



# FROM BLACK TO BLUE



**Moving the climate focus beyond carbon  
and on to water:** Understanding water-stress  
exposure in an investment portfolio



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# Moving the climate focus beyond carbon and onto water

## Understanding water-stress exposure in an investment portfolio

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A lot of work has gone into identifying how carbon can be measured, managed and invested in for tomorrow's green economy. But there is more to the 'E' in environmental than carbon. Here we ask: "what is the next big thing in the environmental space?" For us, it's water.

This research looks at incorporating water issues systematically into an investment portfolio. We have found that understanding water-related risks is a vital component of evaluating the long-term sustainability risks and opportunities of an investment portfolio.

However, today there are limited tools available for investors to properly assess water-related issues methodically, many of which are still developing. In this paper we outline the who, what, where and why of existing water-related frameworks and provide four key takeaways we have distilled from existing water-related data sets.

We have concluded that investment frameworks and data sets for water that are currently available inhibit investors from converting insights into action or into making meaningful investment decisions.

Instead we propose a decision tree approach to help sort companies within an investment portfolio.

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## Introduction

### Water and the Task Force on Climate-Related Financial Disclosures (TCFD)

While significant attention has been paid to measuring and managing carbon-related exposures in investment portfolios, less progress has been made on the topic of water. In 2017, the TCFD, released recommendations for incorporating climate reporting into financial disclosures.

An underlying premise in the TCFD report is that climate-related physical and transition risks will likely manifest themselves primarily and broadly in the form of three themes:

1. Greenhouse Gas (GHG) emissions
2. Effects on energy production and usage
3. Effects on water availability, usage and quality

Much of Russell Investments' responsible investing and environmental, social and governance (ESG) research has focused on addressing the TCFD's first and second themes i.e. GHG emissions and energy production. For the first time, in this paper, we've turned our research onto the third theme – water.

#### Risks related to water

The risks related to water are multi-dimensional and distinct from carbon:

##### Water risks are multi-dimensional

What do we mean by water risk being multi-dimensional? Many of us understand the concept of *financial* risk broadly as the threat of loss to asset owners – let's call this the first and main dimension. Indeed, the impact of water-related risks on asset owners can cause substantial financial loss.

Whereas for water (and many other ESG-related investment topics), there is a broader, and very critical, stakeholder risk to consider on top of that first dimension. That's because the impact of water-related risks on communities is potentially catastrophic, given water's place as a critical input to all facets of life. It is this that makes risks related to water multi-dimensional. And this type of water risk is clearly top of mind for many. As noted in the World Economic Forum's annual Global Risks Report, Water Crisis has been included in the top five of global risks in terms of impact for the past four consecutive years.

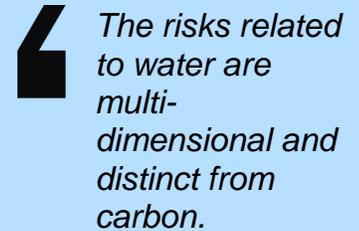
In addition to these dimensions, there is the multi-dimensional nature of the data itself. Carbon emissions, for example, are only one-dimensional in a data sense, as they simply look at volume i.e. what is the total amount of carbon emitted?

Water risks, however, can be thought of as two-dimensional: not only do we need to know how much water was used (i.e. volume), but we also need to plot that against where the unit of water was used (location). We will expand more on why the location dimension matters for water in the rest of this paper.

##### Water risks are distinct from carbon – introducing physical risks

Water risks are distinct from carbon because carbon is generally considered as a transition risk. Transition risk includes the regulatory, reputational and technological disruption risks associated with climate change. Water-related risks, on the other hand, primarily relate to physical risks associated with climate change. Physical risks can be broken down further into direct and indirect. Physical risks include direct damage to assets while indirect risks cover supply chain disruptions and water availability, for example.

As awareness of water risk grows, so too has the availability of tools to incorporate water exposure into an investment process. As a starting point, we reviewed the various industry initiatives related to water. In this research, we begin by sharing the major insights gathered from that review. Next, we provide an assessment of the current state of water data. Finally, we conclude with a roadmap for turning these insights into action.



*The risks related to water are multi-dimensional and distinct from carbon.*

## Chapter 1: Who, what, how and why of water-related investment themes

### Analyzing water-related frameworks: Who, what, how and why

Many frameworks touch on water, including:

1. The Task force on Climate-related Financial Disclosures (TCFD)
2. The Sustainability Accounting Standards Board (SASB)
3. The Global Reporting Initiative (GRI)
4. United Nations Sustainable Development Goals (SDGs)
5. The Carbon Disclosure Project (CDP)
6. Ceres' Investor Toolkit

Given the amount of work that has already been devoted to the topic of water by these organizations, we ask: "what collective insights can we leverage?". By analyzing each of these frameworks, we have identified that together they can, roughly speaking, help to address the "who, what, and why" of water-related themes. Here we expand on these in order to closely examine the relatively uncovered topic of "how" to incorporate water risk awareness into an investment portfolio (see Exhibits 1).

