

## CASE STUDY RECOMMENDATIONS

The case studies in this 3rd issue of the Chief Liquidity Series has shown that water risks manifest themselves differently from those of the power and agribusiness sectors, which had been the focuses of previous CLS Briefings.

In the case of Canada, the fall-out of the significant regulatory changes underway may be too early to predict, but where regulations are weakened to allow business to thrive unencumbered, this will ultimately transfer the risks to society and the environment. Short term profits will always come at a cost if the balancing of legitimate concerns is ignored. The resulting consequence of political pressure may be more draconian and expensive regulation later. FIs can play a leadership role in ensuring that this is not the case, by defining regulations as essential for long-term risk mitigation and responding accordingly through financial due diligence and loans to higher risk profile operations.

The regulatory environment in China has undergone a shift with increasing attention being paid to water quality impacts and environmental impacts. This has come with tighter controls and fines. Increased attention will be paid to water quality impacts and environmental impacts by miners in the coming years. Mining companies who uphold international standards for operational safety and water management will invest more in maintaining that reputation even in countries where regulation has historically been poor. This becomes important in limiting risk where other water users and institutions are weak.

Brazil has a stronger environmental ethos, which has not been translated into strong regulatory controls on mining. However, cumulative impacts of small poorly controlled mining operations may gain greater public awareness, with the consequent regulatory attention, which may spillover into those larger operations that are maintaining standards. This highlights the importance of investors to consider the broader mining environment in assessing water related risk, in addition to the behavior of the specific investment opportunity.

Australia's mining operations are exposed to changing climate variabilities. In order to manage the potential risk to operations posed by extreme climate change, better understanding is required of the extremes of climatic variability for the existing and new operations and the mitigating triggers for action when challenged with climatic extremes. This greater understanding enables the range of options that may be available to be assessed, both within the mine site itself (in terms of onsite water management) and for external water sources and associated infrastructure.

The fracking technology in Australia makes it advisable for a preliminary economical and technical feasibility study to be prepared in conjunction with preliminary environmental appraisal to identify and assess the potential environmental and social issues associated with production activities. In this way, miners may determine the need for mitigation and protective measures and the costs which would be associated with these measures.

In South Africa, the pollution impacts of mining operations (both waste water discharges but also AMD) have led to negative stakeholder and regulatory perceptions around water from mining. These carry both regulatory and reputation risks. The increasing cost of water and the likely imposition of a waste discharge charge system will have financial consequences, but should also mitigate some of the emerging regulatory risk. Investors and financiers can benefit from a proactive approach and a plan for managing water quality and combating pollution impacts.

As indicated the central water risk from the extractives sector relates to water quality impacts, with water availability and flood extremes posing challenges in some places. Water quality impacts tend to be even more localized to catchments, while water availability issues may be reflected at the large basin or infrastructure supply system scale. Furthermore, the financial requirements for cleanup can significantly exceed the costs of water supply.

## CONCLUSIONS

### 11.1 Recommendations

Based on the research and interviews with a number of financial institutions the following recommendations can be made:

1. Banks, investors and other financial institutions should (further) increase their understanding of the complexity of water issues, to ensure the disclosure of the right indicators is demanded from (potential) investments, loans and insurance policies as well as performing the right analyses.
2. Financial institutions can use a number of levers to assess, monitor and control water-related risks, including but not limited to:
  - Risk assessments in the due diligence phase and at a portfolio level on a recurring basis.
  - Development and implementation of credit and investment policies that clearly account for water aspects.
  - (Proxy) voting during annual shareholder meetings
3. Once water-related risks have been identified, financial institutions can engagement with clients on how to mitigate risks, either by offering technical assistance (typically development banks) or by sharing the risk analysis and lists of possible mitigation actions to encourage investments to adopt risk mitigation strategies.

In addition, it is important to be aware that water risk is distinct from other environmental risks, such as carbon and climate change risks. Whereas carbon is a global issue, water risk is inherently local. Specific ecological, social, and economic characteristics determine the extent to which operations and investments experience water risk. As such, overall reductions in water use, while useful in some situations, do not make a necessary proxy for positive action. Assessments which companies are located in areas of high water stress alone are equally insufficient, as the objective for action is more aligned to how knowledgeable, supported and competent companies are in managing their risk under these conditions.

Financial institutions will need to look at the individual risk exposure of clients to be confident that companies are responding correctly to the right strategies and interventions to drive down risk. In many cases this will involve qualitative information, such as changes in water policy, community engagements or investments in certain basin processes. This is particularly true for the extractives sector, as their investments and operations are by their nature geographically fixed, which usually creates relationships with regulatory authorities and water managers. It becomes crucial to the longevity of the company.

