Challenges of Water Scarcity

A Business Case for Financial Institutions

Preliminary Findings

"We now understand that both business and society stand to benefit from working together. And more and more we realise that it is only by mobilising the corporate sector that we can make significant progress."

Kofi Annan
Secretary General, United Nations

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Executive Summary

Water scarcity currently affects many regions in the world. Without a significant reversal of economic and social trends, it will become more acute over time. Although water is considered a renewable resource in many parts of the world, water resources have become so depleted, contaminated, or lacking due to insufficient water infra-structure, that they are unable to meet ever-increasing demands. The challenges are more acutely felt in developing countries where 95% of the world's new population is born each year. This has become a major factor impeding economic development, and business operations.

The potential risks associated with water scarcity have become an emerging risk of strategic importance to businesses and their financial backers around the world. This is becoming even more important with rapid globalization within the business supply chain. Therefore, a business case for strategically addressing water challenges is getting stronger. While each organization must relate to water in its own capacity, the business case for the financial sector will come from acknowledging the potential risks associated with water scarcity and its potential effects on how they do business, thus encouraging them to seek innovative solutions for mitigating these risks.

The Stockholm International Water Institute (SIWI) and the United Nations Environment Programme Finance Initiative (UNEP FI) initiated this study on water-related risks for financial institutions with the main aim founded on the need to learn and expand on the issues that arise from dealing with water scarcity and highlight opportunities for the financial sector for contributing to sustainable development through active engagement in mitigating water related risks at different levels.

Project objectives

- Provide financial institutions with a framework for acknowledging risks related to water scarcity and social conflicts that may arise under this scenario.
- Provide case studies from Latin America and Africa where water scarcity has increased financial risk.
- Identifying elements for a proactive approach to water scarcity by financial institutions.

The scope of the project

- A focus on Africa and Latin America to identify accounts and experiences where water scarcity related risks and conflicts posed significant risks to project finance and investments.
- A broader definition of water scarcity is used taking into account quality, quantity and institutional dimensions.
- Perceptions, views and practices among key actors in development and commercial financial organizations are explored.

Water scarcity risks and Financial Institutions

Financial institutions, which assume the risk of companies and projects, can exercise considerable influence – in some cases – and control over investment and management decisions (through loan management) that could be brought into play for the benefit of both their own business and the environment.

As some of the examples show, financial institutions will also need to address potential risks that arise in the entire value chain of water intensive sectors, which may be affected by future water shortages, as well as risks related to transport on waterways and water related conflict.

It is important to recognize that, as well as creating risk, consideration of water supply problems can also provide opportunities for companies to improve their competitive position through improved operational performance and efficiency, and by innovating new solutions. Sometimes these opportunities will result in new business opportunities for financiers. It is therefore in a financial institution's interests that it understands how water concerns affect its operations and that of its business partners.

Further more, financial institutions have a vital role to play in the development of their economies, and are in a position to influence whether this development takes place in a healthy, sustainable, efficient fashion likely to endure in the long term and foster good international relations, or whether the economy develops in an unhealthy, unsustainable fashion, wasting resources and storing up long term health problems and costs for a country and its neighbors.

The literature review on water scarcity risks and the researched cases from Latin America and Africa demonstrate a diversity of risk drivers and consequences to projects/businesses and financial partners as a result of water scarcity issues.

A series of risk drivers and consequences are presented below which summarizes some water scarcity risks explored in this project and their relationship to specific risk potentials affecting business operations, financial performance and financial partners.

Initial Findings

(Some of the findings in this summary will be expanded in more detail in the full report.)

Risk Drivers and Consequences

Water scarcity poses considerable and different types of risk for projects/businesses and their financial backers. Often the risk drivers are institutional and/or political.

Some common categories of risk drivers include:

We are all becoming more sensitive. This will manifest in terms of the technical evaluation; the extra costs involved in ensuring reliable supply; the statistical exercises. And yes, it will also be an issue of assessing the institutional framework.
A representative of the Development Bank Southern Africa

Risk Driver	Potential Consequences
Draught and drought cycles	An unexpected or chronic decline in water supply can significantly jeopardize business operations, or raise the cost of operations, especially for companies that are water intensive. These factors can result in production delays, limits on expansion, or total failure. This, in turn, affects the company's financial performance at a facility level, and ultimately at a corporate level.