Here we expand on the relatively uncovered topic of "how" to incorporate water risk awareness into an investment portfolio.

### Exhibit 1: Analyzing which Investment Frameworks identifies the who, what, why and how of water topics

	WHO: WHICH COMPANIES TO LOOK AT?	WHAT: WHAT METRICS MATTER?	WHY: WHY SHOULD WE BE INCORPORATING WATER?	HOW: HOW TO INCORPORATE WATER INTO AN INVESTMENT PORTFOLIO?
TCFD	x	x	x	
SASB, GRI, CDP	x	x		
UN SDGs		x	x	
Ceres Investor Toolkit				x

Source: Russell Investments, for illustrative purposes only.

### Who: Be industry-specific and identify industries where water really matters to the portfolio

#### Consider materiality

Materiality of water issues varies by industry, and this is true whether we wear a financial or broader stakeholder hat. Even though it is algorithmically possible from a data standpoint to calculate aggregate water metrics for an entire universe or portfolio, a limited number of industries will be critical to assessing and managing water risks in the portfolio. And it doesn't necessarily make sense to apply these metrics to industries where the data coverage is exceptionally low. Identifying which industries are critical is a good first step.

The SASB and TCFD frameworks can help us identify the industries where water is materially important.<sup>1</sup>

<sup>1</sup> For more about how material importance can help to differentiate between companies, read our paper Materiality Matters: Targeting the ESG issues that impact performance - the material score. [russellinvestments.com/ca/about-us/responsible-investing](https://russellinvestments.com/ca/about-us/responsible-investing).

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## What: Include location to add other dimensions to the data

### Volume and location

In the case of carbon, if one country dramatically reduces emissions while another dramatically increases emissions, these two actions roughly offset. The aggregate amount of carbon emitted globally is unchanged. To put it simply: carbon emissions are a global issue, while water is a regional issue.

While it is true that water issues can also be global, there is a very localized component – the first-order impact on each region is its local water supply and usage. One unit of water withdrawn in a drought-ridden Morocco is not the same as a unit of water withdrawn in a water-rich corner of Russia. As previously highlighted, from a data standpoint, this adds another dimension to water data and managing water risks.

## How: Recognize that water data is still developing

### Start with disclosure

Water-related company disclosures are less prevalent than carbon emission disclosures and disclosure rates vary widely by industry. Even within high-stakes water sectors, water data is not available for many companies. A first step to assessing water risks and opportunities will be getting better disclosure, particularly among industries where water risks are material and for companies with significant exposure to high-stress water regions.

## Why: Be forward-looking and think outside the box to recognize proactive companies

### The UN Sustainable Development Goals - Goal 6

“Ensure access to water and sanitation for all” is Goal 6 out of the 17 Sustainable Development Goals (SDGs), and that status itself is enough for some investors to take it seriously. But, the SDGs add another perspective that is easy to overlook. That is, water is not just an input to a company’s products like beverages and power generation, it is also a critical input to a company’s workforce and broader communities at large.

### Current and potential water crises represent a major systemic risk

So, even for those investors who adopt a purely financial view, current and potential water crises represent a major systemic risk. When communities lack access to clean water and sanitation, the risk of widespread crises rises sharply. While this is a complicated issue to address in an investment portfolio, companies that are taking proactive steps to have a positive impact on clean water and sanitation outcomes can be attractive investments.

Going beyond risk assessment to seek out these types of opportunities, while admittedly more difficult, is a critically important exercise as outlined by the TCFD and other industry bodies.



*Companies that are taking proactive steps to have a positive impact on clean water and sanitation outcomes can be attractive investments.*

## Chapter 2: Four key considerations for investors seeking to incorporate water into their portfolio

Armed with an understanding of some of the key issues surrounding water, we next turn to the available data. In asking “what is the current state of water data in terms of both quantity and quality?” we’ve identified four key considerations for investors seeking to incorporate water into an investment portfolio.

### Analyzing water-related data sets: Four key considerations for investors

#### Consideration #1: Data reporting is low

Water usage data is broken down into two types:

##### 1. Water withdrawal.

Water withdrawal refers to water that is taken out of freshwater sources for use in production but is eventually returned. The amount of water withdrawn is material for industries like semi-conductors and mining, who use freshwater water for cooling or processes – but eventually return the water to its source.

##### 2. Water consumption

Water consumption refers to water that is used but not returned. This is a material issue for industries like food and beverage products where water is an input to products.

