



## Ceres Case Study: Water Footprinting Analysis of Major Global Indices

- Investment water footprinting is an emerging, powerful tool helping portfolio managers identify investment/portfolio risks and the industries or companies that require deeper water risks research.
- Water footprinting also gives investors insights into aggregate water risk exposure by industries and also potentially by regions.
- Ceres analyzed water risk exposure across four major indices using SASB's materiality map and assigning a water risk exposure score to each industry.
- More than 50 percent of the four indices holdings were found to be exposed to medium to high water risks, showing that water can be a very material issue for portfolio managers.

### Investment Water Footprinting

Water footprinting for investment analysis (or investment water footprinting) is an emerging method for determining where an investment portfolio has large portions of high water risk industries or stocks. It can assess volumetric use of water by companies, or assess water risk by geography, by using water risk scores or other parameters - there is no one set approach. But overall, it allows portfolio managers to understand aggregate risk exposure and hone in on specific industries and companies for further water risk research. It also provides a useful starting point to engage portfolio managers on the topic of water risk awareness and integration.

### Ceres' Assessment of Water Risk Exposure Across Four Major Indices

Ceres' analysis provides an overview of water risk exposure across 4 major indices, analyzing water risks in the following way:

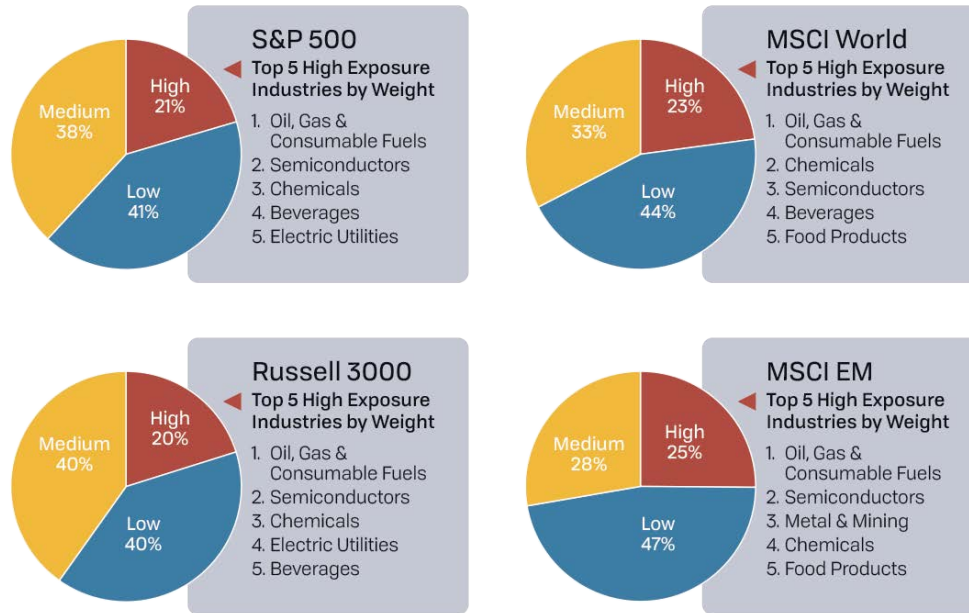
- SASB's materiality maps were used to identify sectors and industries for which water and wastewater management are assessed as likely or not likely to be material. S&P 500, MSCI World, MSCI Emerging Markets (EM) and Russell 3000 were chosen for analysis.
- Each constituent in the indices under investigation was assigned a low/medium/high water risk exposure depending on its industry (informed by the previous step).

### Key Findings

The research found broadly similar exposures to water risks in the four indices. An important observation is that **more than 50% of the components of the four indices are exposed to medium to high water risks, showing that water can be a very material issue for portfolio managers.** Given that there is such a high exposure to water-related risks across indices, these results underline the importance of considering more detailed and sophisticated water footprinting to better understand potential risks. The MSCI EM is the index with the highest exposure to water risks (% index components from high risk industries).

Figure 1 shows the market cap-weighted water footprint of the four indices at the industry level together with the top five high exposure industries.

PROPORTION OF FOUR INDICES BY HIGH, MEDIUM OR LOW WATER RISK INDUSTRIES



Source: Ceres and KKS Advisors' interpretation of SASB materiality indicators.  
www.ceres.org/investorwatertoolkit



Figure 1: Water Footprinting of major indices with top five high water risk industries by index weight

Across indices, the 'Oil, Gas & Consumable Fuels', 'Semiconductors', and 'Chemicals' industries consistently rank high regarding water materiality and weight in the index. These industries have water intensive operations and are likely to affect the quality and quantity of local water resources. Companies in these industries therefore can face strategic, operational, regulatory and reputational risks linked to their water needs and usage.

