BRIDGING THE GAPS IN ESG WATER DATA TO CREATE OPPORTUNITIES

A DISCUSSION PAPER FOR INVESTORS

February 2022

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WWF is the world's leading conservation organization. Founded in 1961, WWF is active in nearly 100 countries and has over 5 million supporters. WWF's mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth. Outside of its more traditional conservation efforts, WWF also works with banks, insurers, regulators and others to ensure the financial system recognizes nature's true value. By demonstrating the value of nature and the links between financial and environmental risks, we aim to redirect the flow of finance away from activities that harm our planet toward those that heal. We're demonstrating how risks like climate change, water scarcity and biodiversity loss affect investments - and how to respond.

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INTRODUCTION

Environmental, Social and Governance (ESG) data and screening have emerged over the past few decades as a key mechanism to influence both Socially Responsible Investing (SRI), and increasingly, mainstream investing. ESG integration is the most used SRI approach globally, and was estimated to be associated with around USD$25 Trillion Assets Under Management in 2020[1]. Investors use ESG data, among others, to inform risk management, investment strategies, and to inform their engagement with investee companies on environmental performance. As the unfolding climate crisis has unfolded, investors have increasingly sought stronger data and understanding of various ESG factors, including water. However, the ESG community has adopted limited comprehensive approaches to water issues due to the complex nature of water, including its differences from carbon emissions and its linkages to biodiversity.

Though "climate" has received the lion's share of investor attention over the past decade, investors are increasingly focussing on other environmental topics. This was highlighted by the launch of the Taskforce on Nature-related Financial Disclosures (TNFD), a global market-led initiative which aims to provide financial institutions and non-financial companies with a strong understanding of their nature-related dependencies, impacts, risks and opportunities - including biodiversity and water.

Water issues, in particular, remain central to how the impacts of climate change will be felt; too little water, too much water, and changes in water quality, as well as the secondary impacts (e.g., forest fires due to more frequent droughts; coastal flooding driven by a mix of sediment loss and groundwater-abstraction driven land subsidence, rise of water borne diseases and human health impacts, etc.). Indeed, water-related "natural" disasters are increasingly being exacerbated by the combination of loss of nature, human overexploitation and climate change. Economically-speaking, water-related natural disasters remain the leading cause of loss of life and property[2]. As populations grow, especially in urban areas that are often located in proximity to rivers, the impacts and dependencies on water and the value at risk will only increase. For example, the 2021 July flooding across Western Europe led to more than $13 billion in losses and claimed the lives of more than two hundred people[3]. Investors that care about climate change, need to understand water. Simply put: failure to properly address water issues creates risk of both financial and non-financial losses.

1 Global Sustainable Investment Alliance (2021) Global Sustainable Investment Alliance Review Available online: http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf Accessed: Nov 17, 2021

2 United Nations (2021) Water-related hazards dominate list of 10 most destructive disasters. Available online: https://news.un.org/en/story/2021/07/1096302. Accessed: September 22, 2021.

3 2021 floods: UN researchers aim to better prepare for climate risks https://unric.org/en/2021-floods-un-researchers-aim-to-better-prepare-for-climate-risks/

This paper does not seek to provide an overview of the state of play on ESG[4], but rather to briefly outline some of the current weaknesses of water-related ESG data and systemic challenges around data availability, and to encourage a shift in thinking by investors. Moreover, the report aims to highlight how water-related ESG data need reconsidering to maximize their usefulness to investors, from informing shareholder engagement to providing insights on accounting for water risks (see box 1) and opportunities as material investment issues.

BOX 1. SOME DEFINITIONS OF RISK AND WATER RISKS

There are many ways in which risk, and more specifically water risk, can be defined. ISO 31000 defines risk as "the effect of uncertainty on objectives" and risk management as "coordinated activities to direct and control and organization with regard to risk"[5]. World Bank defined drought risk as the potential loss of life, injury, or destroyed or damaged assets that could occur to a system, society, or community in a specific period of time, determined probabilistically as a function between drought hazard, exposure, and vulnerability."[6] WWF similarly defined nature-related risk as the intersection between threats, exposure and vulnerability[7], while the WWF Water Risk Filter defines water risk as the combination of physical, regulatory and reputational water hazards that manifest at the basin and operational level.

Risk can be descriptive, semi-quantitative (typically risk categories) or fully quantitative (probabilistic calculations) with many businesses and companies using the middle-approach (semi-quantitative) for its relative ease of application to prioritize response. Building on the above, for the purposes of evaluating ESG water risk frameworks and aligning with the way businesses define risk, water risk refers to the uncertainty of a negative outcome driven by the combination of water risk exposure and water risk response. This paper hence splits water risk into two core areas: (1) Water risk exposure and (2) Water risk response.

Water risk exposure being defined as the combination of the probability and severity of an event, the exposure to the event and a site/corporation's vulnerability, where it is recognized that "response" can mitigate some level of vulnerability.

Water risk response is referred to as "water management", in cases where response is internal only or "water stewardship" where response encompases both internal and external actions in a basin.response encompases both internal and external actions in a basin.

THE CURRENT STATE OF AFFAIRS WITH ESG & WATER: MISHANDLING A COMPLEX ISSUE

Despite how water is often portrayed in ESG data, it is not an issue that can be captured in a single metric like volume. Instead, water is a multifaceted issue (e.g., scarcity, quality, access to water, WASH, etc.), that is both dynamic through space and time (i.e., changes by location and week to week) and bounded with a "Goldilocks zone" (i.e., generally speaking, too much is not good; too little is not good). Furthermore, water issues are to some extent confined to geographical areas, and bind actors and assets within those areas with interdependencies. This makes it a very different issue from, for example, greenhouse gas emissions which broadly speaking are: a single issue (i.e., CO2e), are not limited to a specific location or time (i.e., GHGs can be emitted or sequestered anywhere on the planet), and are unidirectional (i.e., more emissions are bad, fewer emissions are good).