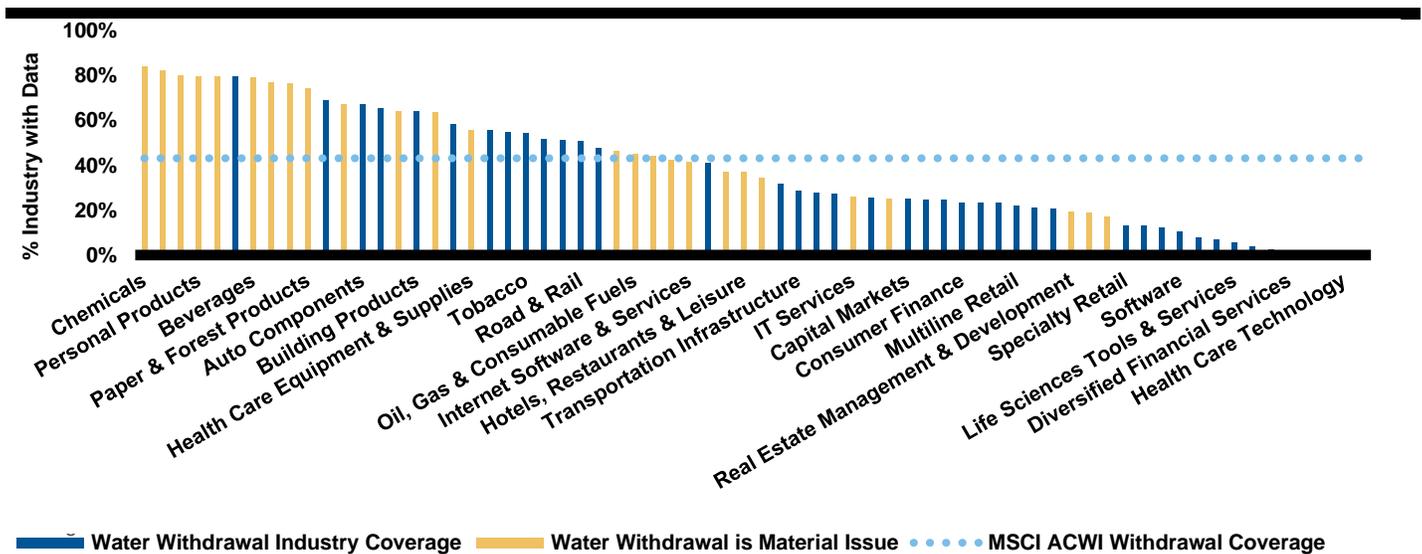
#### Water withdrawal coverage

For securities in the global large cap universe, water withdrawal coverage is 43%. In industries where water *is* a material issue, as highlighted by the red bars below, coverage tends to be higher with industries such as chemicals, metal & mining and semiconductors above 80%.

As illustrated by the red bars on the right of Exhibit 2 below, there are industries such as real estate and energy services where water is considered a material issue, but few companies are reporting.

Water consumption is a material issue for only a few industries, so as one would expect, coverage on water consumption is lower at roughly 16% for the MSCI ACWI Index.

