

January 2022

As sustainable investing and ESG continue to evolve, we consider an alternative perspective to how markets can determine and measure near-term environmental risk.

While there are certain data points like renewable energy use or waste management that might be more material to a particular sector, there has been an intense focus on greenhouse gas emissions (over 50% of the S&P 500 reports Scope 1 & 2 emissions and over 90% publish sustainability reports). Is this the right disclosure for near-term climate-related risk? In this report, we look at water and water management as an alternative and higher quality data point of near-term environmental/climate related risk, focusing on:

- Emissions vs. Water
- Flooding, Drought, and Water Quality
- Options to Measure and Disclose

Emissions vs. Water

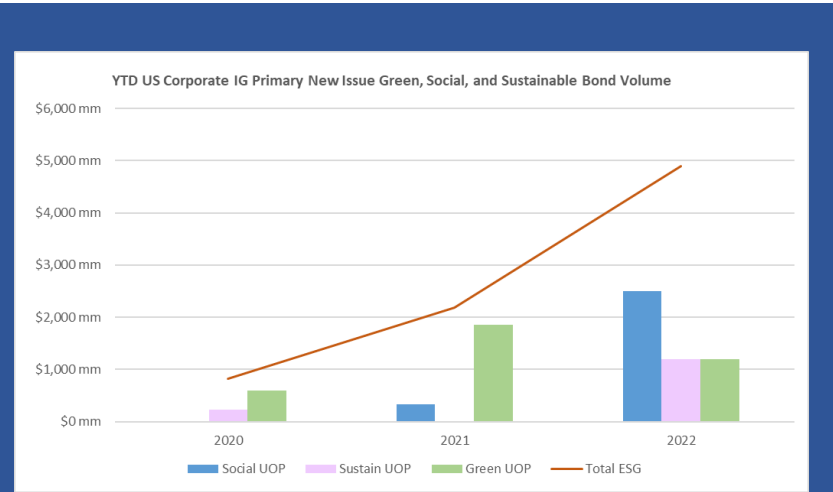
Climate change refers to changes in long-term global temperatures which chiefly impact how water is allocated across the globe. In some cases, it increases water allocations through more intense storms and floods, while on the other hand, it denies other geographies water resulting in prolonged periods of drought.

The knock-on effects of water stress can cause immense ecological, social, and economic fallout. A Barclays report found that the cost of inaction on water scarcity was 5x higher than that of acting. In fact, according to the World Bank, we are not on-track to meet the UN’s 6th Sustainable Development Goal of “Safe Drinking and Sanitation for all” because 2 billion people currently still lack safe drinking water and 3.6 billion people lack safely managed sanitation. The US military also considers water and hydrological risks a chief concern, which is why since 2007 it has invested and worked to reduce its water use by ~27%.

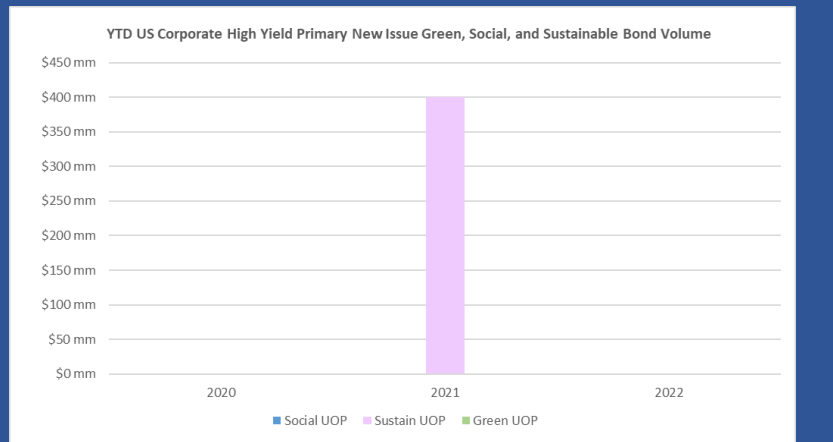
Therefore, this begs us to reconsider, are emissions the best reference? Here we look at near-term water risk including flooding, drought, and water quality/access as indicators of near-team climate related risk.

