

White Paper

NATURE TO THE RESCUE: HOW NATURE-BASED SOLUTIONS ARE MOVING CORPORATE WATER RISK MANAGEMENT BEYOND BUSINESS-AS-USUAL

*More and more businesses are exposed to water risks that could be fundamentally disruptive if left unchecked – this we know. Yet exactly how businesses currently approach and respond to these water risks, within and beyond their own operations, is less known. More than 85% of companies within three surveyed sectors reported exposure to water risks that could substantially disrupt their business. These include physical, reputational or regulatory risks. Physical risks mainly consist of too little or too much water (flooding), or poor quality of water. These often lead to increased external pressure for businesses to act, mainly from local communities and regulators. All of the surveyed companies (49) show that over the past three years, the **strategies to tackle these risks have entailed a share of over 50% beyond-the-fence (i.e. BTF) actions**. Increasingly, businesses are going beyond simply addressing water issues in their own operations and, among others, are relying on **nature-based solutions (i.e. NBS)**, such as wetland restoration or reforestation.*

This paper explores the evolution of water risk management practices amongst the surveyed companies and offers an outlook on promising strategies as to how businesses should continue to manage or adapt to pressing water challenges.

Our Research In a Nutshell

This paper provides groundbreaking quantitative evidence on how businesses are currently responding to water-related risks. To understand how they are managing water-related business risks, we analysed the facility-level response strategies of 49 companies from three sectors (food, beverage, and metals & mining). They reported their risk responses through CDP over the last three years (2015, 2016 and 2017). South Pole assessed:

- to what extent businesses apply beyond-the-fence (BTF) and inside-the-fence (ITF) actions – in other words, actions focused on water resources that were both beyond and within the direct control of the business.
- the most common action they take within the ITF and BTF response types.
- the median costs of ITF and BTF responses.

Our team classified each of the 700 risk response strategies according to the response types in Figure 1¹.

¹ When scrutinising the activities within the ITF and BTF response types, 100% refers to the total BTF and ITF components in 2015, 2016 and 2017.