4 We would recommend academic research such as Gillan et al. (2021) or Halbritter & Dorfleitner (2015) for reviews of such affairs.

5 For more information, please see: https://www.iso.org/iso-31000-risk-management.html

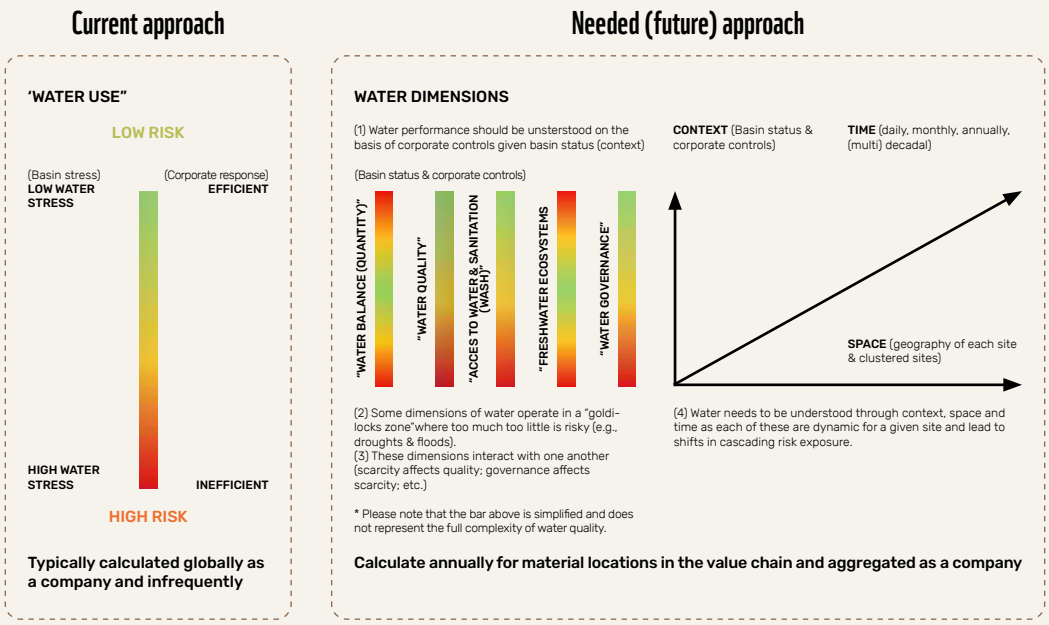
6 Reference World Bank (2019). Assessing Drought Hazard and Risk: Principles and Implementation Guidance. Washington, DC: World Bank, based on the widely accepted definitions related to disaster risk used in the Sendai Framework (UN General Assembly 2016)

7 WWF (2019) The Nature of Risk: a framework for understanding nature-related risk to business. Available online: https://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf_nature_of_risk_final2.pdf Last accessed January 6, 2022.

These notions are illustrated in Figure 1 which contrasts the traditional one-dimensional view of water (left) versus the multi-faceted, contextual view (right). The five dimensions noted broadly align with the SDG6 targets, and it is worth noting that with water being a shared, common pool resource, that is also a human right, water governance becomes especially important, yet remains a poorly explored dimension of water.

Context - the local environmentally-, socially- and economically-specific issues within a defined geography in which a given site is located - is a critical term in the water space. Understanding the context of each given part of a value chain, as well as each part's financial and water materiality, is necessary to understand exposure and response. This raises many challenges regarding knowledge of value chains and asset-level data, which is a recognized issue within the ESG sphere.

FIGURE 1: CURRENT AND DESIRED APPROACHES TO UNDERSTANDING WATER



In short, water is a much more complex issue than carbon, and current approaches lack nuance - most notably around context, resulting in ESG water data lacking meaning. For investors, this leads to an inability to accurately evaluate investments, both in terms of risks and opportunities.

For the purposes of this report, we will differentiate between "water reporting frameworks" and "ESG risk rating frameworks". For the former, we opted to select several of the most commonly referenced frameworks as presented in Table 1: GRI (303 - Water & Effluents), SASB, TCFD (specifically CDSB's application guidance for water-related disclosures) and CDP. Due to the limited amount of publicly available information, the approaches to water risks of ESG risk rating frameworks could not comprehensively be compared in this report. The information that is readily available from mainstream ESG data providers covers topics such as: water use efficiency, water stress, toxic effluents/emissions/ water quality, and then broader issues such as community conflict, human rights, monitoring, reporting. Similarly, several companies include climate risk assessment/management, but rarely is this water-explicit. This information suggests that performance is not evaluated using a nuanced approach to water context, as detailed in the limitations section on the next page.