Companies will experience physical, regulatory, or reputational risk under different conditions and often for very different reasons. Therefore response strategies to water risk will reflect these realities, making it hard to be prescriptive about what the right responses should be.

#### 11.1.1 Risk assessment

In order to adequately assess and address water risk in loans and investment portfolios, FIs should adopt a system for water risk management, which includes tools and indicators. These should be based on a comprehensive understanding of water risk based on relevant data moving beyond the current practice of examining local water scarcity and waste discharge as the framework above demonstrates.

At present, most FIs evaluate water risk as part of their broader environmental and social risk assessment. As the framework of **Figure 1** demonstrates, water risk is complex and multi-faceted which, in some cases, requires a specific analysis. Moreover the assessment of water risk must be addressed in a more systemic fashion. The following principles should be taken account of:

- A framework for understanding water risk that takes into account its multiple dimensions;
- Relevant, reliable, and comparable data across geographies;
- Selection or if necessary creation of appropriate and consistent indicators that capture the complexity of water risk but are usable;
- Sets of response strategies to mitigate water risks demonstrated by indicators.

To recommend appropriate response strategies in a specific location a more in-depth study of any specific investment location should be conducted. However a risk tool that follows the guidelines outlined above will provide a sense of the contour of the risks, their magnitude, and the sets of response strategies that one could adopt. This risk tool should be used in the credit decision-making process as a way to better understand risk elements and recommend mitigation strategies to clients.

### 11.1.2 Investment policies

To incorporate water risk into lending and investment policies, clear policy guidelines need to be established for clients in the extractives sector. There are three general approaches for financial institutions to consider water risk:

- Consider water risk as part of general environmental and social risk policy. Most FIs interviewed for this publication use this approach.
- Consider water as part of any industry specific investment policy, such as a policy for investments in the extractive industry.
- Create a separate policy for water to be used across industries.

Currently, water risk is treated as a subset of operational risk. However, the incorporation of water risk as only existing in operations or in a breakdown in daily operations, only partly captures its full risk dimension. The starting point should be how water (along with other material ESG issues) can affect the credit risk of loan, a specific investment, or the risk/return ratio of an investment fund. Operational risks, reputational and regulatory risks are all factors that can contribute to this. With regard to basin risks, credit risk for water should consider the wider strains on the shared water source, such as increased use by other stakeholders in the form of increased irrigation or requirements for urban and industrial use, climate change manifesting in flood or droughts, the depletion of ground water resources, or basin augmentation such as dams or water flow reduction channels.

In addition to consistent water investment policies, financial institutions could use “red flag” areas of high water risk to be generally avoided. These need to be discerned from high-risk areas that have the potential to be mitigated. Examples include, where extractive companies have been dissuaded from exploiting minerals in wetland areas, disposing of tailings in open rivers, shallow or submarine sea water, or mountain top removal. Additional “red flag” areas or activities can include areas where competition for water is so fierce that it will lead to acute operational risks in the short term and areas where existing mining companies have already polluted local water resources that have yet to be cleaned up.

## 11.2 FI Perspectives on key water risks in the extractive industry

There are relatively few studies that have been conducted which focus specifically on water risks in extractive industries. Some financial institutions such as Citigroup and JPMorgan have released focused reports on the extractive industry and sustainability but none have yet focused solely on water risk. From interviews and various reports, there are a number of key concerns that the financial industry has voiced.

- (1) **Corporate water governance:** Financial institutions are interested in extractive companies having an internal institutional framework that ensures that good practice lessons from projects can be replicated throughout the company’s portfolio. Companies that focus on good governance tend to experience less overall water risk.

- (2) **Increasing regulation:** Many financial institutions expressed concern over institutional capacity and increasing regulation. While developing countries have had weaker regulatory regimes, most countries with significant mineral deposits are moving towards more stringent laws, licensing and environmental assessment standards. Companies with more sustainable practices will likely experience fewer regulatory hurdles and can translated to easier access to natural resources.
- (3) **Disclosure of water risks:** Disclosure of relevant water data by extractives can and should improve in order to enable financial institutions to systematically integrate these in their risk management procedures, loan requirements and selection and weighing of stocks in investment funds. Industry standards need to be established with comparable data and metrics.
- (4) **Credible response strategies:** Most financial institutions do not have a firm grasp on the array of response strategies that a company can take to mitigate water risks. As described above these risks are complex and multi-faceted due in large part because they are specific to a given location. However, water risk tools are emerging that can shed light on local nuances and response categories.
- (5) **Investment in water efficiency:** financial institutions are interested in seeing greater investment in water efficiency technologies to reduce water demand and increase wastewater recycling. These efforts, critical for “getting your own house in order,” have proven to be useful in mitigating some internal risks.
- (6) **Equal access to water:** Many financial institutions are also beginning to recognize that companies need to ensure equal access to water between economic and social uses. Many water risks stem from conflict over access to freshwater sources. As a result companies must begin to adopt policies that ensure that water is available and of a certain quality for social uses to ensure their long term of the resource.