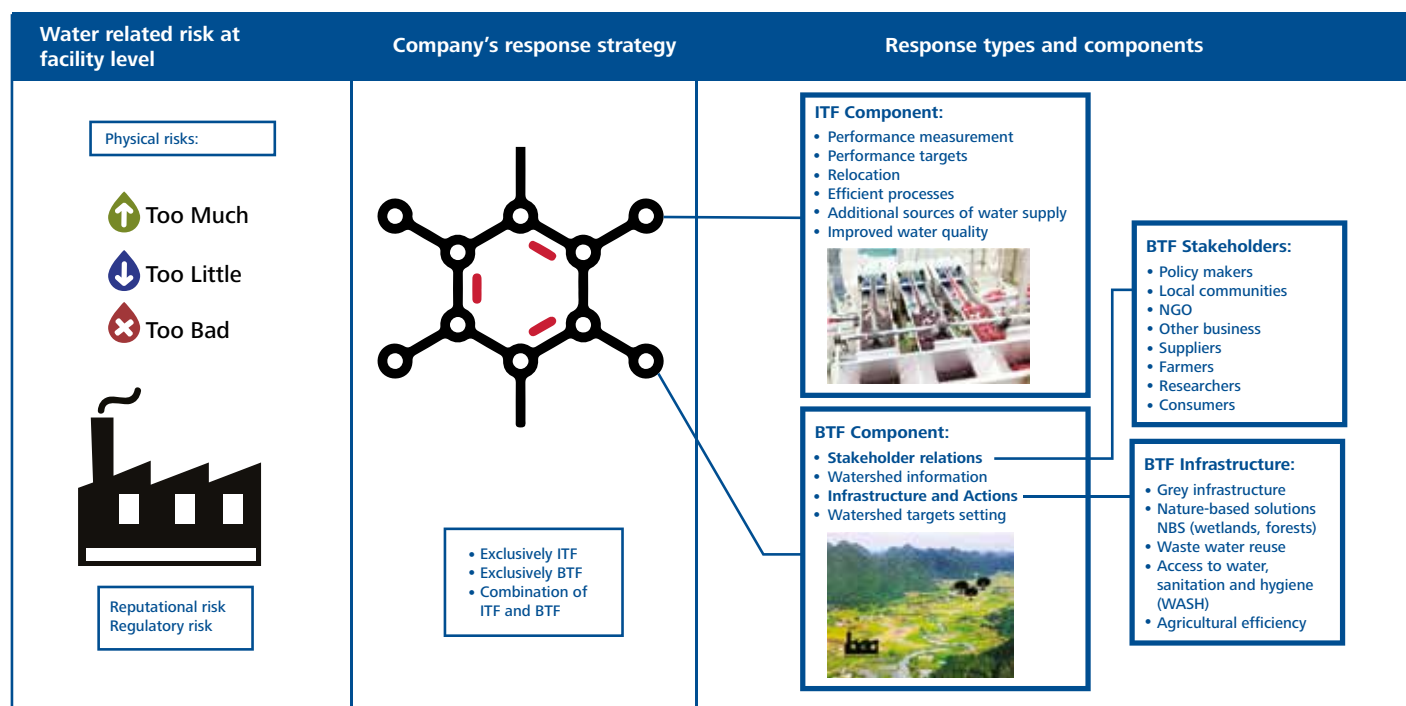


Figure 1: Classification of BTF and ITF response types

Keywords & Abbreviations

- **Inside-the-fence (ITF) actions:** these typically concern water resources that are under **the direct control** of a business. In other words, these 'operational activities' refer to improving water management practices at the owned and operated facilities. Examples include improving water efficiency, reducing the pollution of water used for operations, undertaking better risk assessments, and developing a robust corporate water strategy.
- **Beyond-the-fence (BTF) actions:** these typically concern water resources that are **not under direct control** of a business, and involve engaging with other stakeholders to address shared water risks. BTF actions help businesses advance sustainable water management beyond their own operations and often address the root causes of water risks. An example is collectively investing in upstream wetland restoration to maintain sufficient water flow in dry conditions and to reduce sedimentation.
- **Response strategy:** this addresses water-related business risks consisting of one or more response types (exclusively ITF, exclusively BTF or a combination of ITF and BTF actions).
- **Watershed:** a watershed, catchment or river basin is the land area that is drained by a river and its tributaries.
- **Corporate water stewardship:** the **Alliance for Water Stewardship (AWS)** defines water stewardship as, "the use of water that is socially equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site (i.e. ITF) and catchment-based (i.e. BTF) actions. Good water stewards understand their own water use, water catchment context and shared risk in terms of water governance, water balance, water quality and important water-related areas. They then engage in meaningful individual and collective actions that benefit both people and nature."
- **Nature-based solutions (NBS) for water:** these solutions utilise natural ecosystem services to manage water quantity and quality. Investments in NBS include restoring forests, wetlands, floodplains or mangroves, in order to soak up flood waters, manage water supply, control erosion, or purify water.

The Changing Landscape of Corporate Water Risk Management: A Surge in 'Beyond the Fence' Action

A brief history of Corporate Water Risk Management

A few years ago, water footprinting was considered 'state-of-the-art' in corporate water action. This mainly triggered corporate action on improving efficiency and cleaning up operational processes. While water footprinting provides hotspots for action on an operational level, managing water-related risks can only be done through finding solutions beyond direct operations – in other words, by ensuring that risk management activities also consider the current and future needs of local water users and ecosystems. **Today**, this is the direction water-conscious companies are going. Our results show that businesses are tidying up their own operations and, beyond that, taking action in the watershed within which they operate. They now recognise that if other water users mismanage their water use, they may run out of water despite improving their own water efficiency. **Going forward**, water challenges will continue to be shared between businesses, users and ecosystems of the same watershed. Moving away from water footprinting towards truly collective, 'beyond-the-fence' actions, best adapted to the unique context of each watershed, is an imperative for sustainably improving water conditions and effectively controlling water risks.

