

## Chapter 30

# WWF water risk filter: Assess, respond & value water risks



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### 30.1 INTRODUCTION

With worsening water security across the globe, it is widely recognized that the private sector has an important role to play in safeguarding and sustainably using our shared freshwater resources. WWF is a strong advocate for responsible private sector engagement on water issues and a pioneer in the water stewardship space. Within this context, WWF developed a practical online tool, the WWF Water Risk Filter, to raise corporate awareness on water risks and drive effective water stewardship action.

Launched in 2012 in partnership with the German Development Finance Institution DEG, the WWF Water Risk Filter was one of the first online water risk assessment tools for companies and investors to assess water risks in their operations, supply chain and investments. However, the water risk assessment landscape has evolved considerably since. Not only has the use of water risk tools become more commonplace – contributing to a massive growth in awareness of water risks amongst the private sector – but new data and demands from users have also emerged. In response, WWF undertook a major upgrade of the WWF Water Risk Filter tool and a new version 5.0 was launched in 2018. The enhanced tool not only helps users to assess water risks using the best available data but also enables users to evaluate financial impacts (Value section) and identify contextually-appropriate responses (Respond section) to their unique water risk profile. In 2020, the tool was expanded to align with the Task Force on Climate-related Financial Disclosure (TCFD) recommendations by providing new climate and socio-economic pathway-based scenarios for 2030 and 2050.

This chapter aims to provide a comprehensive overview of the three key sections of the WWF Water Risk Filter – (1) Assess section, (2) Respond section and (3) Value section – along with practical examples of how

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it has been used by companies. As the tool is continually evolving, some important future developments and plans will be highlighted throughout this chapter.

## 30.2 ASSESSING WATER RISKS

Designed to be easy to use by non-water experts, the WWF Water Filter is a free online tool that enables companies and financial institutions to conduct comprehensive water risk assessments. More than 400,000 sites have already been assessed by over 6,000 users from a broad range of sectors – including food and beverage, textile, retail, mining and finance.

The WWF Water Risk Filter's risk assessment framework uses the well-recognized categorization of corporate water risks according to three risk types: physical, regulatory and reputational – as defined by the CEO Water Mandate in collaboration with multiple organizations (UN Global Partnership, 2018). Moreover, the majority of other water risk tools have also adopted the same risk assessment framework, which helps to ensure consistency and aligned approaches to water risk assessments.

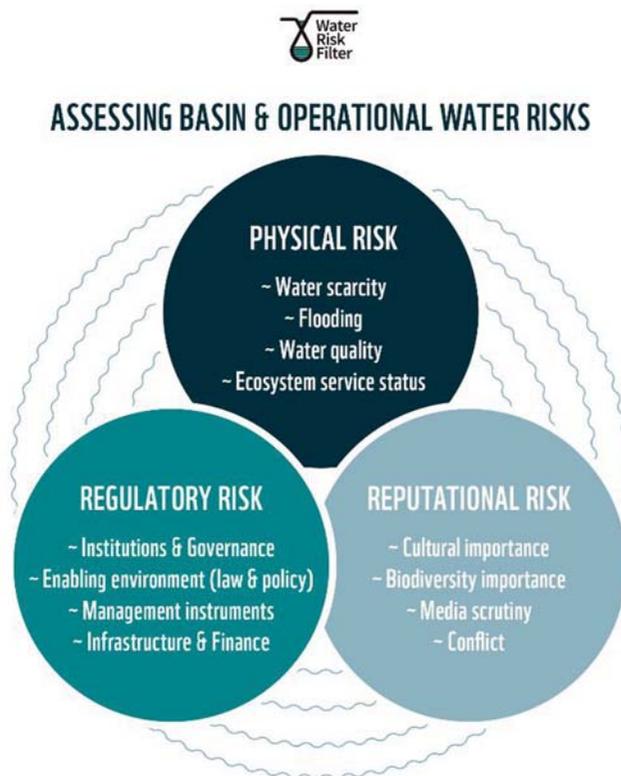
In general, water risk tools assess the physical, regulatory and reputational risks faced by a company due to the nature of the river basin in which its sites are located, referred to as basin risks. However, a company's risk exposure also depends on its performance and potential impacts on the basin, referred to as operational risks. The WWF Water Risk Filter was designed to assess the physical, regulatory and reputational risks for both basin and operational water risks as illustrated in Figure 30.1. (Key considerations and guidance points for companies and financial institutions conducting a water risk assessment are addressed in the report, 'Right Tool for the Job' (WWF/WBCSD, 2020) which is available online at [https://d2ouvy59p0dg6k.cloudfront.net/downloads/right\\_tool\\_for\\_the\\_job\\_1.pdf](https://d2ouvy59p0dg6k.cloudfront.net/downloads/right_tool_for_the_job_1.pdf).)