Flooding

Flooding is one of the key areas of water related risk and one that might be substantially under-represented. While FEMA estimates that around 13mm Americans live within 100-year flood zones, other studies estimate that when considering flood risks from rivers, that number increases to 41mm. This mirrors other research and reports on residential housing which has identified ~14.6mm properties at substantial flood risk, of which 5.6mm are not included



Investment Grade: 2022 ESG themed issuance is off to a strong start buoyed primarily by Citi’s \$2.5bn social bond. Sonoco also came to market with a \$1.2bn green bond, whose proceeds will be used in its acquisition of Ball Metalpack, which qualifies under its Green Financing Framework. Southern California Edison also came to market with a \$1.2bn sustainability bond.



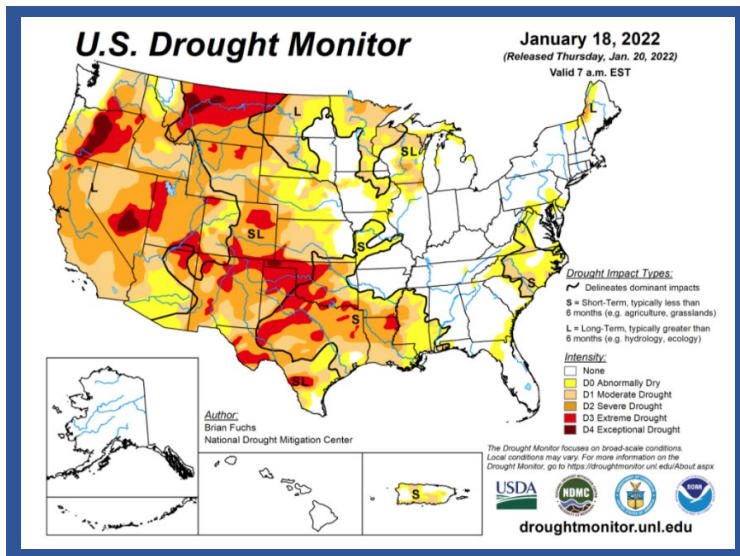
High Yield: ESG debt issuance among HY issuers remains muted in 2022.

January 2022

or are unaware of their flood risk because they are not identified in FEMA’s Special Flood Hazard Area (SFHA). A recent example includes the flooding we saw across the mid-Atlantic, when in September 2021, Hurricane Ida caught many off guard resulting in over 40 deaths and a rare issuance of a flash flood emergency in New York City.

Often not discussed is saltwater intrusion, which is another concern related to flooding and occurs when saltwater moves into freshwater aquifers along coastlines.

The financial impacts and risks are real. Recent reporting has indicated that properties with substantial flood risk on average will experience an annual loss of \$4k per property, totaling \$32bn in annualized losses across the country by 2050 (estimated to have been \$20bn in 2021). To insure all the homes at flood risk would cause NFIP rates to increase an estimated 7.2x to cover the risk posed by 2051 climate models. Such an increase would be detrimental to homeowners who could not afford the insurance and could result in a liquidity issue as buyers might not want to purchase at-risk homes with high insurance premiums. This is one area of concern that has the Fed’s (and other regulators’) attention.



Drought

The other near-term risk indicator and effect of climate change is drought. Where flooding to some degree represents an overallocation of water related to climate-change, specifically 1-in-100-year extreme weather events, drought would be its opposite. Both here in the United States and across the globe, drought remains a topic of concern. In the United States, even with relatively abundant freshwater resources and improving conditions, many states and regions remain in periods of prolonged drought. This becomes especially concerning when we begin to factor in repatriation of supply chains and manufacturing here in the United States, which could put further stress on existing water resources.

Drought is classified as follows: No Drought, to Abnormally Dry (D0), to Exceptional Drought (D4). Even in a Severe Drought (D2) classification (as much of California is under), crop/pasture loss is likely, water shortages are more common, and restrictions are imposed. In California, and places like it environmentally, Severe Drought can lead to increased length of fire seasons and more fire crews to staff. River flows are also reduced which impacts river-based tourism. Any shift to D3 (Extreme Drought) could cause decreased levels in aquifers, orchard removal, increased issues with water sanitation, and restricted hydropower to name a few. Droughts are also extremely costly. On average they are the 2nd most expensive disaster type. For example, from 1980-2019 there were over 24 instances where droughts caused more than \$1bn in damages, with an average cost of over \$9bn!