Yes, water will become more prominent in future, as scarcity becomes more severe... So for instance we will have to include water issues more explicitly in our internal process for loan applications, for instance in the case of golf estates, which have high water needs. Water intense sectors such as mining, beverages will be heavily affected as well, and a reduced productivity in these sectors due to water scarcity will have an impact in the GDP.
A representative of Nedcor, a commercial bank based in South Africa

Risk Driver	Potential Consequences
Water quality concerns	Deteriorating water quality has become one of the most critical issues affecting both the developed and developing countries. While most developed countries have the technical, administrative and financial capability to support advanced technologies to treat industrial wastewater and sewage effluent, most developing countries lack these capabilities. As a result, industrial and municipal pollution pose a significant risk for operations in developing countries, where an average of 90 to 95% of all domestic sewage, and 75% of all industrial waste, is discharged into surface waters without any treatment.

Risk Driver	Potential Consequences
Institutional and managerial capacity for effective water governance	A considerable challenge to address equitable water allocation and environmental sustainability, especially in developing countries, is the lack of capacity at the country or regional level to provide effective water governance. This is characterized by fragmented responsibility over water resources, including multiple government agencies responsible for water management, which typically operate in isolation and in competition for funds; weak governance, coupled with an propensity towards corruption within different levels of government; and lack of capacity to develop, implement, and enforce regulation concerning water management issues.

Risk Driver	Potential Consequences
Political and Regulatory Conditions	Given the current water scarcity scenario and future water demand projections, many countries around the world are taking steps to strengthen regulatory mechanisms for water use and water pollution as part of development processes. This may affect business by changing the environment for obtaining abstraction and discharge licenses; rules for effluent discharge may become more stringent and better enforced; regulations and toxicity categories for effluents may be modified; and businesses may begin to be liable, as they are already in many developed countries, for their negative impacts on the environment as part of their production processes. Legal and regulatory reform may also lead to higher water tariffs for some industrial consumers.

Risk Driver	Potential Consequences
Cross boundary water and the risk of conflict	Cross boundary concerns include risk of conflict, pollution upstream, blocking of waterways and mismanagement of shared resources all poses considerable risks for projects and investments.

The complexity and political sensitivity of water issues have important implications for irrigation and drainage investments particularly as these relate to water allocation and its use, which are strongly tied to food security and poverty, the natural environment, regional income distribution and investment profitability. Water-related investments are typically viewed as risky ventures, especially if international borders are crossed. Such investments also incur relatively high transaction costs and must accommodate various safeguard policies.

Taken from The World Bank's approach to investing in irrigation projects

Risk Driver	Potential Consequences
Local community and stakeholders concerns	Companies are no longer able to exploit water resources with impunity on the pretext of job and revenue creation in the community by setting up a facility. Mismanagement of local stakeholder water needs can result on loss of water use rights or social license to operate.

These drivers are not mutually exclusive. Draught and drought cycles can cause a change in allocation priorities or similarly local community backlash against industrial users. In times of crisis government regulations in many countries designate domestic uses as top priority for allocation, often followed by agriculture. Industry is often the last priority, which increases the business risk for companies operating in water scarce and water stressed areas.

Potential Risks for Financial Institutions

The previous categories of risk discussed above all lead to financial performance risk (See figure). The three major types of financial risks that a project/investment might experience due to water scarcity include:

- Financial losses due to disruption of operations (due to quality considerations, or perhaps stakeholder risk);
- Increased financial investments (due to investments to secure additional supply, or required water treatment, either for water use, or wastewater treatment);
- Loss of an anticipated revenue base due to cancelled or delayed growth and expansion in a region (due to quality, quantity, or stakeholder considerations)

Water scarcity risk

Draught & Drought Cycles
Contamination of resources
Institutional and Political Risk
Capacities for water governance
Shared resources and conflict risk
Local Community and Stakeholder expectations