Exhibit 2: Water Withdrawal Data Coverage by Industry

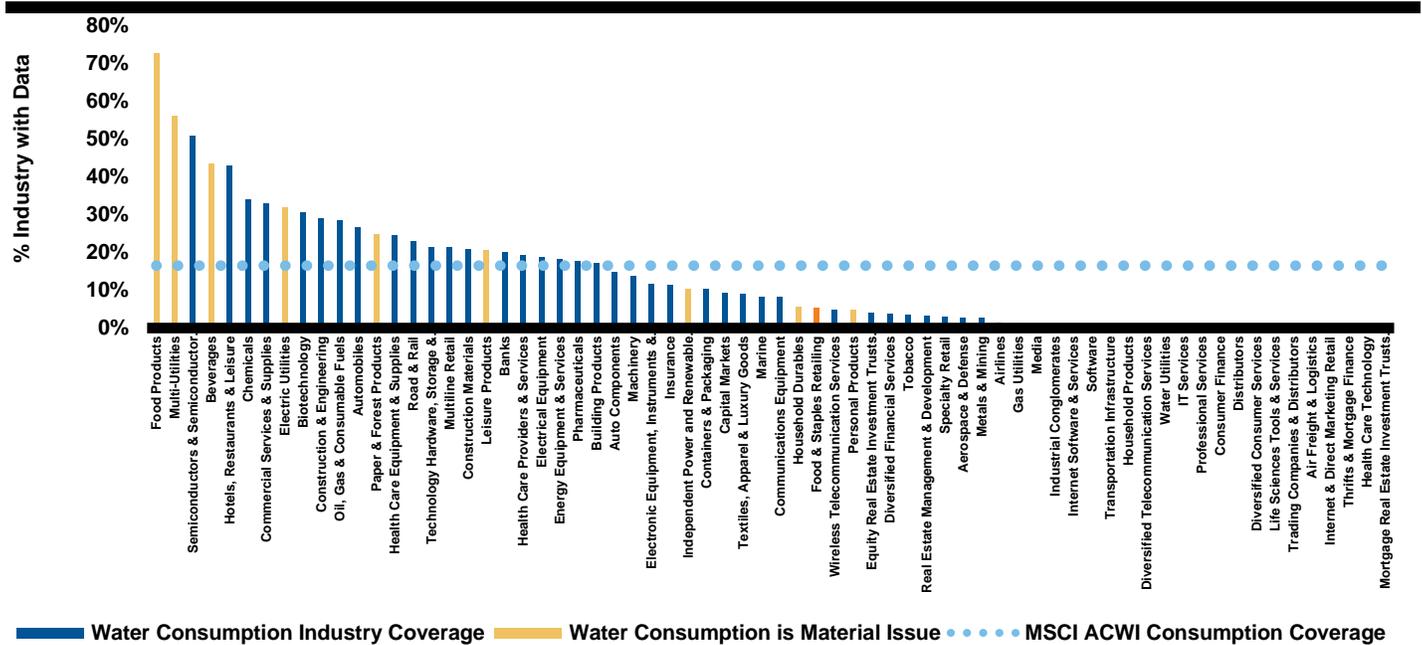


Source: Russell Investments and MSCI, data as at September 30, 2018.

## Water consumption coverage

Water consumption is a material issue for only a few industries, so as one would expect, coverage on water consumption is lower than withdrawal at roughly 16% for the MSCI All Country World Index (ACWI). Again, industries where water is material tend to have the highest coverage, as represented by the red columns to the left of Exhibit 3.

**Exhibit 3: Water Consumption Data Coverage by Industry**



Source: Russell Investments and MSCI, data as at September 30, 2018.

Given that water is not necessarily a material issue for all companies, coupled with the additional insight that coverage at the universe level is low, the reasonableness of producing a portfolio-wide water metric is less clear than in the case of carbon footprint.

## Opportunities to improve water-related disclosures

What is clear from these Exhibits is that there are many industries where water *is* a financially material issue, but companies are not disclosing. This suggests ample opportunities exist for engaging with companies about improving water-related disclosures.

We will expand on both insights later in this paper when we outline our key action items on water.

## Consideration #2: Water usage is highly concentrated

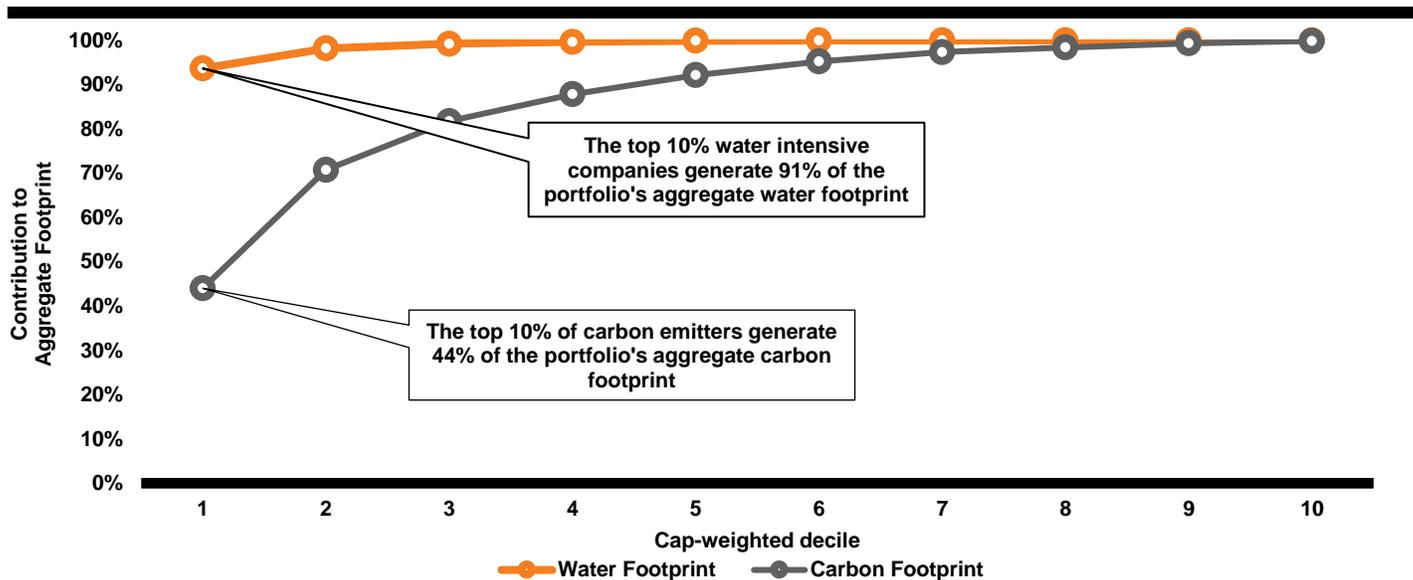
### Water usage is highly concentrated in only a handful of companies