### 11.3 Summary of Chief Liquidity Series Recommendations

Following the publication of the three issues of the Chief Liquidity Series the following generic takeaways can be made:

#### Assessing and valuing water risks

- (1) Create appropriate risk metrics and tools, which incorporate a comprehensive framework for understanding water risk. All relevant risk aspects beyond the usual water scarcity and pollution should be taken into account, including degradation of ecosystems, regulatory and reputational risks.
- (2) Vulnerability of water systems to climate change is considered a highly important risk aspect.
- (3) Requirement for common understanding and assessment of water risks across industries.

#### Mitigating water risks

- (1) Water risk mitigation strategies vary by industry and location.
- (2) To address water risk, companies must begin to look outside their own operations and actively engage in the catchment area.
- (3) Engage in partnerships with local stakeholders that are critical to addressing shared water risk.
- (4) The regulatory environment is critical in addressing water risk.

#### For financial institutions

- (5) There is a need to develop standard credit and investment policies that account for water risks for specific industries and across industries.

## RISK INDICATORS

To help financial institutions to better understand and mitigate water-related risks identified within their client portfolio, we have provided a number of risk indicators specific for the extractives sector. These indicators outline the most relevant aspects and expand on recommendations from earlier work as elaborated in section 4.2. These can be used as part of an engagement process with clients, as part of due diligence or as part of annual portfolio risk assessments.

Six basin related and six company related risk indicators have been identified that are generally relevant for the extractives sector. These are shown in **Table 5**. In addition, sub-sector specific indicators are provided for coal and base metals, oil sands and precious metals in **Table 6**. Please note that these risk indicators are not exhaustive. Instead, they can be used as a preliminary guidance tool for financial institutions that seek to incorporate water risks in a systematic way for clients in the extractives sector.

**Table 5:**  
Risk indicators for extractives sector

	Risk Indicator	Description	Rationale & Materiality
<b>Basin related risk 1</b>	Is the location of the mining operation characterized by water stress?	Understanding this basic element of water availability is not necessarily the key determinant of risk but is a good proxy for identifying hot-spots for further attention or action. Also important for identifying where water issues may come more immediately to the fore.	In regions facing water stress or scarcity a greater consideration must be given to water efficiency technologies and external engagement in the management of the resource.  In some cases the lack of available water may lead to re-allocation or reduced water rights. Scarcity can also be characterised by the functioning or failure of public institutions.
<b>Basin related risk 2</b>	How vulnerable is the local water situation to climate change impacts?	The effect of climate change should be properly assessed, accounting for seasonal variability and projected changes in demand. Using a range of different climate change scenarios rather than a single estimate is preferable and will provide better insights.	Climate change will impact mainly through water availability and timing. This will have implications for how management systems can deal with these changes and how mining operations can adapt to changing regulations, physical droughts and flood events.
<b>Basin related risk 3</b>	How vulnerable is the company to droughts and floods?	Companies should assess the estimated occurrence of droughts and floods in the region, including their seasonal character. Droughts can have serious effects on water availability and therefore operations of the mining company. Floods can lead to halted operations when flooding water enters mine shafts or through spreading waste and contaminants into the wider environment.	The construction of water storage can enable companies to operate during droughts where regulations permit. Special flood protection may need to be implemented around mine operations and contingency plans developed.