Risks to project & investments

Disruption of operations
Increased costs for maintaining current water supply
Constraints on growth and expansion
Deterioration in the quality of assets
Loss of water use license
Environmental Liabilities

Financial institutions exposure to these risks

Loan default
Devaluation of asset value of investments
Loss of value of security/collateral
Environmental Liabilities
Reputation risk
Project failure risk

It is needless to emphasize that a lack of focus on water related issues could have repercussions on the business, ranging from disruption of operations at a particular plant to immense negative publicity for the entire firm and financial bakers. The extent to which a company manages its water scarcity risk may influence the amount of investment required to secure – or even maintain – necessary levels of water use.

As a result, financial institutions that deal with those companies/projects, whether as bankers, investors or development aid organizations, face a variety of potential water scarcity risks. Many of these risks may not become apparent through the standard financial analysis / due diligence processes, and as a result some financial institutions were found in this project to have suffered losses due to unexpected water related problems affecting their customers or investments.

The materiality and risk potentials for a financial institution can vary depending on the nature of business partners (borrowers or investments), business sector and region of operation, and the client's capacity to anticipate and manage these risks. The factors that need to be considered will vary for different types of financial transactions. Noted differences also between public and private finance institutions, whereby the former have a broader set of incentives and objectives. This also relates to the evaluation of water-related risks.

In lending for example, a bank's exposure to water scarcity risks associated with individual banking transactions depends on:

- The extent of customer's dependence on water supply quantity and/or quality for operation. Businesses in water intensive sectors such as mining, food processing, etc. face greater risks from water scarcity.
- The nature of transaction with the customer, as often the value and terms of the loan will affect the ultimate financial risk to the bank.
- The management, technical and financial capacity of the client to deal with its water scarcity problems.

Case Studies

The full report examines a number of case studies from Africa and Latin America. Here is an example.

Foreign Direct Investment in private electricity generation in Sao Paulo State, Brazil

Brazil generates over 90% of its electricity from hydropower with the remaining capacity coming from diesel powered thermal plants. Each year between the months of November to around April, the rainy season fills the country's reservoirs which provides the hydrological capacity for the generation of energy. However in 2001, the rains did not come as usually expected, and the reservoirs' levels only reached 30% storage capacity. The effects of this natural phenomenon, aggravated by unfortunate cumulative decisions in the energy sector, forced the government to take severe measures to prevent blackouts, with serious economic consequences to all users.

One sector that was particularly affected was the private electrical generation companies, such as AES Tiete (a wholly owned subsidiary of AES Corporation who owns and operates hydro, coal, gas, diesel and biomass generating plants in Brasil, Argentina, Chile and Venezuela, amounting to 39% of the company's revenues.) who serves over 5 million customers in the State of Sao Paulo.

AES Tiete's assets and financial stability were affected by the electrical rationing. In 2000, AES Tiete Holdings had closed a USD 300 million 15-year bond offering at 11,5 %. Inconvertibility and devaluation coverage was issued by the U.S. Overseas Private Investment Corporation (OPIC). Bank of America Securities was the lead underwriter. Due to the rationing in 2001, the bond payment schedule had to be post-poned. Though the company cut costs dramatically to be able to pay dividends, the situation was too extreme. Since the company had insurance coverage from OPIC, it was possible to negotiate a new payment schedule at the end of 2003 with the bond holders. By now, the situation has been resolved.

Under normal circumstances, the company was prepared to deal with water availability variations, but for smaller range contingencies. In the electricity generation contracts there is a clause that stipulates that when a generator is below the agreed dispatch due to natural impacts, other generators should provide the deficit. However, the situation in 2001 went beyond what was considered by the business plan of AES Tiete. Fortunately, the political risk insurance, provided by OPIC, permitted the re-negotiation of the payment schedule since financing conditions could not be changed.