The WWF Water Risk Filter basin and operational risk assessment framework has a three-level hierarchy: (A) risk types, (B) risk categories and (C) risk indicators. This hierarchical framework ensures a more comprehensive coverage of all aspects of the three corporate water risks types: physical, regulatory and reputational risks. The following paragraphs describe in detail the basin and operational risk assessment framework of the WWF Water Risk Filter.

### 30.2.1 Basin risk assessment

The WWF Water Risk Filter's basin risk assessment tool evaluates three types of risk – physical, regulatory and reputational risk – which are further subdivided into 12 risk categories. These categories are measured according to 32 separate indicators to evaluate basin risk. (The number increased from 20 to 32 in version 5.0 to provide a more diverse range of best available data sets and to ensure better understanding of basin risk exposure.) The next paragraphs describe the three risk types and associated four risk categories (total of 12 risk categories) of the Water Risk Filter's basin risk assessment framework.

- (1) **Physical risks:** Companies can be exposed to a range of different physical water risks, which are classified in the tool into four categories relating to water scarcity, flooding, water quality and ecosystem services status.
  - **Quantity – Water scarcity:** Lack of water can result in significant impacts to a business such as production disruption, higher operating costs and growth constraints. Recognizing that there are many models and approaches to assess water scarcity, the tool contains several well-recognized global data sets under this category, including the WRI Aqueduct 'Baseline Water Stress' (Hofste *et al.*, 2019) and the WaterGAP3 'Water Depletion' (Brauman *et al.*, 2016);
  - **Quantity – Flooding:** Flood events can impact businesses' operations directly, as well as across their value chain, by closing operations, disrupting supply chains, increasing capital costs and



**Figure 30.1** WWF Water Risk Filter Risk Assessment: 3 types and 12 categories of basin and operational water risks. (Source: WWF (2020a, b) 'Water Risk Filter 5.0 Methodology' Download available at Water Risk Filter website <https://waterriskfilter.panda.org/en/Explore/DataAndMethod>. Accessed October 5 2020).

- reducing revenues from lower sales and/or output. The tool's flood occurrence risk is based on historical data from the University of Colorado's Dartmouth Flood Observatory (Brakenridge, 2019);
- o **Water quality:** Poor or degraded water quality can result in sites having no or limited access to water of good enough quality for their activities and performance, increasing operating costs (e.g., treating incoming water), and increasing regulatory and reputational scrutiny. The tool's Water Quality Index is based on the latest global data sets developed by the World Bank (Damiana *et al.*, 2019);
  - o **Ecosystem service status:** The degradation of ecosystem services can result in sites having restricted access in the long-term to the quantity and quality of water that they need for optimal performance of the sites. For example, the mapping of the world's free-flowing rivers (Grill *et al.*, 2019), which can also be used to determine the degree of rivers fragmentation, was used in the tool as a proxy for assessing ecosystem services status.
- (2) **Regulatory risks:** Most businesses thrive in a stable regulatory regime. Thus, regulatory water risk is heavily tied to the concept of good governance. The WWF Water Risk Filter adopted the framework and integrated the data sets used by UN Environment for monitoring countries' progress towards achieving UN Sustainable Development Goal (SDG) 6.5.1 on implementing