Moving beyond data coverage, we find that water usage, both in terms of withdrawal and consumption, is highly concentrated in a handful of companies. Following the Ceres' Investor Toolkit examples, we consider a basic combination of capitalization weight times water usage.

This is similar to what is observed in carbon data: a small number of companies make up a significant share of a portfolios aggregate carbon emissions. For example, the top 10% of carbon emitters generate 44% of our sample global portfolio carbon footprint. In the case of water withdrawal, this feature is even more extreme with 10% of companies contributing 91% of the portfolio's aggregate water withdrawal.

The high skew of the data may not be surprising to those familiar with carbon data, which also exhibits the phenomenon of high concentration in a handful of names. But, as shown in Exhibit 4 below, this is much more pronounced for water than for carbon.

#### Exhibit 4: Contribution to Aggregate Portfolio Footprint – Water Footprint versus Carbon Footprint



Source: Russell Investments and MSCI, data as at September 30, 2018.

#### What other high-level conclusions can we draw from looking at water-usage data?

The highest water usage is found in the utilities, materials and energy sectors. In many sectors, we observe a significant difference between the median and average, indicative of the high skew in the data. Even within sectors, usage is further concentrated in a small number of industries. For some industries, the concentration goes further, with industry-wide Exhibits being driven by only a handful of companies.

#### The utilities sector

Taking the utilities sector for example, the water utilities industry has the highest water withdrawal metrics. When we drill down further into the company-level data within the industry, we find that only three of the eight companies in the industry report on water withdrawal (see Exhibit 5 over page).

For the three companies reporting, the data varies considerably from approximately 500 cubic meters/million U.S. dollar (USD) in sales up to 1,000,000 cubic meters/million USD sales. Having this type of concentration in a few companies would make it very straightforward to reduce water consumption numbers at a portfolio level by only changing exposure to a small number of companies. On the other hand, from a data standpoint we must be wary of drawing practical conclusions from such a small number of data points.

**The highest water usage is found in the utilities, materials and energy sectors.**

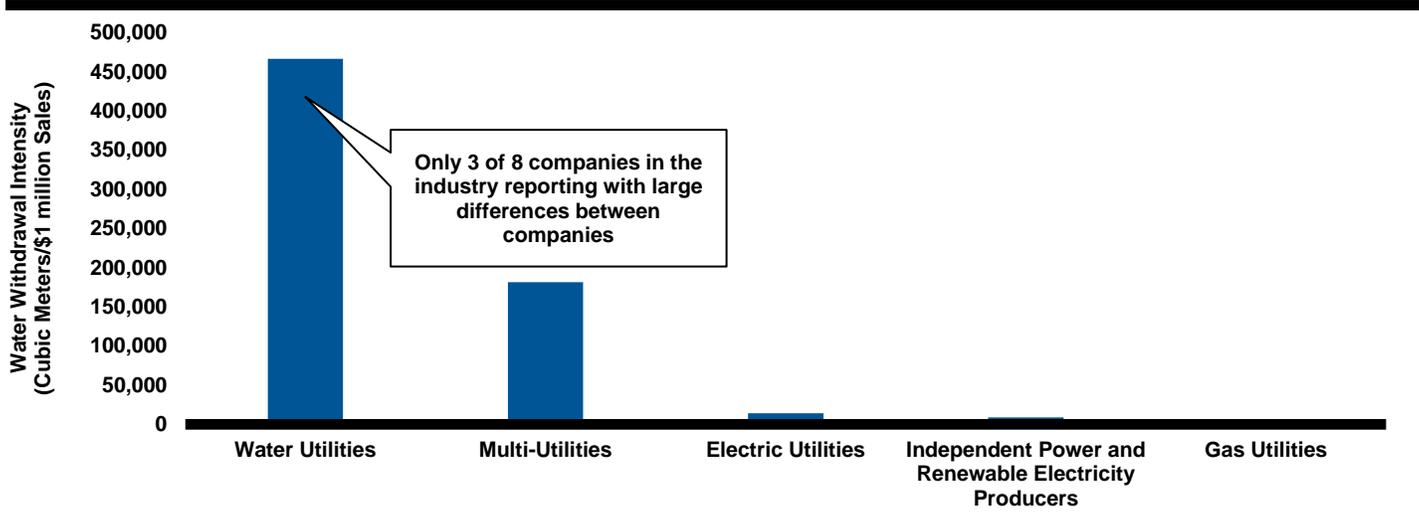
#### Consideration #3: The market is highly exposed to water-stressed regions

##### A regional lens is critical

When it comes to understanding water risks, a regional lens is critical. And so far, we have not paid attention to where each unit of water was withdrawn. The Aqueduct Water Risk Atlas from the World Resources Institute provides free access to water risk maps (see Exhibit 6). They can be used by companies and investors to identify water stress.