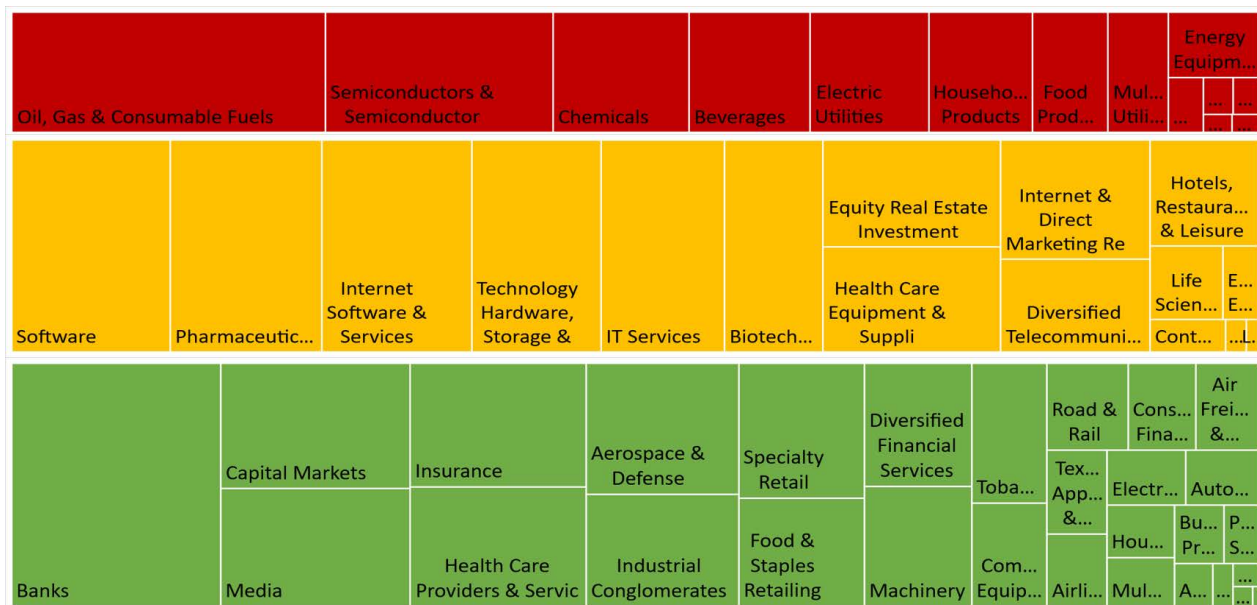


Figure 2: Heat map of industry water risk hotspots for S&P 500. The size of rectangle indicates weight of industry in the index and color indicates if high, medium or low water risk classification using Ceres' analysis and classification of SASB materiality indicators.

Ceres also conducted water footprinting by equal weighted market capitalization. Through this analysis, the proportion of highly exposed companies increased in three of the indices up to 4%. In the case of the MSCI EM index, companies in the financial sector with high market capitalizations and low water risk exposure skew the water footprinting when market capitalization is taken into account.

## Water Volume Data

Ceres also studied water volume data per industry to assess whether this indicator could be a helpful red-flag for investors in understanding water risks more deeply. The industries with the highest volumes of water for the S&P 500 were: Electric Utilities, Chemicals, Metals and Mining, Multi-Utilities and Beverages. Not surprisingly, this list has a fair amount of overlap with the high water risk categories above. The percentage of water use data points for each index was relatively low on the Bloomberg terminal and therefore serves as a caution for this type of analysis at this point in time (Table 1). Smaller market capitalized companies in particular had, not surprisingly, much lower water use disclosure rates as can be seen by the five percent disclosure rate of the Russell 3000 index. Some ESG data providers and investors are modeling or filling these gaps independently.

	S&P 500	Russell 3000	MSCI World	MSCI EM
Disclosure rates	22%	5%	33%	22%

**Table 1:** Percent of companies disclosing 2016 water use data via Bloomberg by index

## Future of Water Footprinting

Understanding materiality of water across industries is a good start for a first indication of investor water risk exposure. The added complexity with water footprinting is that unlike carbon footprinting, water is a local issue. Water risks are multifactorial issues based on water resource dependency (industry-specific) and water security (location-specific) and management's response to mitigate these risks. The above approach and others developed, or in development, by SBA Florida and ACTIAM are all helpful in driving more comprehensive analysis of water risks. Overall, exciting days are ahead as investors, ESG research providers, and others evolve water footprinting methods even further.