Integrated Water Resource Management (IWRM) (UN Environment, 2018). Regulatory risks are assessed according to four categories aligned with SDG 6.5.1 framework:

- **Enabling environment:** companies face higher regulatory risks when operating in countries with no or weak legal frameworks, policies and management plans on freshwater resources;
  - **Institutions & governance:** companies face higher regulatory risks when operating in countries with no or weak presence of official forum/stakeholder platforms and institution for integrated water resource management;
  - **Management instruments:** companies face higher regulatory risks when operating in countries with no or a low level of management instruments in place as well as monitoring data available; and
  - **Infrastructure & finance:** companies face higher regulatory risks when operating in countries with no or a low level of financing for water resource management and infrastructure.
- (3) **Reputational risks:** Although a company's reputational risks are primarily linked to its water management performance, there are some basin pre-conditions that make reputational water risk more likely to manifest.
- **Cultural diversity:** water is a social and cultural good, therefore it is critical to understand that businesses face reputational risk due to the importance of freshwater for local communities and indigenous people in their daily life, religion and culture;
  - **Biodiversity importance:** companies operating in biodiversity rich areas are exposed to higher reputational risks;
  - **Media coverage:** businesses face higher reputational risks when operating in countries or regions with higher global or local media coverage reporting on water-related issues; and
  - **Conflict:** WWF partnered with RepRisk (<https://www.reprisk.com/>) which collects data on documented negative incidents, criticism and controversies that can affect a company's reputational risks.

The 32 global risk indicators are based predominantly on publicly available external, peer-reviewed global data sets. Each original data set is first classified into the WWF Water Risk Filter's risk score categories ranging from a 1-to-5 value: risk score level 1 represents no or very limited risk while risk score level 5 represents very high risk. The data sets are subsequently aggregated at the basin or country level. This process creates a series of basin risk indicators out of the raw basin data sets.

In addition to the global water risk data sets, WWF has developed and integrated several higher-resolution data sets into Water Risk Filter 5.0 to provide country-specific local risk indicators for conducting risk assessment at a finer scale. More specifically, the tool currently has local data sets available for the following countries and regions: South Africa; Brazil; Colombia; Chile; Europe Region; Great Britain; Spain; Hungary; and Greater Mekong Region (Thailand, Vietnam, Laos, Cambodia). Additional local data sets will be integrated into the tool in the coming years.

As new data sets are constantly emerging, the WWF Water Risk Filter's underlying global and local data sets are reviewed and, as appropriate, updated on an annual basis with latest available data. Detailed information on the WWF Water Risk Filter risk assessment framework and latest underlying data sets are available online in the WWF Water Risk Filter's methodology documentation (WWF, 2020a)

Based on the WWF Water Risk Filter basin risk assessment framework, in 2020 the tool launched new climate and socio-economic pathway-based scenarios of water risk for 2030 and 2050. This latest development aims to enable companies and investors to perform scenario analysis to better understand future water risks and opportunities, as recommended by the Task Force for Climate-related Financial Disclosure (TCFD, 2020).

To tackle the complexity of water risks, the Water Risk Filter scenarios comprehensively cover all types of water risks, ranging from TCFD-focused acute physical risks (e.g. flooding) and chronic physical risks (e.g. scarcity, water quality, and ecosystem services status) to the less commonly explored regulatory and reputational water risks, which can cause significant potential impacts if overlooked. Ultimately, the outputs of scenario analysis should be used to evaluate whether the company's current strategy is adequately resilient or will need stronger resilience planning, considering the future risk levels. The WWF Water Risk Filter Brief (WWF, 2020b) provides an overview of the new WWF Water Risk Filter scenarios and guidance on how scenario analysis can help companies and investors to understand future water risks and build resilience in an uncertain future.

### 30.2.2 Operational risk assessment

A site's operational risk exposure is based on the nature of its activities and water management performance. In the WWF Water Risk Filter tool, operational water risks are assessed by completing a short or detailed operational risk questionnaire developed by WWF through an iterative stakeholder consultation process in order to capture the most important aspects of operational water risk. The framework of the operational risk questionnaire is aligned to the basin risk assessment framework and contains a similar three-level hierarchy comprised of: (A) risk types, (B) risk categories and (C) risk indicators. The detailed assessment questionnaire contains 22 risk indicator questions whereas the rapid assessment questionnaire consists of only 10, both covering all three risk types: physical, regulatory and reputational.