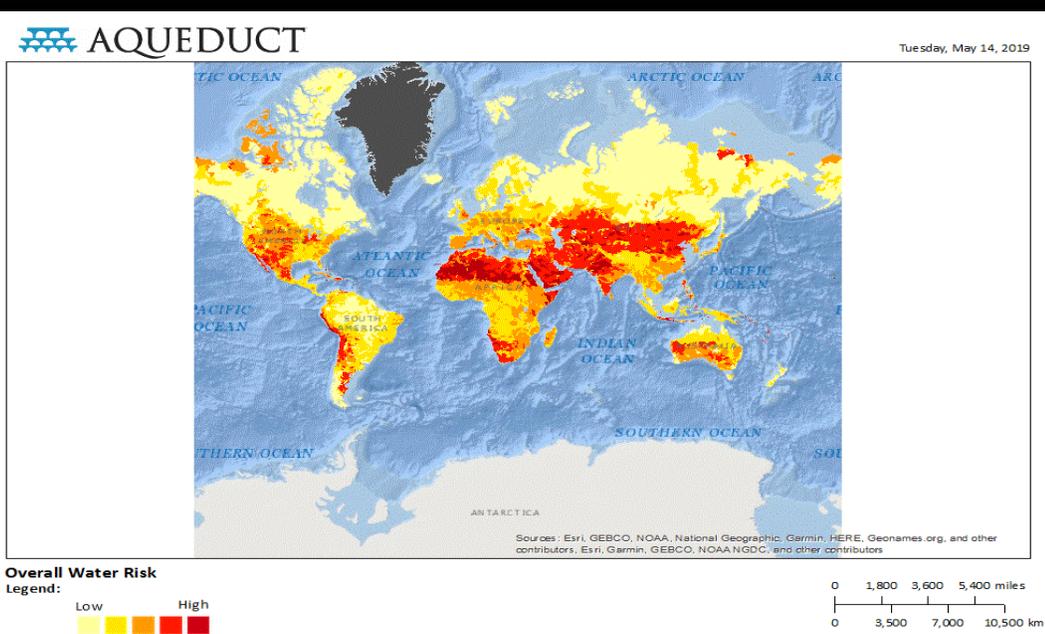
Ideally, available data would tell us not just how much water was consumed, but also what percent was in high-stress regions. Unfortunately, the data is not this granular (yet). Instead, we proxy for exposure to high-risk regions by looking at companies with more than 20% of operations in high water risk regions. We find that 71% of the companies in the portfolio meet this criterion, suggesting exposure to regional water risk is significant.

**Exhibit 5: Median Water Usage (Withdrawal Intensity) – Utilities Sector**



Source: Russell Investments and MSCI, data as at September 30, 2018.

**Exhibit 6: Aqueduct High-Stress Water Regions**



Source: The Aqueduct Global Maps 2.1 database, 2019. As of May 14, 2019.

### The water-data universe: Six buckets

As noted earlier, ideally the data we seek is two dimensional: water exposure and exposure to high risk regions. Here we break the universe into six buckets to get as close to that type of analysis as possible with the available data. The six buckets are defined along three dimensions:

1. Exposure to water stress regions: high or low
2. Exposure to water usage: higher or lower than average water users
3. Companies that are non-disclosers, and hence the exposure posed by them is still unknown

We can glean several pieces of information from this breakdown represented in Exhibit 7. The first is that the headline number of 73% of companies exposed to high-risk regions may not be as bad as it sounds. Only 27% of the universe’s water use is actually coming from these high-risk regions.

In other words, there are a lot of companies in high risk regions, but these are not necessarily high water-users. That’s the (relatively) good news. The bad news is that there are significant unknown risks in the high-risk regions: 32% of companies have exposure to high-risk regions and do not disclose water use.

In the next section, we will talk about how we translate this type of breakdown into action items.

### Exhibit 7: Global universe breakdown to water use and high-stress region exposure

**There are a lot of companies in high risk regions but not these are not necessarily high water-users. That’s the (relatively) good news.**

High-Stress Region Risk		
	LOW REGION RISK	HIGH REGION RISK
<b>Total</b>	<b>28% companies 73% water use</b>	<b>73% companies 27% water use</b>
High	2% of companies 67% of water use	6% of companies 21% of water use
<b>Water-Use Risk</b>		
Low	11% of companies 6% water use	35% of companies 6% of water use
Non-discloser	15% of companies unknown water use	32% of companies unknown water use

Source: Russell Investments and MSCI, data as at September 30, 2018.