Fresh Water Access & Quality

The final area of focus is the impact on freshwater resources (surface and groundwater) quality. It’s often said, but we will reiterate here again, that only about ~1% of the globe’s water is accessible to humans. This puts intense pressure on existing resources, not just on their consumption, but also on how they are treated. It’s critical that organizations not only look at how they use water in their products, but also how their products impact water

January 2022

resources used by stakeholders and the broader hydrological cycle (this is part of the much larger conversation on double materiality and sustainability). We will not belabor the point, but there are many examples here in the United States and strong precedent for criminal and civil penalties related to water contamination.

Going Forward

Mitigating these risks and finding opportunities to address them are critical. Organizations that don't already do so will need to look to find ways to furnish information internally to decision makers and possibly externally to stakeholders via ESG disclosures. For flooding, it will revolve around disclosing metrics associated with asset exposure located in FEMA's Special Flood Hazard Areas or in enhanced flood zones and could possibly extend to precautions made to protect those assets (insurance or protections). As for drought, this will include information related to the intensity of revenue/product on water (for instance, "x" volume of water per "x" amount of revenue generated). This type of information is helpful as it allows for a more accurate near-term assessment of climate related financial risk.

Key Take-Aways

- Water-related risk metrics are becoming more reliable data points (as opposed to emissions) for considering how climate change impacts business.
- Looking at not just flood and drought risk, but also at water quality, saltwater intrusion, and costs.
- In the future, it is likely that funds and indexes will look to re-weight environmental considerations by shifting from emissions to water and waste management.

Further Resources

First Street Flood Risk Report: <https://firststreet.org/research-lab/published-research/highlights-from-the-cost-of-climate-americas-growing-flood-risk/>

Barclay's Calculating True Cost of Water: <https://www.cib.barclays/our-insights/3-point-perspective/calculating-the-true-cost-of-water-for-the-consumer-staples-sector.html>

Drought Costs Report: <https://www.drought.gov/news/high-cost-drought#:~:text=Among%20these%2C%2026%20droughts%20cost,258%20events%20exceeds%20%241.75%20trillion.>

Wildfire and Drought: <https://news.climate.columbia.edu/2021/01/22/high-risk-wildfire-flood-zones/>

World Bank Global Water & Sanitation Partnership Report:
<https://documents1.worldbank.org/curated/en/470921636660686226/pdf/Global-Water-Security-and-Sanitation-Partnership-Annual-Report-2021.pdf>

US Drought Monitor: <https://droughtmonitor.unl.edu/CurrentMap.aspx>

Disclaimer This document and its contents are confidential to the person(s) to whom it is delivered and should not be copied or distributed, in whole or in part, or its contents disclosed by such person(s) to any other person. Any party receiving and/or reviewing this material, in consideration therefore, agrees not to circumvent the business proposals explicitly or implicitly contained herein in any manner, directly or indirectly. Further, any recipient hereof agrees to maintain all information received in the strictest confidence and shall not disclose to any third parties any information material to the opportunity contained herein and, upon review hereof, agrees that any unauthorized disclosure by any party will result in irreparable damage for which monetary damages would be difficult or impossible to accurately determine. Recipients recognize, and hereby agree, that the proprietary information disclosed herein represents confidential and valuable proprietary information and, therefore, will not, without express prior written consent, disclose such information to any person, company, entity or other third party, unless so doing would contravene governing law or regulations. This document is an outline of matters for discussion only. This document does not constitute and should not be interpreted as advice, including legal, tax or accounting advice. This presentation includes statements that represent opinions, estimates and forecasts, which may not be realized. We believe the information provided herein is reliable, as of the date hereof, but do not warrant accuracy or completeness. In preparing these materials, we have relied upon and assumed, without independent verification, the accuracy and completeness of all information available from public sources. Nothing in this document contains a commitment from Academy to underwrite, subscribe or agent any securities or transaction; to invest in any way in any transaction or to advise related thereto or as described herein. Nothing herein imposes any obligation on Academy. Academy is a member of FINRA, SIPC and MSRB. Academy is a Certified Disabled Veteran Business Enterprise and Minority Business Enterprise, and is a Service Disabled Veteran Owned Small Business as per the US SBA. Investment Banking transactions may be executed through affiliates or other broker dealers, either under industry standard agreements or by the registration of certain principals.