Table 30.1 provides an overview of the WWF Water Risk Filter's short version operational risk questionnaire framework. While the short version questionnaire will provide a rapid operational risk assessment, the higher the quality of input data, the better the quality of the assessment output will be. Therefore, users are encouraged to complete the full version questionnaire for more comprehensive operational risk assessment results. Recognizing that different sectors face different types of operational risks, efforts are currently underway to develop tailored versions of the operational risk questionnaire for specific sectors: agriculture, textile & apparel, forestry, and pulp and paper products.

### 30.2.3 Case study: how EDEKA uses the WWF water risk filter to assess water risks across their supply chain

Since 2009, WWF has a transformational partnership in place with EDEKA, the leading German food retailer. As a first step in EDEKA's water stewardship work with WWF, the WWF Water Risk Filter was used to assess water risks at a global scale across their supply chain. More specifically, the physical, regulatory and reputational water risks for over 2,300 own-brand products were analyzed.

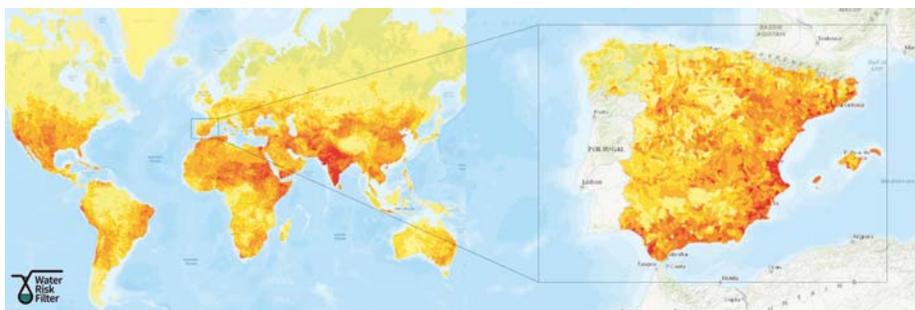
In addition to a global water risk assessment, EDEKA and subsidiary Netto Marken-Discount conducted finer scale assessments using the high-resolution data sets for Spain in the WWF Water Risk Filter as illustrated in Figure 30.2. EDEKA and WWF have a joint project with citrus fruits growers in southern Spain and the high-resolution data sets provided a more detailed understanding of the local water risk exposure faced by growers.

The results of continuous risk assessments with the WWF Water Risk Filter at global and local level helped EDEKA and Netto Marken-Discount to:

- increase their engagement with their suppliers on water risks and stewardship;
- identify hotspots where they could focus their efforts to reduce high water risks by implementing on-the-ground Alliance for Water Stewardship (AWS) projects; and
- increase customer awareness by including water risk assessments in the approval process for WWF co-branding of their organic own-brand products.

**Table 30.1** Three-level hierarchy of the short version operational risk questionnaire framework: (A) risk types, (B) risk categories and (C) operational risk indicator.

Risk Type	Risk Category	Operational Question/Risk Indicator
Physical Risk	(1) Physical: Water Scarcity	O1. In which ways does the site use water?
		O2. How important is the current and future use of water quantity and quality for operating/processing at this site?
	(2) Physical: Quality	O3. Is it necessary to treat/purify the water the site withdraws before its use in operations?
		O4. Is it necessary to treat/purify the water the site withdraws after its use in operations?
		O5. What is the potential impact of the site's operations on downstream water quality in terms of physical, chemical and biological parameters?
Regulatory Risk	(3) Regulatory: Enabling Environment (Policy & Laws)	O6. Relative to other water users in your local catchment (~50 km radius), does this site face heavy water-related regulation and legal enforcement?
	(4) Regulatory: Institutions and Governance	O7. Is the site always in compliance with legal waste water quality standards?
Reputational Risk	(5) Reputational: Community Conflict	O8. Relative to other water users in your local catchment (~50 km radius), would you consider the site a large water user/polluter?
		O9. Relative to other water users in your local catchment (~50 km radius), is the company associated with the site a recognized brand (to the local public)?
		O10. How would you describe this site's general water management/stewardship maturity?