Droughts, floods and declining freshwater ecosystems have become the new 'norm', but NBS herald a way of responding to water risks in a sustainable manner. The rapidly changing climate is making dry regions drier and wet regions wetter. Major cities in the world are facing the risk of completely running dry – from the dramatic [urban water emergency](#) in Cape Town to the pressing [water-supply problem in Mexico City](#). Many metropolises are also feeling the impacts of more extreme weather conditions, such as the recent [flood crisis in Asia](#). This is already negatively impacting industries, tourism, freshwater species and people. The conventional water management strategies of damming and rechanneling rivers or concreting over floodplains (also known as 'grey infrastructure') have exacerbated the problem. At the same time, the UN estimates that around [two-thirds of wetlands and forests have disappeared](#) over the last century, threatening the already dwindling water available for consumption. Fittingly, the Chair of UN Water has called for the re-examination of potential NBS to help achieve water management objectives, while simultaneously delivering additional benefits vital to all aspects of sustainable development.



Many companies are broadening their water risk management strategies to engage within the watershed in which they operate. Site-based actions (i.e. ITF) remain crucial in businesses' response strategies. Over the last three years, however, risk management responses that exclusively focus on ITF actions have decreased and a growing number of businesses are, in fact, shifting from solely focusing on their own water efficiency and compliance to include **BTF** actions. Figure 2² shows how businesses in 2015 were already applying a BTF action in 52% of their overall water risk mitigation strategies. This rose to 56% in 2017, not radically but steadily. Pioneering businesses have probably spurred these BTF activities, having 'cleaned up their own backyards' and scrutinised the broader water cycle and watershed they rely on. Businesses seem to have realised that the key to sustainably tackling upstream water risks is to move beyond 'symptoms' in their own operations to the root cause of water risks, such as poorly managed abstraction of groundwater or unsustainable land management.

² The overall sample of the 49 companies includes 241 valid risk response strategies in 2015, 231 in 2016, and 221 in 2017. 'Valid' refers to a business that has disclosed information about their risk response strategy for a reported water risk. '100%' relates to the total amount of response strategies in a given year.

Most common ITF activities favoured by surveyed companies*:

- **Improving water efficiency:** the number one ITF activity companies opt for is to improve the overall use and to reduce the loss of water in operations (e.g. by investing in process efficiency). This increased from 55% (2015) to 63% (2017).
- **Reducing water pollution:** efforts to treat discharge water and reduce the pollution of water sources in the immediate vicinity of operations is high on the agenda (e.g. investing in water treatment plants on site). This increased from 25% (2015) to 41% (2017).
- **Securing water sources:** one third of respondents highlighted the importance of investing in additional sources of water supply, to increase the overall volume and diversify water sources for direct operations (e.g. additional pipes, reservoirs, dams and different water sources).
- **Assessing risks and footprints:** evaluations on operational performance occur in about a third of all response strategies. This decreased from 37% in 2015 to 29% in 2017.
- **Operational target setting:** the amount of companies setting operational targets jumped from 13% in 2015 to 22% in 2017.
- **Relocating operations:** relocation remains a marginal risk response option, with only 6% of companies opting for it in each year.

Choice of response strategies

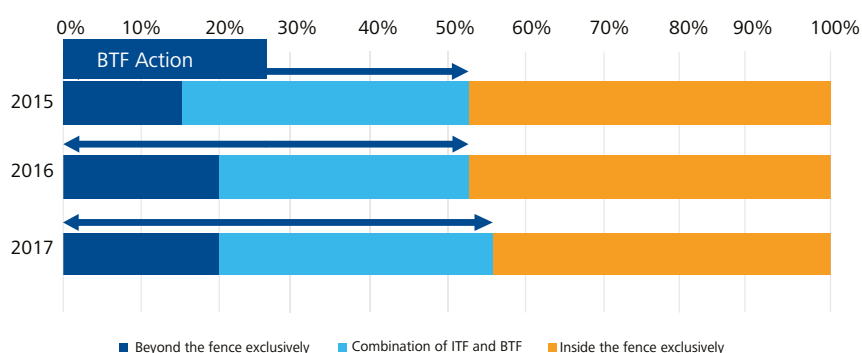


Figure 2 Choice of response types amongst surveyed companies. *Check the break out boxes for the most common ITF and BTF activities favoured by companies.