### Consideration #4: Identify forward-looking information and proactive companies

#### A forward look

So far, our discussion has leaned heavily on backward-looking elements of water risk in a portfolio. However, it is important to look forward, as highlighted by the TCFD’s Final Recommendation Report:

*“The Task Force encourages organizations to undertake both historical and forward-looking analyses when considering the potential financial impacts of climate change, with greater focus on forward-looking analyses...”*

One piece of forward-looking data that can be considered is a company’s water-related targets. Increasingly these are being reported in corporate disclosures where water is a material part of a company’s business.

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## **Water as a material part of a company's business**

Where water is a material issue, approximately 29% of companies by name count have set water-use targets. In an ideal world, we would track how closely a company has achieved these targets and project future water use based on these measures. Unfortunately, the data is not here yet. As a first step however, we incorporate that companies setting targets are signaling more pro-active management of the issue, all else equal.

The underlying premise here is that companies going to the effort to set a water reduction target are making a higher commitment to manage water use than a peer with comparable water use who has not. As we turn to actionable items in the section that follows, we will get specific about how we propose incorporating this information.

## **Proactive companies**

Finally, in addition to company targets, we also want to recognize proactive steps companies are taking to contribute to Sustainable Development Goal 6: "Ensure availability and sustainable management of water and sanitation for all".

Admittedly, this is a difficult exercise to undertake systematically when direct links between company activities and Goal 6 are limited to the handful of companies explicitly engaged in water activities. At least one initiative that is directly related to the Sustainable Development Goal 6 is the WASH at The Workplace Pledge. Companies who are signatories "commit to implementing access to safe water, sanitation and hygiene at the workplace at an appropriate level of standard for all employees in all premises under their control within three years of signature".

The World Business Council for Sustainable Development outlines why this is a relevant goal:

*"One third of the world's population is without access to a safe toilet, 10% of the world's population does not have access to safe drinking water, and 1 in every 8 people practice open defecation. Conversely, every USD 1 invested in water and sanitation yields a return of USD 4.3, through increased worker productivity and reduced absenteeism."*

This pledge represents a very tangible way that companies can indicate their commitment to Sustainable Development Goal 6. As we outline below, we want to capture these types of proactive programs where possible.

## Chapter 3: Turning research into action

### A decision-tree approach

#### Leveraging key water insights to arrive at simple actions

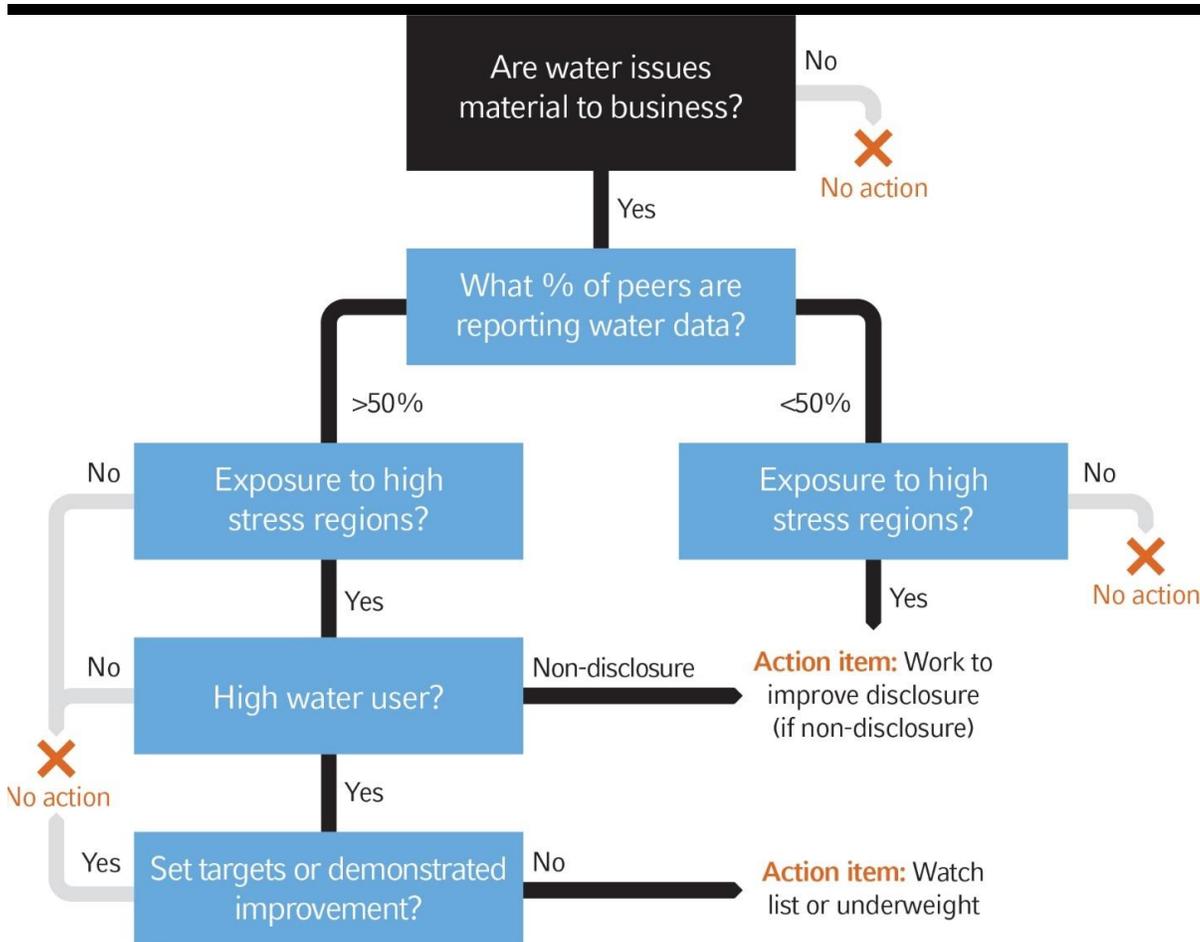
Understanding water-related risks is a vital component of evaluating the long-term sustainability risks and opportunities of an investment portfolio. However, the tools for properly assessing water-related issues systematically are still developing. So how do we turn these insights into action?