**Figure 30.2** WWF Water Risk Filter Global Risk Map (left) and WWF Water Risk Filter High Resolution Map for Spain (right). (Source: WWF (2020a, b) Water Risk Filter Maps, 'Map Region: Global' and 'Map Region: Spain'. Accessible at Water Risk Filter website <https://waterriskfilter.panda.org/en/Explore/Map>. Accessed October 5 2020).

### 30.3 RESPONDING TO WATER RISKS

The Respond section of the WWF Water Risk Filter tool was borne out of WWF's experience of working with companies who were either requesting further guidance on how to proceed from their risk assessment results, or who in some cases were selecting responses to their water risks that did not align with or match their water risk exposure. Thus, the Respond section was developed with the aim of helping to guide companies towards taking contextually appropriate response actions given the water risks that they are exposed to.

By dynamically linking risk assessment results, the WWF Water Risk Filter's Respond section provides users with recommended response actions to address their unique water risk exposure. It enables users to quickly identify and prioritize response actions that adequately mitigate their water risks and help them set contextually appropriate targets. While WWF recognizes that global data sets are not always sufficiently accurate to be prescriptive in dictating response actions, the WWF Water Risk Filter's Respond section offers a strong starting point for guiding contextually appropriate actions, which can then be further refined and informed based on local data, knowledge and expertise.

Recognizing the existence of well-established water stewardship frameworks, the WWF Water Risk Filter's response actions are based on and aligned to leading frameworks and standards such as the Alliance for Water Stewardship, CEO Water Mandate's Water Stewardship Toolkit, Ceres Aqua Gauge, CDP Water Security and UN Sustainable Development Goals 6. This enables users to better understand and take action within the broader water stewardship ecosystem.

The online component of the WWF Water Risk Filter's Respond section offers users a customized and ranked list of recommended actions according to their unique water risk profile. All actions are classified under 10 categories, which are a hybrid of CEO Water Mandate's Water Stewardship Toolkit, CDP's Water Security Questionnaire, Ceres' Aqua Gauge and WWF's experience. Furthermore, users can filter and select actions according to different criteria of interest. For example, actions can be filtered according to the implementer (actions to be implemented by site managers at the site level vs. actions to be implemented at the corporate level) or the company's water stewardship maturity level (actions for beginners vs. well established companies). Table 30.2 provides examples of WWF water risk filter's recommended response actions.

The water risk assessment space has focused primarily on understanding water risk exposure. However, the enhanced WWF Water Risk Filter enables both companies and investors to understand not only water risk exposure, but also account for response in a more comprehensive manner by understanding how strong corporate response is as well as how appropriately aligned their responses are to exposure. By taking such a risk-response approach, companies and investors can adopt a more nuanced approach to water risk that also helps identify opportunities for value creation.

While water risk remains the key driver to mobilize corporate action and is the main focus of the Water Risk Filter tool, WWF aims to drive a new narrative on water stewardship to capitalize on opportunities, collaboration, resilience and value creation (WWF, 2018a). By leveraging its risk assessment and respond section, the WWF Water Risk Filter is seeking to evolve to provide new ways for companies and investors to identify water-related opportunities and invest in bankable projects as part of WWF's Bankable Water Solutions initiative (WWF, 2018b).

#### 30.3.1 Case study: H&M group

H&M Group and WWF have been working together on water stewardship since 2011. Developing a comprehensive understanding of water risks across H&M Group's operations and suppliers using the WWF Water Risk Filter tool was a critical first step.

**Table 30.2** Examples of WWF water risk filter's recommended response actions per water stewardship response categories.