TABLE 1: OVERVIEW OF WATER METRICS IN SUSTAINABILITY REPORTING FRAMEWORKS

Reporting framework	Water risk/exposure metrics	Water management response metrics and information
GRI 303[8]	303-1 (information on water sources & impacts; assessment process/ tools); NB: some of the contextual dimensions are picked up under water management responses.	303-1 (shared efforts; targets); 303-2 (effluent discharge quality); 303-3 (withdrawals by source type and status; additional context – NB: water stress uses either WRI "baseline water stress" or WRF "water depletion"); 303-4 (discharge by body; substances of concern; additional context); 303-5 (consumption – overall & for water stressed areas; additional context)
SASB (e.g., FB-AB – Food & Beverage where water is material)[9]	FB-AB-140a.1 (water withdrawals by stressed basin – per WRI "baseline water stress")	FB-AB-140a.1 (water withdrawals); FB-AB-140a.2 (description of management risks, mitigation strategies and practices)
TCFD (CDSB's Application guidance for water-related disclosures)[10]	REQ-3 (risks and opportunities); REQ-6 (outlook – future water scenarios)	REQ-1 (governance responsibilities); REQ-2 (management policies, strategy & targets); REQ-4 (sources of impact – e.g., withdrawals, consumption, discharge); REQ-5 (performance & comparative analysis – i.e., contextualization of results)
CDP[11]	W1.2 (% of operations measuring aspects); W2.1 (detrimental water impacts); W2.2 (water fines & violations); W4.1/4.2 (water risk impact identification); W7.3 (climate scenario analysis); NB: some of the contextual dimensions are picked up under water management responses (especially W3.3)	W1.4 (value chain engagement); W3.3 (water risk assessment); W4.3 (water opportunity identification); W6.1 (water policy); W6.2 (board governance); W6.3 & W6.4 (management governance); W6.5 (public policy influence); W6.6 (water risk response information); W7.1 (strategic integration of water); W7.2 (water expenditure); W7.4 (water pricing); W8.1 (targets)

Building on some of the issues outlined above, the shortcomings of the current approach begin to become clear. Current ESG approaches to water, be it reporting or ratings, are limited both in terms of both appropriately capturing water risk exposure and corporate response toward risk exposure.

8 For more information, please see GRI's standard on water and effluents here.

9 For more information, please see SASB's webpage here.

10 For more information, please see CDSB's water-related disclosures webpage here.

11 For more information, please see CDP's water homepage here.

LIMITATIONS ON ESG'S CURRENT APPROACH TO RISK EXPOSURE

Beginning with water risk exposure, there are several ways in which current approaches are insufficient:

1. ESG data tends to explore only one linear dimension of water risk exposure: Most ESG risk rating frameworks – as well as companies reporting on water risk exposure, continue to measure "water risk" exposure through the use of a single basin water stress metric. While it is important to recognize that reporting frameworks such as CDP, GRI and TCFD have made steps - including issuance of guidance - in recent years to extend the scope of context related to water risk exposure, companies have largely continued to use "water stress" for reporting. There is a lack of nuance between the use of "water stress", "water scarcity", "water availability", "water accessibility" with terms sometimes being used interchangeably, despite different meanings (see box 2). Furthermore, even within one of these terms (e.g., "water stress"), there are different approaches with different data and different models. Accordingly, most basin risk metrics only account for typically one issue "water stress", and within that one data set, that uses one model (Figure 3). This paints a very specific picture, which may differ from other models and interpretations, resulting in non-comparability between ESG assessments (and often within a given ESG data providers assessment, given varying methods used within corporate disclosure). The climate equivalent would be using a single climate model and scenario – something that the IPCC does not do. The focus on a single linear dimension also does not adequately account for future environmental or adaptation tipping points including those related to water, nor the interlinkages between environmental systems. Examples of environmental tipping points are abrupt changes in the functioning of the biosphere as a result of transgressing an ecosystem's carrying capacity, such as the sudden surge in flooding, wildfires and droughts in British Columbia, linked to shifts in climate patterns (atmospheric rivers), lower temperatures (pine beetle infestations), and land use practices (logging, loss of wetlands, building in deltas, etc.).

2. ESG water data lacks standardized temporal and spatial scales: While mainstream water risk tools (e.g., WWF Water Risk Filter, WRI Aqueduct) have generally aligned around a common geographical basin structure (i.e., basin delineation)[12]. Given the nested nature of hydrological basins/water, there is no common basis for reporting or interpretation of the data. Simply put, there is no way to compare water data consistently because basin names, sizes, shapes and reporting periods differ. Moreover, the spatial and temporal granularity of many water data sets is insufficient to inform an appropriate understanding of context. For example, when WASH data are only reported nationally (despite vast differences between urban, rural, and workplace environments), it is difficult to interpret meaning. Similarly, nationally reported water scarcity can create averages out of very wet (e.g., Chile's Patagonia) and very dry areas (e.g., Chile's Atacama Desert) resulting in an inaccurate average value. Likewise, water issues such as drought and flood are typically a matter of days, weeks or months (under rare circumstances, years) as they represent deviation from the norm or climatology. If water data sets are not operating in near-real time, these exposure events, and suitable responses, are difficult to assess. Furthermore, for informed long-term assessments, multiple temporal scales should be considered, including historic, near-real time, and future/projected water data.

12 Both the WRF & Aqueduct employ HydroSHEDS. For more details see: https://www.hydrosheds.org/

BOX 2. UNPACKING THE NUANCE OF WATER TERMS

Often considered synonymous, the terms water stress, water scarcity, water availability, and water accessibility all differ, as do the notions of water withdrawal (or abstraction) and water consumption. While the latter terms are relatively easily distinguished (withdrawal is taken out and put back; consumption is taken out and not put back), the former terms can create considerable confusion.

Water scarcity typically involves a comparison between volumetric use (often consumptive use) and volumetric availability, but can seek to account for social, economic, and environmental dimensions. Damkjaer & Taylor (2017)[13] highlighted that there are more than 150 different water scarcity indicators, and their paper also highlights many of the socio-economic dimensions of many of the water scarcity metrics out there.