Moreover, the comparison of the median cost over the past three years shows that exclusive ITF responses are typically more expensive than BTF actions. Figure 3 shows costs for ITF activities, which tend to be four times higher than BTF actions and twice as high compared to a combined ITF+BTF approach. Assuming that local facilities and risk managers choose the response type that best mitigates their water risk, BTF seems to be more cost-effective.

Median cost (USD) per response type over three years

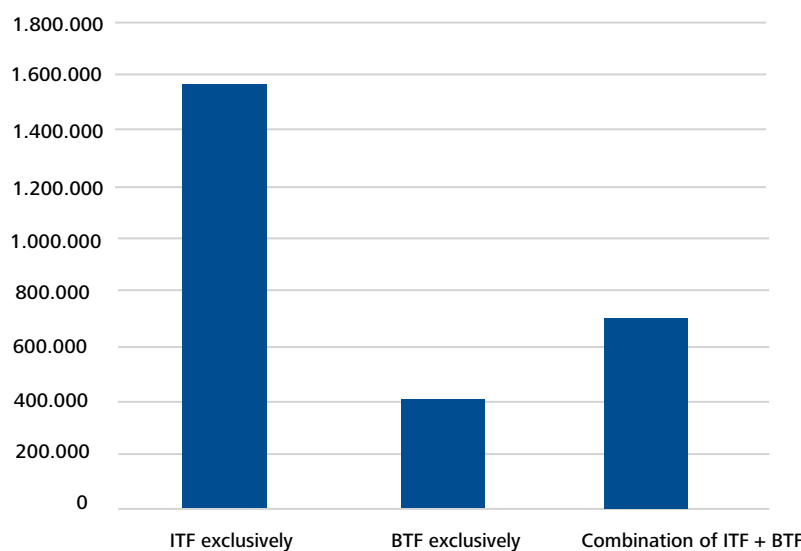


Figure 3: Median cost companies spent on each response type over the past three years (USD)

Appart from a less daunting price tag, and a longer-term risk management outlook, a BTF approach points to appropriate management of reputational and regulatory issues. This is because all BTF measures include a great deal of stakeholder engagement (more than 80% of all BTF responses focus on stakeholder involvement). Through activities such as stakeholder dialogues with communities and regulators, businesses can better understand and jointly address shared water issues.

* 100% refers to the total ITF responses in 2015, 2016 and 2017 (both response types of ITF exclusively and combination). Companies often opt for several activities, which is why the sum can add up to more than 100%.

Evolution of most common BTF responses among surveyed companies*

- **Stakeholder engagement is part of almost every BTF response and increasingly focuses on policymakers and other businesses:** active stakeholder engagement, such as those sharing the same watershed, was pursued in roughly 80% of all BTF responses from 2015-2017. The most commonly engaged-with stakeholders include:
 - Local policy makers and river basin authorities as the most important gatekeepers (increasing from 51% in 2015 to 64% in 2017).
 - Other businesses and industries (increasing from 19% in 2015 to 47% in 2017).
 - Local communities and NGOs (appearing in 36% of BTF risk responses in 2017 that featured stakeholder engagement).
- **Gathering watershed information remains popular:** despite showing a slight decrease (from 55% to 43%), gathering watershed-related information was the second most frequent approach used by companies after stakeholder engagement.
- **Investments in NBS is growing:** in general, companies are going beyond mere lip service by investing in real actions and infrastructure (throughout the three year period, BTF Action and Infrastructure investments steadily appeared around 35% of all BTF responses). Figure 4 illustrates the most reported BTF-actions and infrastructure investments:
 - NBS are rising in popularity (increasing from 32% in 2015 to 40% in 2017) and rose to become the most popular solution. Meanwhile, the use of grey infrastructure (damming and rechanneling rivers) decreased from 36% to 23%.
 - WASH solutions for nearby communities are popular, especially amongst mining companies. This is despite being less practiced compared to previous years (dropping from 43% to 39%).
 - Wastewater reuse from other utilities or using discharge water for irrigation purposes (23% in 2017).
 - businesses operating in the food sector often engage with local farmers in the effort to improve agricultural practices, such as more efficient irrigation systems (26% in 2017).
- **Setting watershed-based targets is still marginally implemented:** there is a slight uptick in setting watershed-based targets (from 3% in 2015 to 8% in 2017). While this is considered stewardship behaviour, it continues to be very marginally implemented. The most common targets set by surveyed companies typically focus on water efficiency in water scarce areas. The concept of [Context-based water targets](#) explains how to set local targets guided by the facility's fair share of available renewable water sources in the basin – thus ensuring sustainability.