Faced with data weaknesses, we might succumb to a familiar adage: it is easy to let perfection be the enemy of the good and stop us from acting today. Instead, we propose a decision tree approach to addressing water-related risks and opportunities in the portfolio (Exhibit 8).

This tree can be used to sort companies into three buckets:

1. Targeted for improved water disclosures
2. Added to a water watchlist or underweighted
3. No water-related action necessary

#### Exhibit 8: Decision tree approach to sorting companies in the portfolio



Source: Russell Investments, for illustrative purposes only.

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In using this structured approach, we have identified the following:

### **Better disclosure is the first step**

First, it recognizes that getting better disclosure for at least the high-stakes companies is going to be the first step to accurately assessing water-related risks in a portfolio. We propose a simple rule for identifying high-stakes non-disclosers: look at materiality by industry and exposure to high-stress regions.

### **Avoid penalizing companies who are industry leaders**

During this early phase of water data incorporation, it is critically important to avoid penalizing companies who are industry leaders and have started disclosing even though their peers have not. For example, if we underweight a company who is a large water user even though they are one of only a handful of companies that is reporting, we have effectively punished a company for taking the proactive step of disclosing water data. This action would be completely counter to our objective – which is to reduce the water-related risks in an investment portfolio.

### **Identify the sources of highest known risk in the portfolio**

Next, we move to the subset of companies in high-reporting peer groups that have disclosed to identify the sources of highest known risk in the portfolio. This is can be identified by looking at the intersection of material industries and high water-users. For investors looking to minimize exposure to water-related risks, these are potential companies for underweighting or adding to watch list to monitor more closely.

### **Incorporate positive attributes and forward-looking metrics**

Finally, we incorporate positive attributes and forward-looking metrics such as company targets and involvement in positive initiatives. The goal is to recognize companies that are taking proactive steps to manage water issues, contribute to Sustainable Development Goal 6, and improve water security. Admittedly, poor data makes this a challenging step but one we argue is critical to incorporating opportunities and a forward-looking perspective.

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## Conclusion

### **A nuanced topic that requires a thoughtful line of attack**

In this research paper we have provided an overview of key water-related investment issues, an assessment of water data as well as a new framework for incorporating water issues into an investment process.

Ultimately, we find that many useful industry groups and frameworks have emerged over the last few years. However, data limitations will inhibit investors from converting the insights from these frameworks into action, even using the same methods that have already been developed for carbon.

Addressing this nuanced topic requires a thoughtful line of attack. The most useful tool we have found for combining the myriad of considerations into a simple actionable framework is a decision tree approach. Armed with this framework as a starting point, we can now start tackling the challenge of addressing this critical element of “E” within ESG more explicitly.

As the focus on responsible investing best practices evolves over time, we remain committed to looking forward, researching new ideas/approaches and anticipating trends. We will foster dialogue and debate on the issues that are important to our clients, their investments and the stakeholders they support. We believe that our research supports this focus on insight and innovation in responsible investing.

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