Water stress, which is perhaps one of the most commonly referred to concepts related to water scarcity, has both a specific and general, colloquial meaning. Specifically, the term was originally coined by Falkenmark and Lindh (1974)[14] and later mainstreamed by Falkenmark (1986)[15] through the Water Stress Index (WSI) - a specific metric of scarcity that looks at the number of people reliant upon a given annual supply of water. "Water stressed" in that context becomes a specific "level" of water scarcity (annual withdrawals are between 20% and 40% of annual freshwater supply, where supply is a function of mean annual river runoff - and ignores soil moisture which is critical for agriculture, while "absolute water scarcity" is the next level beyond that - i.e., greater than 40%). The WSI is one metric of water scarcity. WRI's Aqueduct Water Risk Atlas has continued to popularize "water stress" largely via another specific metric: Baseline Water Stress (BWS) which also uses a ratio of total withdrawals to renewable supply in a given area (but only accounts for water quantity, ignoring water that may be overly contaminated as supply)[16]. In keeping with this, CDP Water whilst recognizing the lack of a universal definition, frames "water stress" by " identifying water stressed areas based on physical scarcity[17]".

However, in other circles, "water stress" is also colloquially used to describe not only volumetric-driven stress, but also quality-driven stress. In 2017, this led the CEO Water Mandate[18] to define these terms as follows:

> **Water scarcity:** the volumetric abundance, or lack thereof, of freshwater resources [that accounts only for availability, or volumetric supply vs. demand].
>
> **Water stress:** the ability, or lack thereof, to meet human and ecological demand for fresh water; compared to scarcity, "water stress" is a more inclusive and broader concept [that accounts for availability, accessibility, and water quality]

Within these CEO Water Mandate definitions, water availability (whether water is there or not) is differentiated from water accessibility (whether water can be accessed even if it is there).

In summary, water stress (and water scarcity to a lesser extent) is a term that always needs to be questioned: it could be a general notion relating to an inability to meet human or ecological needs, a specific metric (like WSI or BWS), or a specific level within a metric (e.g., "water stressed" within the WSI).

13 Damkjaer, S., Taylor, R. The measurement of water scarcity: Defining a meaningful indicator. Ambio 46, 513–531 (2017). https://doi.org/10.1007/s13280-017-0912-z

14 Falkenmark M, Lindh G. How can we cope with the water resources situation by the year 2015? Ambio. 1974;3:114–122..

15 Falkenmark M. Fresh water: Time for a modified approach. Ambio. 1986;15:192–200.

16 Reig, P., T. Shiao and F. Gassert, 2013 "Aqueduct Water Risk Framework." Working Paper. Washington, DC: World Resources Institute. Available online at http://www.wri.org/publication/aqueduct-waterrisk-framework

17 CDP (2022) Glossary. Available online: https://guidance.cdp.net/en/guidance?cid=35&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=Guidance&tags=TAG-597%2CTAG-607%2CTAG-599 Last accessed, March 11, 2022.

18 For more information, please see the CEO Mandate's terminology webpage here.

LIMITATIONS ON ESG'S CURRENT APPROACH TO RISK RESPONSE

Moving on to response, there are additional ways in which current approaches are insufficient:

1. ESG risk frameworks are not accounting for water context in sufficient nuance to inform strong vs. weak practice: When it comes to water, "good" is a function of context. Within current ESG water assessment frameworks, water is still handled as a "management issue" and largely evaluated through an one-dimensional "efficiency" lens. There is a lack of recognition around the more recent corporate framing of water stewardship and the fundamental recognition that water cannot be "solved" through efficiency, but rather must account for actions beyond the operational footprint of a facility that fit with local context. Indeed, there is evidence that water use efficiency actually drives greater ecological problems in river system[19]. Even if we were to embrace efficiency as a proxy of good water stewardship, achieving strong water use efficiency in a basin with abundant water resources (even overabundant conditions – i.e., flooding) does not provide particularly useful information as it is an indicator of inefficient use of resources (i.e., spending on fixing a "problem" that doesn't require fixing). In such locations, flood resilience measures would be a better proxy of a superior performing company. [...] Water scarcity cannot be solved through water efficiency gains of a single actor. To understand the ongoing risk exposure to a facility, it requires an understanding of basin-level response and collective actions in a basin. While efforts in recent years have extended response into aspects of governance, targets and controversies, there are still significant gaps on water strategy and collective action. In particular, basin-level response actions rarely manifest in reporting or ratings, and where they do, they lack standardized metrics - an issue that needs greater attention in the future. In short, for water, understanding the quality of corporate response is always dependent on the context.

2. Current corporate water responses explore only a limited (and potentially non-material) scope of value chain impacts: Evaluating water risk requires evaluation of the local context, which necessitates the use of asset level data. Most companies and ESG data providers are aware of and report their operational locations, but often lack an understanding of their full value chain, let alone an assessment informed by the materiality of water to a given part of the value chain. Water is typically most material in the raw materials portion of the value chain, which is rarely reported or evaluated within ESG water assessments. For example LVMH has calculated 80% of their water footprint is in their agricultural value chain; likewise SAB-Miller[20] (now AB InBev) estimated that 90% of their water footprint lies in their crop production. Virtually no companies consider the water footprint of their Scope 2 or Scope 3 energy consumption.

3. ESG water data are largely not accounting for strategy, value creation or opportunity and thus corporate responses are also not addressing this: As hinted at in the limited approach to reporting and rating water responses, there remains a dearth of data on how companies are mobilizing their water work in service of their corporate strategies, and moreover, how they're incorporating value and opportunities. CDP requests some data on this front (W4.3 and W7.1) but it is not sufficiently reflected in ESG risk frameworks. Water continues to be framed largely as an impact-related risk to be "mitigated" as a problem. What is needed, going forward, is for companies (and investors) to see water as an opportunity that can create new forms of value and revenue for companies and their shareholders. Approaches to valuing water-based opportunities, and details on how products and services are solving water challenges and creating value are rarely requested, reported or rated, leaving investors in the dark.