	<b>Risk Indicator</b>	<b>Description</b>	<b>Rationale &amp; Materiality</b>
<b>Basin related risk 4</b>	Is the location of the mining operation characterized by water pollution?	Water quality can usually be dealt with through strong regulation and technological innovation. Yet too often, water quality is affected by poor company management systems, poor investment or enforcement of policy or weak regulations. Water quality can have detrimental impacts on downstream users, particularly communities and the environment with associated reputational, regulatory and cost implications.	Focus on pollution reductions, adherence to higher discharge standards and investments in technology.  Engagement with public authorities charged with municipal works and regulatory policies will be crucial.
<b>Basin related risk 5</b>	Has the company assessed its impact on the environment?	Threats to freshwater biodiversity are not just a concern for NGOs but often are the food source for local populations. Functioning ecosystems deliver numerous services to communities and business and will need to be maintained in the long-run.	Assess the impacts of operations through a full environmental and social impact assessment. Failure to account for biodiversity and the environment could result in higher fines, regulations or community backlash.
<b>Basin related risk 6</b>	What is the institutional capacity of the local, regulatory, and national management bodies?	Local and regional governance structures, including relevant institutions, water managers and regulators, control most of the conditions that cause risk to companies. This will be based on their ability or not to manage, invest, implement, regulate and enforce relevant policies. A failure to do so transfers risk to people, the environment and business.	Engage with those charged with managing and controlling the external environment. Understand their weaknesses, failures and strengths and actively work together with others, to support these larger governance structures.
<b>Basin related risk 7</b>	Is there local stakeholder pressure for water access or pollution control?	Local use of water is a highly political issue and where these are not met, can translate into a political issue and ultimately regulatory pressure on commercial users and polluters.	Assess the social access to water of adequate quality and the degree to which local communities are articulating demands.
<b>Basin related risk 8</b>	Are the costs of water supply or waste disposal/ discharge likely to increase dramatically?	Water supply in arid regions or waste discharge in polluted catchments can become a considerable cost of mining, that may be mitigated by improved water use efficiency and waste disposal systems	Assess the degree to which charging regimes may change and possible production responses to mitigate these financial impacts.
<b>Company Related Risk 1</b>	Does the company use the most efficient water processing technologies?	Practicing the latest advancements of technology and ensuring efficient use of water is not only good business sense but is also important as a negotiating position with external parties (i.e. our house is in order).	Under stressed environments, efficiency is usually already being pursued but will often be inefficient to deal with wider risks. While a desirable outcome is to explore better technology, getting your own house in order makes it easier to engage externally with others.
<b>Company Related Risk 2</b>	What is the extent of measures taken to prevent, minimize, and control mining tailings and effluents within outflow?	Water quality breaches will always increase the risk of tighter regulation, community backlash and blame. Often this blame will be apportioned to companies regardless of their contribution to the problem.	Quality measurements of the water the company withdraws and discharges by the company itself or an external company
<b>Company Related Risk 3</b>	Has the company been accused or prosecuted for breaches regarding water use and discharge?	Full compliance is an essential basis for community trust, reduction of regulatory risk and perceptions by other stakeholders.	Compliance of the company to legal quality discharge standards for wastewater is a basic minimum and a failure to comply creates unnecessary risk and costs to the company.



	Risk Indicator	Description	Rationale & Materiality
<b>Company Related Risk 4</b>	Were stakeholders consulted during the water assessment for project development?	Engaging with other local basin stakeholders like municipalities, governments, companies, farmers and NGOs to solve water-related conflicts and to manage local water resources is essential to drive down risk.	Most risk will occur due to the external environment and perceptions of the company. Being active will help mitigate risks that might otherwise occur if not engaged.
<b>Company Related Risk 5</b>	What are competing social and economic plans for water resources in the basin over the medium to long term?	Assessing the full range of other water users and stakeholders (upstream and downstream) in its area of operations helps a company understand its importance as a water consumer in comparison to other stakeholders.  Companies should research platforms by which stakeholders come together to discuss water-related issues of the basin.	Failure to understand stakeholder uses and needs is a high risk, particularly in stressed environments. It is essential within the river basin to anticipate future changes and potential risks.
<b>Company Related Risk 6</b>	Does the company have a water policy, strategy and/or management plan?	Internal governance around a water strategy is essential to identify who has the highest level of responsibility within the company for the policy, strategy and/or plans as well as who is monitoring (waste) water quantities and quality.	Keeping top management abreast of risk issues, opportunities and developments will help to remain proactive and on top of risk occurrences.

**Table 6:**

Risk indicators for different sub-sectors in broader extractives sector

	Risk Indicator	Description	Rationale & Materiality
<b>Coal and Base Metals specific 1</b>	Has there been a change in risk profile as a result of closure of mines from Acid Mine Drainage (AMD)?	Governments are more aware of AMD related issues, and will likely demand that all mines will have a plan to deal with AMD while the mine is operating and after its closure	Long term business cases for mines is impacted negatively when (potential) costs related to dealing with AMD after the mine will be eventually closed are included.
<b>Coal and Base Metals specific 2</b>	Has there been a dip in share price as a result of reputational risk from AMD?	Some coal and base metals mines had to pay significant compensation payments to (often local) external organizations when it was proven they did not act as good environmental stewards	Impact on profitability as a result of significant compensation payments or increased premiums
<b>Coal and Base Metals specific 3</b>	Can the company obtain and maintain water licenses for operations?	Local and national governments are more than ever before aware of the fact that water allocations to a large water user as a coal or base metals mine must be done in a balanced manner vis-à-vis social and environmental needs of water	Additional capex required to adhere to new regulations or environmental damage
<b>Coal and Base Metals specific 4</b>	Is the mine already (re-)using water in an efficient way, and are appropriate measures taken to reduce pollution?	There is much knowledge and experience available on significantly reducing the water withdrawals (by re-using/recycling and more efficient technologies and processes), and on reducing pollution (treatment facilities)	More difficult to attract investors and strong community opposition when investors and public opinion understand the mine is underperforming

