iron	AQ	No	Australia	Steel	1,054	14.23						Reply publically
Barrick Gold Corporation	AQ	Yes	Canada	Precious Metals & Minerals	29,450	38.74	Yes	Yes	Yes	Yes	No	Identify the source of key materials and inputs. Decrease the impact of water discharges
BHP Billiton	AQ	Yes	Australia	Diversified Metals & Mining	171,173	37.40	Yes	Yes	Yes	Yes	No	Decrease the impact of their withdrawals and discharges on other stakeholders
BlueScope Steel	DP		Australia	Steel	2,919	-3.47						Respond to CDP water questionnaire
Cia. Siderurgica Nacional - CSN	AQ	Yes	Brazil	Steel	6,581	N/A	Yes	Yes	Yes	Yes	No	Increase disclosure on the regions at risks
Cliffs Natural Resources Inc	NR		USA	Steel	2,945	12.62						Respond to CDP water questionnaire
Exxaro Resources Ltd	AQ	Yes	South Africa	Diversified Metals & Mining	6,302	-20.44	Yes	Yes	Yes	Yes	No	Involve more suppliers on water risks and opportunities
Fortescue Metals Group	AQ	Yes	Australia	Steel	12,803	38.36	Yes	Yes	Yes	Yes	No	Involve more suppliers on water risks and opportunities
Freeport-McMoRan Copper & Gold Inc.	AQ	Yes	USA	Diversified Metals & Mining	31,676	31.95	Yes	Yes	Yes	Yes	No	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Fresnillo plc	AQ	No	Mexico	Precious Metals & Minerals	14,763	48.52						Reply publically
Glencore International AG	NR		Switzerland	Diversified Metals & Mining	38,166	1.46						Respond to CDP water questionnaire
Gold Fields Limited	AQ	Yes	South Africa	Gold	5,709	38.74	Yes	Yes	Yes	Yes	No	Increase transparency on water risk impacts on their business
Goldcorp Inc.	AQ	Yes	Canada	Precious Metals & Minerals	27,362	39.06	No	No	No	Yes	No	Increase transparency: disclose detrimental impacts and their financial impacts. Establish water targets
Harmony Gold Mining Co Ltd	DP		South Africa	Gold	2,795	14.71						Respond to CDP water questionnaire
Iluka Resources	DP		Australia	Diversified Metals & Mining	4,086	51.21						Respond to CDP water questionnaire
Impala Platinum Holdings	AQ	Yes	South Africa	Precious Metals & Minerals	9,183	20.27	Yes	Yes	Yes	Yes	No	Increase transparency on the impact of their water withdrawals and discharges
Industrias Peñoles	NR		Mexico	Precious Metals & Minerals	18,865	20.39						Respond to CDP water questionnaire
Kumba Iron Ore	AQ	Yes	South Africa	Diversified Metals & Mining	16,998	50.89	No	Yes	Yes	Yes	No	Increase transparency on water risks impacts on their business
Lonmin	AQ	Yes	United Kingdom	Precious Metals & Minerals	2,529	3.10	No	Yes	Yes	Yes	No	Increase transparency on water risks impacts on their business
Lynas Corporation	DP		Australia	Diversified Metals & Mining	1,146	N/A						Respond to CDP water questionnaire