19 Linstead, C. (2018) The contribution of improvements in irrigation efficiency to environmental flows. Frontiers in Environmental Science. Available online: https://www.frontiersin.org/articles/10.3389/fenvs.2018.00048/full

20 Read the full report here.

CASCADING RISKS

A key theme related to both risk exposure and corporate response, is the lack of consideration of local *"cascading risks"*. The term cascading risks refers to the phenomenon where the manifestation of risk extends beyond a single operation, and affects or creates new risks to practices of other stakeholders. This practice is inherent to water, given that interventions in water upstream in a basin are naturally felt downstream. Therefore, water risks can often not be fully mitigated by operationalizing response at asset level without collective action. For example, deforestation related to animal agriculture in the Amazon is changing weather patterns across the Southern Brazilian Amazon through shifts in atmospheric (or "flying") river patterns[21]. A recent paper calculated that these changes will result in future productivity losses of US$1 billion annually for downstream soy producers[22]. Diversified investors with exposure to both industries have a clear incentive to assess and mobilize action on such cascading risks, which is currently not captured by ESG data. This requires a comprehensive understanding of all dimensions related to water risks at asset level, and related responses of investors and other stakeholders relevant to the cascading effect. There are clear examples of companies acting as stewards of basins, addressing cascading of water risks beyond their own operations, thereby contributing to long-term mitigation of water risks for all stakeholders (and thus operations or supply chains of other potential investees) in the basin. For example WWF's work with actors such as AB Inbev[23], Coca-Cola[24] and H&M[25], or Deltares' work with Kimberly-Clark[26].

RECENT EFFORTS TO ADDRESS THE GAPS

Despite the concerns noted above, it is also important to recognize that recent years have seen a renewed, and stronger, effort on how water is handled within ESG reporting and rating frameworks. In particular, some reporting frameworks have evolved to better reflect the contextual nature of water. The 2018 revision of GRI 303 incorporated extensive references to context, and even in SASB's work, there was an attempt to include greater focus on areas facing water stress. CDSB's recently released (August 2021) Application guidance for water-related disclosures also continues to push towards greater context and an improved set of issues. Similarly, in 2018, ISS released a report on "Dealing with Water Scarcity: an ESG perspective"[27] which did recognize several of the issues noted. Sustainalytics/Morningstar has also increased their capacity and work in the water sphere over the course of the past two years, with gradually growing sophistication in how the topic is addressed. FitchRatings also released a report in November, 2020 on how water issues translate into credit risk for investors[28]. This report covered a broad range of water related issues like floods, droughts, resource competition, water quality, insufficient infrastructure, and supply chain disruptions. Broadly speaking, the reporting framework actors have pushed a more nuanced approach to water than the entities behind the rating frameworks.

The "residual water risk" logic that both Sustainalytics/Morningstar and MSCI employ does have potential to be harnessed for part of this story. Indeed, in 2019, WWF published guidance for the Financial Sector in which a framework was proposed (further adapted in the following section in Figure 2). Strong, adaptable frameworks are a key foundational element in driving towards stronger approaches. The exposure-response & residual risk framing is logical for companies, investors and analysts alike.

Despite these positive trends and elements, there still remains much work to be done to address the issues flagged above, especially with respect to aligned and robust approaches to water stress, geographic scope, materiality, and embracing opportunity. Without significant changes, and improved standardization, investors will continue to lack the information necessary to drive informed decisions and in turn, create more accurate market signals.

21 https://www.fao.org/in-action/forest-and-water-programme/news/news-detail/en/c/1190278/

22 Leite-Filho, A.T., Soares-Filho, B.S., Davis, J.L. et al. Deforestation reduces rainfall and agricultural revenues in the Brazilian Amazon. Nat Commun 12, 2591 (2021). https://doi.org/10.1038/s41467-021-22840-7

23 For more information on WWF's work with AB Inbev, see here.

24 For more information on WWF's work with Coca-Cola, see here.

25 For more information on WWF's work with H&M, see here.

26 For more information on Deltares' work with Kimberly-Clark, see here.

27 Full ISS report here.

28 Special report: ESG in Credit - Water Issues. FitchRatings, November, 2020. For full report, see here.

RECOMMENDATIONS

Building on the challenges noted above, the following sets out a series of recommendations for how to tackle these challenges and pragmatically account for water in ESG data to enable better decision making by investors:

1. Need for aligned methods & metrics for water ESG efforts to enhance comparability: With varying definitions, geographies, and metrics, comparing company X to company Y is impossible. To drive comparability, the ESG community will need to begin to work on more consistent approaches. There are several immediate actions which could support this effort[29]:

a.An aligned, multi-model approach to water scarcity: Dropping "water stress" (which conflates scarcity and water quality) in favour of water scarcity, and adopting a multi-model, peer reviewed data sets, including climate change and socio-economical scenarios, would help all parties.

b. Aligned multi-model approaches to other water issues (within SDG6): While water scarcity is perhaps the key starting point, water quality, extreme events (flooding, drought), WASH/water-borne diseases, freshwater biodiversity and water governance issues, all also need greater alignment. Building on efforts to support SDG6 reporting offers the possibility of driving win-win efforts.

c. An aligned spatial scale (hydro-geography): HydroSHEDS[30] (granular, but not named), and the WMO Basins & Sub-Basins (WMOBB)[31] (named, but insufficiently granular) have been the de-facto standards on this front, but we still lack a consistent, named set of basins at a more granular level on a global basis (roughly 1000-2000 basins). McGill University is exploring the development of HydroSHEDS 2.0 with an expanded set of named basins with rough spatial equivalency, which would help considerably to align basin reporting.