"The electrical rationing was not caused by a water shortage, it was caused by the management of the reservoirs of the previous years" explained a chief economist. Due to the Brazilian financial crisis, the government did not modify the tariffs and so did not authorize the purchase of the fuel necessary to supply the thermal plant park in 1997, 1998, and 1999. Therefore, the electricity usually provided by the thermal plants was provided by hydroelectricity, and thus, the reservoirs levels where allowed to go lower than what was technically "safe". The inflexibility of the tariffs also affected private generators, who considered the risk and did not continue to invest in new plants, as was expected before the economic crisis.

We conclude from this case study that water scarcity risks can be a combination of issues: drought cycle, misuse of resources and/or institutional mismanagement. Under this scenario, water scarcity has affected both the business and its financial backers. The lead underwriter in this bond offering deal for AES Tiete, Bank of America incurred unusually high transaction costs due to the postponed payment as a direct consequence of this situation.

The message from this is that financial institutions can incur higher risks and financial costs when the potential of water scarcity is not considered in the due diligence process.

Final Recommendations

For financial institutions there is a clear benefit from incorporating water scarcity risk assessment into financial products and services. Although we have not been able to evaluate practices of financial institutions at a global level, the observations from Africa and Latin America do indicate the possibility to improve on current due diligence practices. A proactive approach by financial institutions in promoting mitigation measures and strategies through investments, can improve water sustainability. Among the mitigation strategies financial institutions can promote with clients include:

- Encourage clients/project developers to make comprehensive and holistic water assessment and risk management in project planning decisions, business projections, and business opportunity due diligence. Some of the tools at the project level include value chain and supply chain analysis, water resources economic/vulnerability analysis and .

- Encourage business partners to develop appropriate performance indicators focused on water risks as part as part of the annual reporting.

- Encourage business partners to include integrated water resource management as an intrinsic part of their operations, and to open dialogues with their stakeholders for its effective implementation.

- Support stakeholder engagement in local community. It is important that project developers and their financial partners address water resource considerations within stakeholder engagement and community investment strategies. A collaborative approach with relevant stakeholder groups would go a long way in building capacity and partnerships to anticipate risks and address them when they emerge.

Additionally, recognition that water supply problems can create new opportunities for improving a company's competitive position through improvements in operational performance and efficiency is in the interest of financial institutions as these improvements can result in new investment opportunities.

As a follow up recommendation to this study, it is important to develop systemic approaches within the financial sector on the issue of water scarcity risk management, particularly for the institutions that are active in regions with weak adaptive capacity. A more systematic assessment of risks and opportunities is needed to quantitatively assess the extent of exposure to water scarcity risks.

As for governments and policy makers, it is clearly demonstrated how important the institutional and managerial capacity for water governance as a factor in producing water scarcity risks. Further it was clearly demonstrated the need to relate project-based planning and evaluations to catchment management. This emphasises the challenges for policy makers of developing and supporting transparent and proactive planning and decision-making at the catchment level.

A proactive governmental role in water scarcity mitigation measures, e.g. encouraging and providing incentives for sustainable water management practices at the enterprise level and at the water basin level, can improve resilience to water-related risks. This is coupled with a stable regulatory regime, coordinated policies in water resource management, transparent and equitable licensing and allocation procedures are all important challenges on the agenda of policy makers in addressing the challenges of water scarcity for projects and investments.

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Stockholm International Water Institute (SIWI)

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The Stockholm International Water Institute (SIWI) is a policy think tank that contributes to international efforts to find solutions to the world's escalating water crisis. SIWI advocates future-oriented, knowledge-integrated water views in decision making, nationally and internationally, that lead to sustainable use of the world's water resources and sustainable development of societies.
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SIWI

United Nations Environment Programme Finance Initiative (UNEP FI)

UNEP Finance Initiative is a global public-private partnership between UNEP and the private financial sector. UNEP FI works closely with 230 financial institutions to develop and promote linkages between the environment, sustainability and financial performance: sustainable finance. Through regional taskforces (Africa, Latin America, North America, Asia, Central and Eastern European), working groups (asset management, climate change, environmental management and reporting), training programmes and research, UNEP FI aims to address the opportunities and needs that sustainable development can provide to the financial sector and subsequently to the larger stakeholder community.
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