Company name	Response status ⁱ	Public response ⁱⁱ	Country	GICS Sub sector ⁱⁱⁱ	Market cap mUSD ^{iv}	Operating margin ^v	Detrimental impacts ^{vi}	Water strategy ^{vii}	Water targets ^{viii}	Identifies water risks ^{ix}	Fine for significant breaches of discharge ^x	Engagement topics
Metorex Ltd	NR		South Africa	Diversified Metals & Mining	N/A	36.95						Respond to CDP water questionnaire
MMC Norilsk Nickel OSJC	NR		Russia	Diversified Metals & Mining	31,873	61.25						Respond to CDP water questionnaire
Newcrest Mining	AQ	Yes	Australia	Gold	16,026	35.98	Yes	Yes	Yes	No	No	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Newmont Mining Corporation	AQ	Yes	USA	Gold	20,792	31.79	No	Yes	Yes	No	No	Increase transparency on water risks impacts on their business
Nippon Steel Corporation	NR		Japan	Steel	24,050	0.04						Respond to CDP water questionnaire
Norsk Hydro	AQ	Yes	Norway	Aluminum	8,900	3.09	Yes	Yes	Yes	No	No	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Northam Platinum Ltd	AQ	Yes	South Africa	Precious Metals & Minerals	1,620	9.20	No	Yes	Yes	Yes	No	Undertake water risk assessments covering all operations and considering physical, regulatory and reputational risks
Novolipetskii Metallurgicheski Kombinat (NLMK)	NR		Russia	Steel	N/A	N/A						Respond to CDP water questionnaire
Nucor Corporation	NR		USA	Steel	14,621	5.45						Respond to CDP water questionnaire
OneSteel	AQ	Yes	Australia	Steel	1,227	4.35	Yes	Yes	No	Yes	No	Undertake water risk assessments that considers risks beyond water scarcity including regulatory and reputational risks. Encourage engagement with suppliers
OZ Minerals	AQ	Yes	Australia	Diversified Metals & Mining	1,688	16.83	Yes	Yes	Yes	Yes	No	Increase the level of details on investments and financial implications of water risks
Palabora Mining Co Ltd	NR		South Africa	Diversified Metals & Mining	535	-1.73						Respond to CDP water questionnaire
PanAust	AQ	No	Australia	Diversified Metals & Mining	1,590	33.17						Respond publically, Increase transparency
Perseus Mining	NR		Australia	Gold	858	31.18						Respond to CDP water questionnaire
POSCO	AQ	Yes	South Korea	Steel	25,618	7.82	No	Yes	Yes	Yes	No	Increase transparency on water risks impacts on their business
Rio Tinto	AQ	Yes	United Kingdom	Diversified Metals & Mining	92,046	22.49	Yes	Yes	Yes	Yes	No	Increase the level of details on investments and financial implications of water risks
Royal Bafokeng Platinum Ltd	AQ	Yes	South Africa	Precious Metals & Minerals	957	10.64	No	Yes	Yes	Yes	No	Increase transparency: disclose detrimental impacts and their financial impacts
Sesa Goa	AQ	Yes	India	Steel	2,501	41.35	No	Yes	Yes	Yes	No	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Sims Metal Management	AQ	Yes	Australia	Steel	2,139	0.19	Yes	Yes	Yes	Yes	No	Increase the level of details on investments and financial implications of water risks
Southern Copper Corporation	NR		Peru	Diversified Metals & Mining	N/A	51.36						Respond to CDP water questionnaire
Teck Resources Limited	AQ	Yes	Canada	Diversified Metals & Mining	16,504	26.93	Yes	Yes	Yes	Yes	Yes	Consider risks beyond water scarcity, particularly regulatory and reputational risks
Titanium Metals Corp	NR		USA	Diversified Metals & Mining	N/A	16.70						Respond to CDP water questionnaire
United States Steel Corporation	NR		USA	Steel	2,860	1.98						Respond to CDP water questionnaire
Vale	AQ	No	Brazil	Diversified Metals & Mining	92,027	43.82						Reply publically, Increase transparency
Xstrata	AQ	No	Switzerland	Diversified Metals & Mining	48,531	15.15						Reply publically, Increase transparency

I AQ: answered questionnaire / DP: declined to participate / NR: No response / AQ(SA): see another (i.e. through parent company)

II Responding companies can decide whether or not they wish to disclose publically

III Based on the GICS methodology

IV As of 03/04/2013

V Based on the latest financial year data available

VI Question 4.1 of CDP Water questionnaire "Has your business experienced any detrimental impacts related to water in the past five years?"

VII Question 1.1 of CDP Water questionnaire "Does your company have a water policy, strategy or management plan?"

VIII Question 1.1.b of CDP Water questionnaire "Does the water policy, strategy or plan specify water-related targets or goals?"

IX Question 3.1 of CDP Water questionnaire "Is your company exposed to water-related risks (current or future) that have the potential to generate a substantive change in your business operation, revenue or expenditure?"

X Question 8.2 of CDP Water questionnaire "Did your company pay any penalties or fines for significant breaches of discharge agreements or regulations in the reporting period?"

CDP Contacts

Cate Lamb
Head of Water

Sarah Robertson
Water Project Officer

Emanuele Fanelli
Senior Vice President – Investor
Initiatives

Charles Fruitiere
Project Officer – Investor
Initiatives

Diana Guzman
Director, CDP Southern Europe

Katharina Lütkehermöller
Project Officer, CDP Southern
Europe

CDP

40 Bowling Green Lane
London EC1R 0NE
United Kingdom

Telephone: +44 (0)20 7970
5660
Fax: +44 (0)20 7691 7316

www.cdp.net
info@cdp.net

Eurizon Capital Contact

Gianluca Manca
Head of Sustainability

CDP Board of Trustees

Chairman: Alan Brown
Schroders

Ben Goldsmith
WHEB Group

Chris Page
Rockefeller Philanthropy
Advisors

Dr. Christoph Schroeder
TVM Capital

Jeremy Smith
Berkeley Energy

Takejiro Sueyoshi

Tessa Tennant
The Ice Organisation

Martin Wise
Relationship Capital Partners

Thanks to the support of



EurizonCapital

Global Water Program Sponsors:

Deloitte.

NBIM

Norges Bank Investment Management