d. Consistent approach to evaluating water risk exposure: Water risk exposure (see box 1) is built around two components, namely: hazard and vulnerability. For the second component, which is often based on available socio-economic data in a certain geography, it is equally important to align methodologies to calculate vulnerability in a way that comparison of final risks between user groups (belonging to different generations, sectors, or societal status) is possible.

e. Common water-management measurement methodologies: Ongoing efforts to align "how" companies measure and report water (e.g., consumption, withdrawal, recycling, etc.) remain useful. For example, ISO has several standards in this realm[32], but they are not widely used for reporting at present.

f. An aligned, data-driven value chain water materiality assessment: Ensuring that companies in given sectors are reporting on the most material portions of their value chains when it comes to water. While several such matrices exist, much of the materiality mapping to date (e.g., SASB, CDP) has been built off of expert opinion. We believe a common, data-driven version would be beneficial to all. Such a matrix, rooted in observed empirical data, could begin to also better account for sectoral vulnerability.

g. Consistent approaches to evaluating water stewardship response: Building on the fact that water use efficiency is woefully inadequate as a proxy for good management, new approaches are needed to better benchmark and evaluate response, *including collective responses*. CDP has substantial data on corporate response, but other approaches from standards (e.g., Alliance for Water Stewardship) through to benchmarked contextual performance (especially aligned to basin status and thresholds, as is intended in the Science-Based Targets for Water effort). Such efforts would go a long way to improving investors' shared understanding of cumulative actions to enhance resilience. Alignment on water governance engagement (as noted in #2 below), as well as tracking corporate financing (e.g., corporate green bond issuance for water) and improved approaches to evaluate how water is being accounted for in corporate strategy would also help investors significantly.

29 For guidance on the different tools which have emerged to help companies and financial institutions understand and respond to water challenges and risks, please see WWF & WBCSD's 2020 report, Right Tool for the Job: Tools and Approaches for Companies and Investors to Assess Water Risks and Shared Water Challenges

30 See HydroSHEDS webpage here.

31 See more on WMO Basins & sub-basins here.

32 See for example ISO 7027 on water quality turbidity

2. Need to get beyond water (stress) risk and into collective action of resource governance: While water stress, and the risks that it brings, have been a useful narrative to shine a spotlight on water challenges, we undoubtedly need to move ESG reporting and ratings beyond not just water stress, but also beyond water risk. Risk is only one dimension of water and its opposite is water opportunity. Developing products and services that directly tackle the world's water challenges is a dimension of the water and ESG sphere that has not received nearly enough attention. Reporting and rating frameworks need to dig much more extensively into reviewing how companies are creating value from water challenges, and how their water strategies are tied into longer term corporate strategies. Equally important, given the fundamental role of water governance in ensuring long-term sustainability of water resources, there needs to be a much deeper push into evaluating how corporate actors are engaged in advocacy and water governance. While CDP does track this (W6.5), additional approaches and greater transparency around corporate advocacy, political lobbying, public positioning on issues, etc. are needed. We continue to see political lobbying result in persistent regulatory foot-dragging on issues of non-point source pollution, discharge exceptions, and overallocation of water. For example, in the EU, many member states have continued to employ exemptions to the Water Framework Directive on the back of industrial lobbying, while in much of the world, agricultural water pollution remains exempt from water quality regulations. This industrial lobbying is undermining progress and delaying solutions and is critical to address if we are to improve the shared water challenges of SDG6. Collective action that can shift basin governance, including advocating for strong policies, is required to fundamentally reduce basin water risk and create water opportunities. Accordingly, ESG actors also need to go beyond evaluating internal corporate governance (e.g., board oversight), and pay greater attention to the role of companies in external water governance.

3. Need for transparency on asset-level data to support accountability throughout the value chain: With the repeated refrain "water is local", it is essential that companies increase transparency across their supply chains, beginning with data collection. While many companies have data on direct operations (and growingly, tier 1 suppliers), driving back down the value chain, as well as potentially "up" the value chain (to customers) remains less common. Many ESG data providers are pushing towards such data, but it will be critical to have to effectively evaluate water risk and opportunity – especially as we look to the two far reaches (raw materials & customers). This would also align with 1f above (an aligned sector materiality matrix) and pick up the issue of landscape-level exposure noted earlier under cascading risks.