	<b>Risk Indicator</b>	<b>Description</b>	<b>Rationale &amp; Materiality</b>
<b>Oil Sands specific 1</b>	Has the company an increased local regulatory or reputation risk as a result of downstream impacts?	The oil sands are under the spotlight for the environmental performance of operations. The probability of higher risk emanating from this area is higher because of this attention.	Decrease in share price and dividends stream as a result of mine closure or decline in international standing
<b>Oil Sands specific 2</b>	How likely is it that the company has to close or reduce its operations significantly due to international pressure?	International governmental and consumer pressure can lead to loss of (social) license to operate	Increased likelihood of default as a result of closure or significant reduction in operations
<b>Oil Sands specific 3</b>	How likely is it that flow allowances will be altered by governments as result of competition with other users	Governments realize more and more that large water consumers as oil sands operations threaten the local social and environmental water requirements	Change to profitability as result of altered flow allowances due to competition with other users
<b>Oil Sands specific 4</b>	Is the company anticipating increasingly strong regulation regarding water and oil sands?	Given the relative new legislation on oil sands, it is expected that stronger legislation (incl. on water) will be implemented in the coming years	Additional capex required to adhere to new regulations or environmental damage, or loss of license to operate
<b>Precious Metals specific 1</b>	Is the mine using the latest technologies to be water efficient in the transport of the ore and tailings, and in the washing and separation processes?	Given the high tailings-to-ore ratio, the amount of water used in the different processes per kg ore is very high. A company can reduce its dependency on water by leveraging technical solutions and optimized processed	Production to be (temporarily) halted or mine to close down because of water availability issue. This risk can be reduced significantly by becoming more water efficient.
<b>Precious Metals specific 2</b>	Has the mine implemented solid social standards?	The precious metals sector is under special attention of human rights watchers	Production to be (temporarily) halted or mine to close down because of loss of social license to operate, or additional capex required to implement measures suddenly
<b>Precious Metals specific 3</b>	Does the company at least comply with local regulations?	Precious metals mines are often located in regions with limited regulation or enforcement. Companies should pro-actively ensure they comply with local regulations (at minimum), even where enforcement is poor. Due to the trend of radical transparency mistakes will come to the surface quicker than ever before	Loss of (social) license to operate. Payment of (significant) fines or penalties
<b>Precious Metals specific 4</b>	Did the company implement measures to reduce gold/silver cyanide pollution?	This kind of heavy (and toxic) pollution is typical for precious metals, and if not taken seriously can lead to serious human health risks	Loss of (social) license to operate. Reduced ability to attract capital for the mine



## APPENDIX I

As part of this Briefing interviewed have been held with the following institutions to better understand their perspective towards water risks and how they address these issues with their clients: Industrial Development Corporation (IDC, South Africa), Nedbank (South Africa), Robeco (the Netherlands), Citi (USA), Royal Bank of Canada (Canada), and Calvert (USA). The following questions were used to structure each interview.

1. How significant is water risk in investment decisions for the extractive industries in particular base metals (copper & iron ore), coal, precious metals (chrome, platinum, etc.) and oil sands?
2. How is this water risk measured for the extractive industries?
3. How is water risk factored into investment decisions for the extractive industries?
4. Is water as a topic covered in your investment/lending policies? If yes, are there specific policies covering the water topic, or is the water topic embedded in industry specific (in this case extractives) policies?
5. Have the results of a water risk analysis fundamentally changed the nature of the investment in the extractive industries (monetary value, interest rates, repayment period, termination clauses, etc.)?
6. Has water risk ever stalled or terminated an investment decision for the extractive industries?
7. Do you have any experience of investments that have severely faltered or failed as a result of experiencing water risk?
8. Which regions have the highest water risk for the extractive industries? Why?
9. Does the institution seek to balance water related risk within investment portfolios?
10. Are you engaged in any global processes and/or platforms related to water risk? If yes, which ones and why have you chosen them? If no, why not?