

Investor Brief: Water Risks Threatening the Mining Industry

Background

Access to a secure and stable water supply is critical to mining operations. Water is used in practically all stages of the mining process. The most water intensive activities include the separation of minerals from host rocks, the cooling of drilling and processing machinery, and dust suppression. Water is also often used to store refused mining by-products (tailings) and in downstream processing.

The industry is facing increasing water-related risks. Physical risk is on the rise due to extreme weather events such as draughts and floods that are becoming more frequent due to climate change in many mineral rich regions causing mine shutdowns. At the same time, there is fierce competition for scarce water supplies. Increasing demand and declining grades require more ore to be processed, which in turn requires additional water resources. Communities surrounding mining projects that often rely on agriculture are wary of potential seepages and spillages causing water pollution. This has led to a rise in social/reputational risks with communities opposing mining projects going ahead or causing temporary shutdowns. In jurisdictions with a long mining history, increased physical and social pressure has resulted in governments passing more stringent and complex laws to obtain water intake and discharge permits. In Chile, for example, new regulations are being reviewed that would require large mining projects to desalinate water from the Pacific ocean and pump it up 10,000 feet to the Atacama mining region. With increasing tailing dam failures and rising residual remediation costs for governments, more guarantees and up-front financing may be required for approval. The implementation of such regulations will increase the capital and operational expenditures required by mining companies, changing the economics of mining projects. In sum, all water related mining risks (physical, social/reputational, and regulatory) are on the rise and this trend is likely to continue, which may ultimately lead to a rise in stranded mining assets.

With increasing risks, corporations need to do more to disclose and assess water related data and management plans. Various actors such as Carbon Disclosure Project,¹ Bloomberg,² the World Resources Institute,³ and Columbia University⁴ are developing tools to assess water related risks. However, these tools are constrained by a lack of standardized, comparable and easily accessible data. Such data is required by investors to assess which mining assets and companies are particularly exposed to water-related risks. Despite improvements in water disclosure since the Securities Exchange Commission (SEC) released the interpretive guidance on climate change related disclosure in 2010, data on company water use and the financial impacts of water related risks remain infrequent in financial filings.⁵ For example, while companies are providing water intake volumes, this information is not useful to investors without contextual data such as competing water users in the region.

Proposed Action Items

- Encourage the SEC to devise standardized water disclosure guidelines that will better support investor decision-making process. The SEC is currently proposing changes and standardization measures to its disclosure requirements for mining companies.⁶
- Engage with companies to improve disclosure and water management practices. (The following table provides an overview of water related risks that may be material for investors)

¹ <https://www.cdp.net/water>

² http://www.bbhub.io/sustainability/sites/6/2015/09/Bloomberg_WRVT_09162015_WEB.pdf

³ <http://www.wri.org/our-work/project/aqueduct>

⁴ <http://water.columbia.edu/2015/11/04/mining-and-water-risk-diagnosis-benchmarking-and-quantitative-analysis-of-financial-impacts/>

⁵ <https://www.ceres.org/resources/reports/clearing-the-waters-a-review-of-corporate-water-risk-disclosure-in-sec-filings>

⁶ <https://www.sec.gov/rules/proposed/2016/33-10098.pdf>



World Resources Institute Water Risk Framework for the Mining Sector

	Surrounding environment	Type of commodity	Type of operation	Corporate Policy/ Approach	Disclosure/ Engagement	Regulatory Climate
Questions for Companies*	<p>Operating in water scarce regions?</p> <p>Competing with other users?</p> <p>Seismic hazard?</p>	<p>Grade of ore and ratio of ore to final product?</p>	<p>Extraction method, waste disposal, water management procedures?</p>	<p>Does the company conduct water footprint analyses?</p> <p>How are water risks assessed?</p>	<p>Does the company disclose water risks?</p> <p>Engage with stakeholders?</p>	<p>How will prices, water quality regulations, or other permits affect the company?</p>
Risk Level	<p>High</p> <ul style="list-style-type: none"> Arid/semi arid environments Presence of other competing uses (agriculture, ranching) High seismic hazard Very high rainfall and/or frequent, major storm events High permeability aquifers 	<ul style="list-style-type: none"> Low grade ore Precious metals Diamonds Copper Nickel Oil shale/sands 	<ul style="list-style-type: none"> Open pit that reaches below water table Dewatering required High acid drainage potential Tailings disposed in rivers Energy derived from hydropower Large water withdrawals Large mixing zone for discharges 	<ul style="list-style-type: none"> No water accounting or footprint analysis Does not consider water risks 	<ul style="list-style-type: none"> No reporting against existing frameworks (e.g. GRI) Does not report tailings effluents Minimal engagement w/ stakeholders 	<ul style="list-style-type: none"> Operating in countries with uncertain regulatory climate Water scarcity a major concern for policy makers Effluent releases and water withdrawals exceed permits
	<p>Medium</p> <ul style="list-style-type: none"> Moderate seismic hazard Moderate rainfall with distinct dry season 	<ul style="list-style-type: none"> Coal Uranium Crude oil Zinc Lead Iron ore 	<ul style="list-style-type: none"> Open pit above water table Dewatering water recycled Potentially acid generating material capped and controlled Tailings stored in impoundment Energy derived from coal/natural gas Moderate water withdrawals Small mixing zone for discharges (1-2 miles) 	<ul style="list-style-type: none"> Water balance/ accounting at mine site Stated policy to reduce water consumption Developing additional water metrics 	<ul style="list-style-type: none"> Reports some water indicators (e.g. GRI EN8, EN10, MM3) Regularly consults with stakeholders at site and global levels 	<ul style="list-style-type: none"> Company is taking steps to anticipate changes in regulations Effluent releases and water withdrawals are well within permits
	<p>Low</p> <ul style="list-style-type: none"> Moderate rainfall Low seismic hazard 	<ul style="list-style-type: none"> Cement Other industrial minerals Natural Gas 	<ul style="list-style-type: none"> Energy derived from renewable sources Old mine workings capped and covered Low acid generating potential Water flows carefully controlled at site Water discharges meet ecosystem requirements All water consumed is reused/ recycled 	<ul style="list-style-type: none"> Comprehensive direct/indirect footprint analysis Water risks have been measured and taken into account Company sets targets to reduce water footprint 	<ul style="list-style-type: none"> Company discloses data on waste characteristics, flows, water risks Seeks input and participation of stakeholders 	<ul style="list-style-type: none"> Company is operating beyond compliance Zero discharge facility

Source: WRI.

* Questions in this row are from Morrison, J. et al. 2009. *Water Scarcity and Climate Change*, pp. 39-42.