* 100% refers to the total BTF responses in 2015, 2016 and 2017 (both response types of BTF exclusively and combination). When looking at strategies entailing BTF infrastructure investment and BTF stakeholder engagement, 100% refers to the total amount of responses involving a BTF Infrastructure and action or stakeholder engagement component, respectively. Companies often opt for several activities, which is why the sum can add up to more than 100%

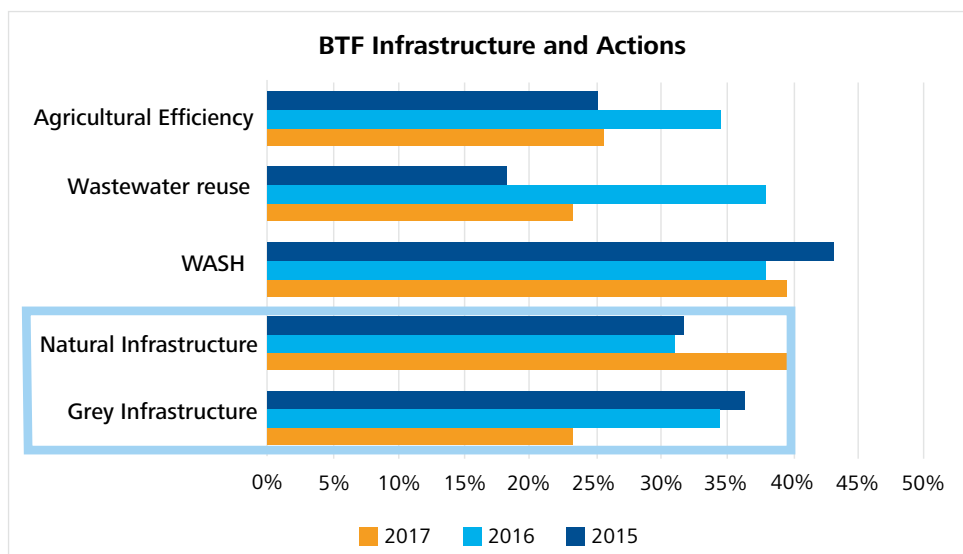


Figure 4: Evolution of activities in BTF Infrastructure and Actions over the past three years

Corporate investments in NBS for water risk management is an emerging trend regarding BTF-led water action, Nature is increasingly seen as an ally amongst businesses working to respond to water risks³. As climate change exacerbates water-related risks, investments in NBS can protect and secure businesses and make them more **resilient**. For example, floods, droughts and low soil moisture due to limited soil infiltration or shifting water flows are increasingly being addressed by investing in wetland restoration or reforestation.

NBS also create valuable carbon benefits. This is particularly attractive for businesses looking to manage their water risks and lower the carbon emissions within their own value chain, or certify products as 'carbon balanced'. Danone, for example, is restoring mangroves in India and Senegal through their livelihoods fund, in order to remove carbon and manage water (desalination and flooding). A large Swiss retailer has also invested, through carbon finance, in watershed reforestation together with its suppliers and smallholders in Kenya, to reduce sedimentation and improve local livelihoods.