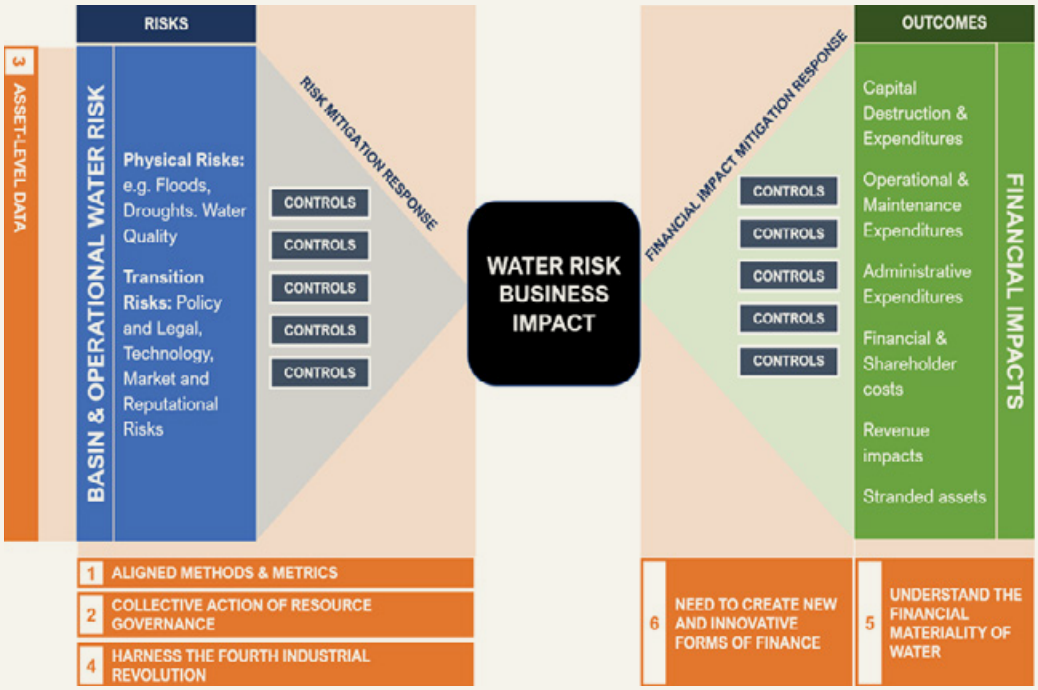
4. Need to harness the Fourth Industrial Revolution for water to assess systemic risk at the basin scale: As noted earlier, the array of new data emerging must form a core part of how more spatially and temporally dynamic water risks are managed. Distributed sensor arrays and low-cost satellite imagery continue to increasingly provide better water data, and in turn, evidence for vulnerability, effective resilience measures and corporate accountability. Translating such data into useful information for investors will remain a key role for actors like Deltares and WWF (e.g., via efforts like Global Water Watch), with accessibility and transparency remaining critical to ensure trust in new high quality data. Moreover, such data need to inform the exposure of clusters of asset level data at the basin level and how the array of actors in a given context are exposed to systemic, cascading water risk.

5. Need to enhance the ability of investors to understand the financial materiality of water: Much of the discussion on water risk remains qualitative, but there is the need to better translate "risk" into "financial materiality". To do so, requires the conversion of water risk in qualitative terms into quantifiable financial impacts to enable greater use by investors. CDP has undertaken efforts in this space, but inconsistency of reporting has made the data difficult to work with. Similarly, there have been some tools that have endeavoured to unpack this issue at the site level (e.g., WWF's & Water Foundry's Water And ValuE/WAVE tool - but they require more development) and at the stock level (e.g., Equarius Risk Analytics' work on waterBeta). These all represent strong steps, but are held back in part due to the other issues noted here.

6. Need to create and support new and innovative forms of finance on the back of water ESG work: Lastly, it is not only the ESG reporting and rating agencies that must innovate, but also financial institutions themselves. Stronger ESG approaches must be encouraged through growing use and leveraging of efforts into new financial products and services. Creating market signals to reward strong performance on water is important and financial institutions have a key role to play in this regard in driving the required water ESG transformation.

Figure 2 below outlines a potential risk response framework, including where the community needs to build out efforts to strengthen water ESG efforts. The 6 recommendations presented above are incorporated in this figure.

FIGURE 2: WWF'S WATER RISK-RESPONSE FRAMEWORK FOR THE FINANCIAL SECTOR AND ITS RELATION TO THE 6 RECOMMENDATIONS



To forge a pathway towards sustainability of water resources, the finance sector will need new ESG data. Financial Institutions need to consider arrays of assets in a much more systematic manner, and begin to give greater thought to how new, distributed data sets can be leveraged. Equally important, the sector needs to give much greater attention to how companies are playing a role in water governance at the political level. Failure to pick up these points will result in ongoing, and perhaps even greater, exposure to basin level risks that will cascade from one sector to another and through value chains.

SUMMARY & PROPOSED PATHWAY FORWARD

Water is not carbon. It is not a single issue needing to be reduced as quickly as possible. Water is local. Water is multi-dimensional in terms of the issues it covers. Water is also dynamic, both spatially and temporally, and is a shared resource for local communities, the private sector, and nature itself. It represents a fundamental human right. Water is also the front edge of how climate change will impact the financial wellbeing of investors and as such, is something that needs to be handled appropriately by the ESG community, academia, and the private sector alike. Collaboration is needed to ensure that the right questions are being asked, sufficient data is being provided by companies, and correct actions are taken by both companies and investors.

Existing frameworks, be they reporting or rating, have not yet come to terms with the nuances of water. An ongoing focus on water stress, poorly handled spatial and temporal variability, a limited angle on response (which has failed to unpack opportunity, strategy and value), and a limited approach to scope and context have led to an inability to effectively interpret water data, focus on the right issues within the value chain (materiality), and ultimately an inability to compare companies when it comes to water performance. Nevertheless, efforts are underway to improve these gaps, and a growing push towards context in recent years, along with greater data, holds promise for stronger water and ESG performance.

This work would offer a few broad recommendations to meet key needs, in particular:

1. Aligning methods and metrics for water ESG efforts to enhance comparability

2. Getting beyond water (stress) risk and into collective action of resource governance

3. Building out asset-level data to increase traceability and accountability throughout the value chain

4. Harnessing the Fourth Industrial Revolution for water to assess systemic risk at the basin scale

5. Enhancing the ability of investors to understand the financial materiality of water

6. Creating market signals by supporting new and innovative forms of finance on the back of improved water ESG efforts

As immediate next steps we encourage asset managers to:

A. Advocate to reporting platforms and ESG data providers, and financially support efforts, to move towards the recommendations noted above.

B. Undertake efforts to better understand water, and re-think approaches to how cascading water risks, and resilience at a broader scale (e.g., basin level) may be financially material in a way not previously considered, and incorporate considerations into corporate and sovereign risk screening processes.