<b>Water Stewardship Response Category</b>	<b>Example of Response Action</b>
(1) Water Awareness & Internal Capacity	Review or conduct a formal study on future water resources scenarios including water supply and quality resulting from higher demands within the basin and how it may affect the company's operations and value chain
(2) Strategy & Business Planning	Calculate how water can affect the site's financial value and integrate into decision-making related to opportunity identification
(3) Collective Action	Engage with peer companies in regionally specific water-related benchmarking
(4) Disclosure & Reporting	Publicly disclose the site's efforts to address shared water challenges
(5) Water Governance	Join a water-related forum (sectoral or intersectoral) as for example: CEO Water Mandate, AWS, WBCSD, ICMM (mining), SAC (apparel), BIER (beverage), etc.
(6) Operations, Performance Measurement & Management	Install or upgrade water treatment systems at the site to treat water to the necessary levels (e.g. reverse osmosis)
(7) Policies, Standards and Plans	Set performance standards and goals through publicly available water policy/statement that align to the water-related SDGs
(8) Risk Awareness	Assess the energy risks (including price increases, brownouts, blackouts, etc.) to the site of shared water challenges in the region (consider the water risks facing the regional energy grid)
(9) Stakeholder Engagement	Identify stakeholders, their water-related challenges and the site's sphere of influence
(10) Value Chain Engagement	Collect and monitor data related to effectiveness of suppliers' water management practices

More recently in 2019, water data from over 1,100 sites within of H&M Group's value chain was used with WWF Water Risk Filter's Respond section to provide both specific local water stewardship recommendations for individual sites as well as recommendations to inform internal regional water stewardship strategies. In addition to this, WWF is working with H&M Group to create a customized sector-specific questionnaire and set of bespoke sector-specific response actions that are tailored to the Apparel and Textiles sector.

Moving beyond assessing to responding to water risks, H&M Group is working actively in water stewardship projects in high priority river basins in China and Turkey. For example in the Taihu Basin in China, WWF, H&M Group and other international partners are providing trainings to increase their knowledge of water risks, regulatory changes and impact reduction opportunities. Moreover, this project has a strong component focused on collective action: textiles brands participation leverages their business partners and stakeholders towards the transformation of the supply chain/textile sector. H&M Group is encouraging other textiles brands to join global industry efforts on water stewardship to work 'beyond the factory fence' by helping to build multi-stakeholder solutions to water issues and support



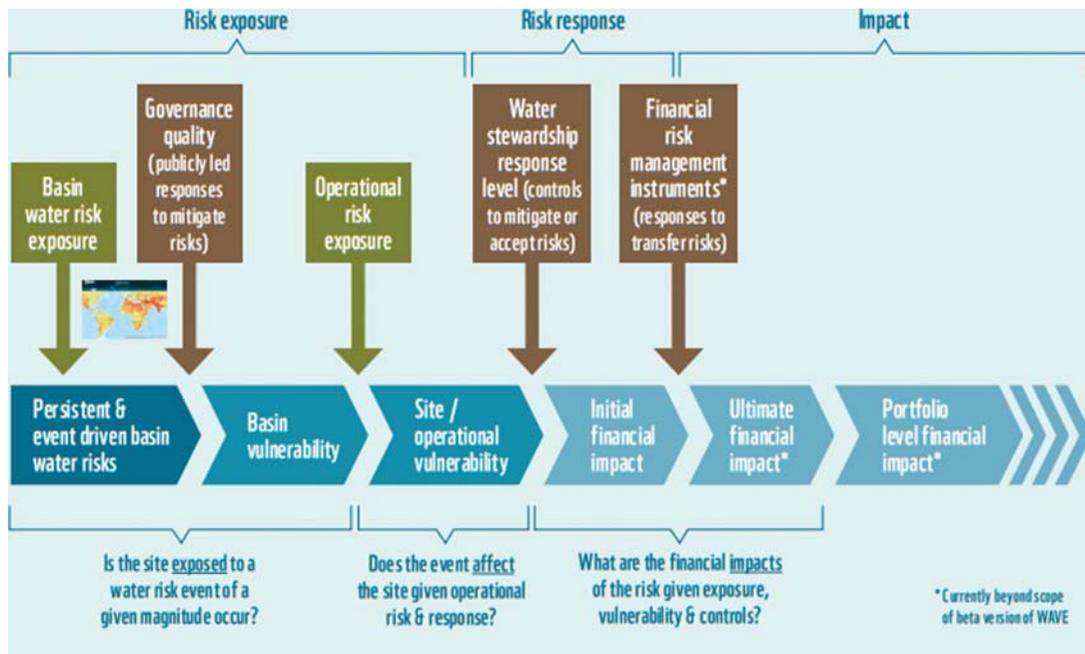
**Figure 30.3** Based on WWF's Water Stewardship Framework, H&M adopted a five-step water stewardship strategy as described in this diagram. (Source: [WWF \(2015\)](#) WWF Water Stewardship Framework)