Investments in nature-based solutions incentivises ownership and true collective action amongst critical water users, including farmers, industries, river basin authorities and cities. There is possibility to link the benefits from the NBS of local businesses to the water goals of international customers. Businesses are also able to capture cost savings and build resilience over the long-term by investing in natural infrastructure. This can be achieved along with grey solutions, such as dams. Overall, addressing water sustainably through NBS offers a robust message to external stakeholders, including investors, insurances, clients and communities.

³ Examples of NBS that support the management of water availability and quality include management of vegetation, soils and/or wetlands such as rivers and lakes; restoring forests, grasslands and natural wetlands; reconnecting rivers to floodplains; or creating buffers of vegetation along water courses.

How companies from surveyed industries have leveraged nature-based solutions for water



Food

NBS for water risk management can contribute to supply chain resilience, especially in agricultural supply chains. To-date, most businesses still focus on engineered technology such as efficient irrigation or dams and water reservoirs. However, surveyed companies have begun to leverage NBS to safeguard the availability of irrigation water (e.g. by planting trees to improve aquifer recharge or reconnecting rivers). NBS are also used to reduce agricultural runoff risks and increase soil moisture through cover crops. Unilever, for example, their suppliers to engage in boundary planting. Companies pioneering NBS have also begun to treat wastewater through constructed wetlands.



Beverage

ABInbev, for example, has turned to NBS for its bottling plants in Brazil and Bogota, where it reforested 100 hectares of degraded areas and local forests and preserved 120 hectares of forests remnants to reduce sedimentation. Engaging in NBS beyond its own direct operations has allowed ABInbev to build successful collaborations with a large range of stakeholders, including the Nature Conservancy, the Mayor's office, the Bureau of the Environment, the Brazilian Agricultural Research Corporation, the Brazilian National Water Agency and watershed committees.



Metals & Mining

Surveyed mining companies often mentioned NBS as part of their concession rights. It is a preferred approach for the closure of mining sites, for example – helping to increase vegetation and rehabilitate former mining sites. Meanwhile, in the construction materials sector, Holcim⁴, has been working on robust flood prevention through the [rehabilitation of quarries and construction of wetlands](#).

Conclusion: there is no 'one size fits all' to water risk-response solutions. Different approaches are required depending on the unique local water context. Our analysis shows that today, businesses combine both ITF and BTF actions, and work with several technologies and stakeholders to respond to the water risks to which their facilities are exposed. There are clear signs of growing interest and uptake, and we expect to see more as awareness of the benefits grows and better cost-benefit quantifications emerge.

Corporate BTF action is becoming increasingly important. NBS solutions offer one great way of containing water risks. As they offer sustainable mitigation of and resilience to (climate-change induced) water risks, as well as social, operational, financial and reputational gains - e.g. enhancing companies' social license to operate



⁴ Note: Holcim was not among the 49 companies surveyed



Looking Ahead: New Finance Mechanisms and Benefit quantification Methodologies Set to Drive Uptake in Nature-Based Solutions

While traditional, “grey” ITF initiatives are crucial and indeed, still have an immense amount to contribute to water security efforts, our analysis indicates that BTF approaches are beginning to appear much more attractive and may offer significantly greater, if non-traditional, returns on investment.

This trend looks set in one direction – up! Especially when you consider estimates in the latest [United Nations World Water Development Report](#), that agricultural production could be increased by around 20% worldwide if NBS to water management were used.

