Combating risks to water security

Corporate-level risk management toolbox

We help companies identify, evaluate and mitigate the risks to their business posed by water scarcity in water-stressed areas.

Our water risk toolbox comprises skills, methods and tools developed to explore, evaluate and mitigate the threats companies could face when sources of water to parts of their business are compromised.

Using the toolbox, we can help an organisation to:

- evaluate risks that the company and its supply chains face from water stress
- limit the financial losses relating to water scarcity to an acceptable level
- assist with regulatory certification and environmental compliance and enhance corporate reputation
- reduce insurance premiums where these apply

We are able to apply the toolbox within broader risk management and business planning within an organisation to help:

- develop a business case for water risk management actions
- devise a strategy for integrating water risk management actions into broader business risk management plans
- implement specific actions that reduce a business's exposure and vulnerability to water risks, making its operations and performance more resilient and sustainable

Our services are designed to help tackle an issue that is fast becoming a global crisis. Some 2.8 billion people already live in water-stressed countries, with demographic factors, like population growth and dietary change, and environmental factors, such as increasing water pollution and climate change, set to make things worse.

Many companies' operations rely on water being available for use in their key production processes or by their supply chains; where these are located in areas that are already, or set to become, water stressed, we find ways to mitigate the risk.

Our approach

We know that no two companies are the same – each faces different water security risks at different levels and in different areas of their operations.

Our approach is to deliver the right level of analysis for an organisation, in line with the importance and complexity of the specific set of risks identified.

We're able to help organisations to identify the specific risks to their business, including:

- resource risk – where there is insufficient water of the right quality
- regulatory risk – arising from weak regulatory arrangements that fail to ensure equitable access

to water; or from changes in permits and prices in countries where water abstraction is regulated
- reputational risk – where increased competition for water from economic, social and environmental groups can damage the reputation and the business prospects of a company

Together, our experts in business risk management, water resource planning and economic analysis provide a tailor-made approach to evaluating and managing water security risks, guiding strategic and operational-level decision making within a business.

Our services

Our services range from providing a broad assessment of a company's water security risks to detailed analysis at particular water-stressed sites with evaluation of options to mitigate specific risks.

We customise our analysis and evaluation using a tiered system. The depth of analysis depends on the significance of the risk:

- Tier-one methods are broad in scope, semi-quantitative, and enable the identification and initial assessment of areas of risk. Methods used include water footprint assessments, data evaluation and 'traffic-light' risk assessments, risk registers, weighted water-risk indices, and multi-criteria analysis based on approximate monetary values.
- Tier-two methods are quantitative, allowing risks identified during tier-one analyses to be examined in more detail. Tier two provides a quantitative analysis of risk based on the likelihood, duration, and extent of water shortages, indicated by a water supply-demand balance assessment; an evaluation of water use and the potential for improving water efficiency; and an evaluation of the cost-effectiveness of risk-management measures.
- Tier-three methods are quantitative and aimed at a more detailed assessment of water supply-demand imbalances and water needs, taking the influence of current and future uncertainty into account in the analysis of risk. Tier-three methods include operational risk assessment techniques, such as fault and event-tree analysis and cause-consequence analysis, and the assessment of uncertainty using Monte-Carlo analysis.
- Tier-four methods can be used to extend the tier-three analyses to assess the implications of longer-term change and uncertainty.

The overall aim of the assessments, whatever the level of detail, is to help a company develop a management strategy appropriate to the water risks identified.

Delivering value – case studies

High level corporate risk assessment

Halcrow is undertaking a company wide high level corporate water risk assessment for an oil and gas company operating in 25 countries worldwide.

A detailed questionnaire was developed and transmitted to each of the company's facilities. The questionnaire was used in workshops with each facility to develop a water risk register. The risk registers will be aggregated and will provide input to the company's sustainability report and form the basis of their water management strategy.

Water security at a strategic industrial site

Halcrow carried out a study of water abstraction needs for an international industrial organisation.

The organisation is licensed to abstract water essential to the continuation of its key production processes. The quantity of water required is significant and it faces increasing competition from other licensed organisations using surface water, as well as navigation and environmental needs.

A key output is to develop a more sustainable water management strategy for improving control of river flow and planning licensed abstractions, while:

- maintaining residual base-flows to satisfy environmental needs
- minimising the impact of weirs on ecosystems
- maximising the recreational value of the site

The scope of services provided by Halcrow includes:

- evaluating the supply-demand balance for the industrial plant, taking into account the available resources and the needs of other users
- exploring various planning scenarios and their effects on water availability and river flow
- determining optimal abstraction limits
- assessing water efficiency measures at the plant and exploring the feasibility of reusing the plant's wastewater to reduce overall water usage

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