C. Begin the process of developing new and innovative forms of finance that encourage companies to adopt measures that enhance water and climate resilience (e.g., resilience bonds to finance nature-based solutions to extreme weather events), and further integrate water into existing offerings. Additionally, by encouraging investment into companies which focus on the water issues outlined in this paper, investors can stimulate the transition towards water management approaches which better reflect real-world challenges.

D. Engage companies via dialogue, shareholder resolutions and other means to ensure water is being considered in material portions of the value chain, that water is being linked to corporate strategy, that the company is working to strengthen external resource governance, and that the value of water is being more strongly accounted for in decision making from the board level to the factory and project level. Ceres' Aqua Gauge Tool[33] offers a structured framework for such engagement, but specifically, some of the following questions can be posed:

How are your efforts on water supporting your corporate strategy?

Where in your value chain are you emphasizing efforts on water and why? Is it material to risk and opportunity?

For exposed sites and portions of the value chain, how are you undertaking efforts to mitigate basin risks that are driven from shared water challenges?

How is the value of water being explicitly accounted for in decision making in your company?

33 For more information, please visit Ceres' Aqua Gauge website here

With a stronger, more aligned approach to water, ESG-related actors can help to ensure a strong, positive contribution to the achievement of, among others, multiple Sustainable Development Goals, like 6, 11, 13, 14 and 15. It is up to all of us to ensure that financial markets have access to material information on water risk and stewardship response so that they can help drive the change that our planet, and all of humanity, desperately needs.

GLOSSARY

Adaptation tipping point: An adaptation tipping point specifies the conditions under which the status quo, a policy action or a portfolio of actions will fail. An adaptation tipping point is reached when the magnitude of external change is such that a policy no longer can meet its objectives, and new actions are needed to achieve the objectives[34].

Baseline water stress: In line with the definition of the World Resources Institute (WRI), baseline "water stress measures the ratio between total water withdrawal and available renewable surface water supply".[35]

Basin delineation: The geographical boundaries that define an area (i.e., basin, watershed, catchment) that aggregates water to a common outlet. The HydroSHEDS[36] project sought to create universal, global basin delineations at various, nested scales using digital elevation data and modelling from earth observation data.

Cascading risks: The phenomenon where the manifestation of risk extends beyond a single operation, and affects or creates new risks to practices of other stakeholders.

Context: The local environmentally-, socially- and economically-specific issues within a defined geography in which a given site is located

Drought risk: In line with the definition of the WRI, "drought risk measures where droughts are likely to occur, the population and assets exposed, and the vulnerability of the population and assets to adverse effects".[37]

Effluent discharge quality: The quality of discharged wastewater.

Exposure: See "Risk"

Financial materiality: An issue or a topic is financially material when it can have a substantial impact on the financial performance of an organization.

Hydro geography: The geography of rivers, seas and other water bodies.

Materiality: See water materiality or financial materiality.

Risk: The probability of an event X impact severity X a site/corporation's vulnerability. Risk is typically articulated in qualitative framing (high to low), but also sometimes quantified in financial terms. Also referred to as risk exposure in this paper.

The Fourth Industrial Revolution: In line with the definition of the World Economic Forum, the Fourth Industrial Revolution is a digital revolution "characterized by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres".[38]

Tipping points: The critical point that, when exceeded, leads to significant changes to the system that are often not reversible.

WASH: An acronym standing for **W**ater, **S**anitation & **H**ygiene. More broadly this is referred to as access to clean drinking water, access to sanitation and awareness/training on hygiene.

Water accessibility: Having access to supply of water to meet human and environmental demand.

Water availability: The quantity of water available that can in principle be used by humans and the environment. For example, water can be available but not accessible if the required infrastructure to transport it from one location to another is not in place.

34 https://www.deltares.nl/en/adaptive-pathways/

35 https://www.wri.org/aqueduct/food

36 https://www.hydrosheds.org/

37 https://www.wri.org/aqueduct/food

38 https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

GLOSSARY

Water balance: The state when the amount and timing of water use, including whether the volumes withdrawn, consumed, diverted and returned at the site and in the catchment are sustainable relative to renewable water supplies and are maintaining environmental flow regimes and renewable aquifer levels.

Water consumption: Water that is taken and not put back to the original water source.

Water context: The local environmentally-, socially- and economically-specific issues within a defined geography in which a given site is located.

Water governance (in comparison to corporate governance): In line with the definition of the OECD, water governance is the "range of political, institutional and administrative rules, practices and processes (formal and informal) through which decisions are taken and implemented, stakeholders can articulate their interests and have their concerns considered, and decision makers are held accountable for water management".[39]

Water materiality: An issue or topic has high water materiality when it can have a substantial impact on water resources.

Water management: Internal corporate actions to respond to water risk. Related to water stewardship (see below).

Water opportunity: Developing products and services that directly tackle the world's water challenges.

Water risk: Risk that stems from a combination of basin and operational water context for a given site.

Water scarcity: Having an insufficient supply of fresh water to meet human and environmental demand.

Water stewardship: Corporate response to water risk which encompasses both internal and external actions in a basin. Related to water management (see above). Water stewardship entails the use of water that is socially equitable, environmentally sustainable and economically beneficial.

Water stress: See "Baseline water stress"

Water withdrawal: In line with the definition of the OECD, water withdrawal is defined as "freshwater taken from ground or surface water sources, either permanently or temporarily, and conveyed to a place of use".[40]

39 https://www.oecd.org/regional/OECD-Water-Governance-Indicator-Framework.pdf

40 https://data.oecd.org/water/water-withdrawals.htm#:~:text=Water%20withdrawals-,Water%20withdrawals%2C%20or%20water%20abstractions%2C%20are%20defined%20as%20freshwater%20taken,to%20a%20place%20of%20use

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