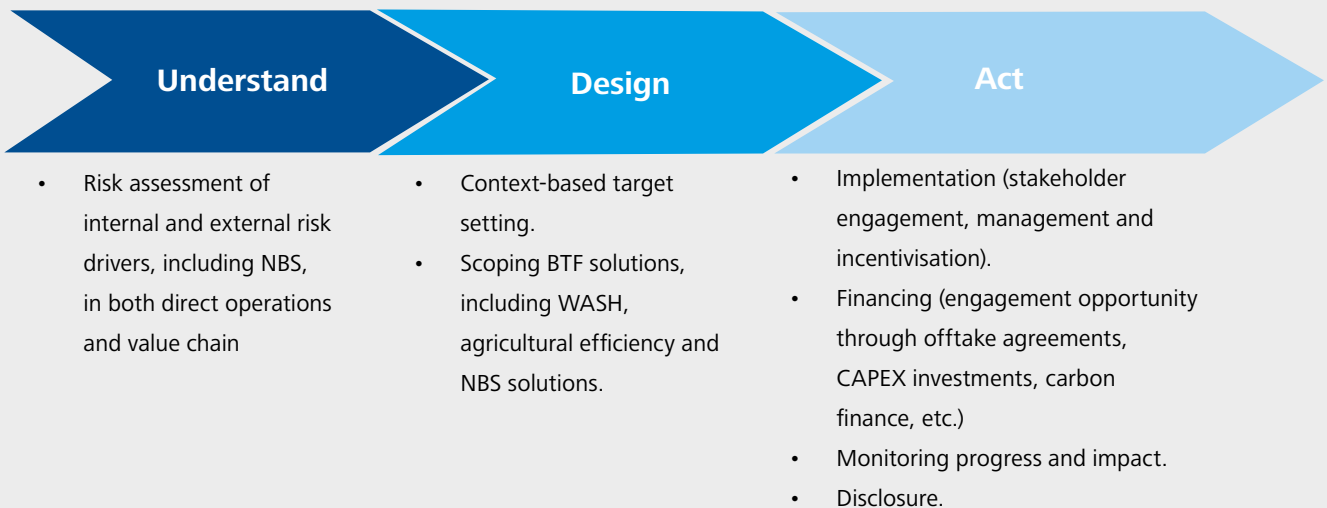
Increasingly, new financing instruments are being developed that enable companies to finance NBS using public and private capital. This includes preferential interest rates on short and long term loans, undertaking investments in NBS to lower insurance rates, and using public funding to de-risk private investments. By working collectively within a watershed, and across supply chains, corporates are collectively financing interventions, thereby lowering costs for each stakeholder.

[Water Infrastructure Criteria of the Climate Bonds Standard](#) is an example of best practice in sustainable investments in water infrastructure and green-grey hybrid systems. Unlike conventional pipes and pumps, NBS projects, to-date, have rarely been able to take advantage of bond financing from cities, companies and utilities. This has often posed a significant barrier to implementation. [The Water Consortium](#), a global group of climate finance and sustainability organisations, launched the Water Infrastructure Criteria of the Climate Bonds Standard to overcome this barrier. This new standard enables nature’s water infrastructure, such as watersheds, wetlands, and forests, to be better protected, managed and restored in order to generate water outcomes using certified green bonds – making these climate-smart solutions ripe for the investments they direly need.

The next frontier for some will be the establishment of methodologies to quantify the contributions these interventions make to water security at a local level. The growth of more formal decision-making tools to compare the cost-benefits of green and grey approaches will also become popular. While these interventions are important, sufficient evidence already exists, giving us the confidence to move forward with NBS at scale. The health of businesses is explicitly linked with the health of the basin, so before reaching for the next pump or pipe, it is worth asking what nature can do for the business.

The scope for innovation is unlimited and the value that is currently on the table is exciting. Smarter water management is a golden opportunity to enhance the social license to operate, build credibility in the water basin and maximise that credibility by taking collective action with stakeholders. As droughts, floods and declining freshwater ecosystems become the new 'norm', businesses should do all that they can to drive the transition to a water secure future. This includes reducing the dependence on freshwater resources, eliminating pollution and working in partnerships to enhance the landscapes upon which they depend.

South Pole's Offering



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The data used for this research came from CDP, formerly known as the Carbon Disclosure Project. South Pole would also like to thank CDP for contributing to this paper with insights on the future outlook of nature-based solutions in corporate water risk management.