stronger water governance in high water risk regions. [Figure 30.3](#) illustrates the five-step water stewardship strategy adopted by H&M.

### 30.4 VALUING WATER RISKS

The financial impacts of droughts, floods, more stringent water regulations or the loss of social license to operate can be significant for businesses, reaching up to US\$38 billion in financial loss based on CDP's 2018 Global Water Report ([CDP, 2019](#)). Investors and businesses are increasingly seeking ways to analyze the potential financial impact of water-related risks. Building on the WWF & IFC co-developed framework on the relationship between water risk, the value of water and water stewardship ([WWF/IFC, 2015](#)), WWF developed a database to catalogue all existing valuation tools and approaches that have emerged over the last 15 years. Launched in November 2019, the Valuing Water Database, embedded in the WWF Water Risk Filter, helps users navigate the array of valuation tools and approaches in order to identify the most suitable tool for the job. As explained in the series of WWF Reports 'Linking Water Risk and Financial Value' ([WWF, 2019](#)), WWF made the decision to develop its own valuation tool to address some of the gaps and limitations amongst existing valuation tools. In 2018, Water Foundry joined the effort to co-develop the Water And Value (WAVE) tool.

By combining data from the user, the WWF Water Risk Filter, CDP and more detailed probability data, WAVE aims to evaluate how water risk exposure currently affects financial value, and may potentially affect it in the future (CDP Global, 2019). The WAVE tool leverages Water Risk Filter data on basin and operational risk exposure, and accounts for site vulnerability and response to calculate financial impacts organized around a series of costs and revenue categories outlining WAVE's logic model ([Figure 30.4](#)). Whilst some user financial information is required to be entered, the WAVE tool is powered by CDP's Water Security database with the objective to draw upon corporate water disclosure



**Figure 30.4** Process of translating water risk to financial impact in the WAVE Tool. (Source: WWF, 2019)

information to: (1) identify linkages of key water risk events to different types of financial impacts reported by companies and (2) inform financial impact magnitude ranges.

One of the key benefits of WAVE is that it can help users build a clear business case for the need to invest in mitigating a company's water risks. Too often the argument that water procurement is a low cost is used to justify a lack of action on water issues. However, water risk events such as droughts and floods can have significant financial impacts on capital and operational expenditures. WAVE offers a tool for asset-level water risk evaluation that can convert risk exposure into financial impacts suitable for financial analysis purposes. Moreover, the future goal is to enable WAVE to more explicitly handle scenarios to enable users to stress test information as recommended by the TCFD.

### 30.5 CONCLUSION

WWF's Water Risk Filter tool has evolved considerably since it was first launched in 2012. By shifting beyond risk assessment, WWF's Water Risk Filter has developed into a tool that can support private sector efforts to mitigate the rising tide of water risks and challenges.

The tool's evolution is a continuous journey – with new data availability arising out of new technologies, momentum on the TCFD initiative and WWF's new narrative on water stewardship on value creation – the Water Risk Filter will continue to expand and grow to help drive corporate water stewardship to the next level.

The tool provides a business case for more sustainable use of water by highlighting the risks of inaction. With this innovative tool, WWF will continue to mobilize private sector engagement and aims to raise the level of business sector commitment to supporting a transition to a water secure world for all.

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