

A WHITE PAPER BY

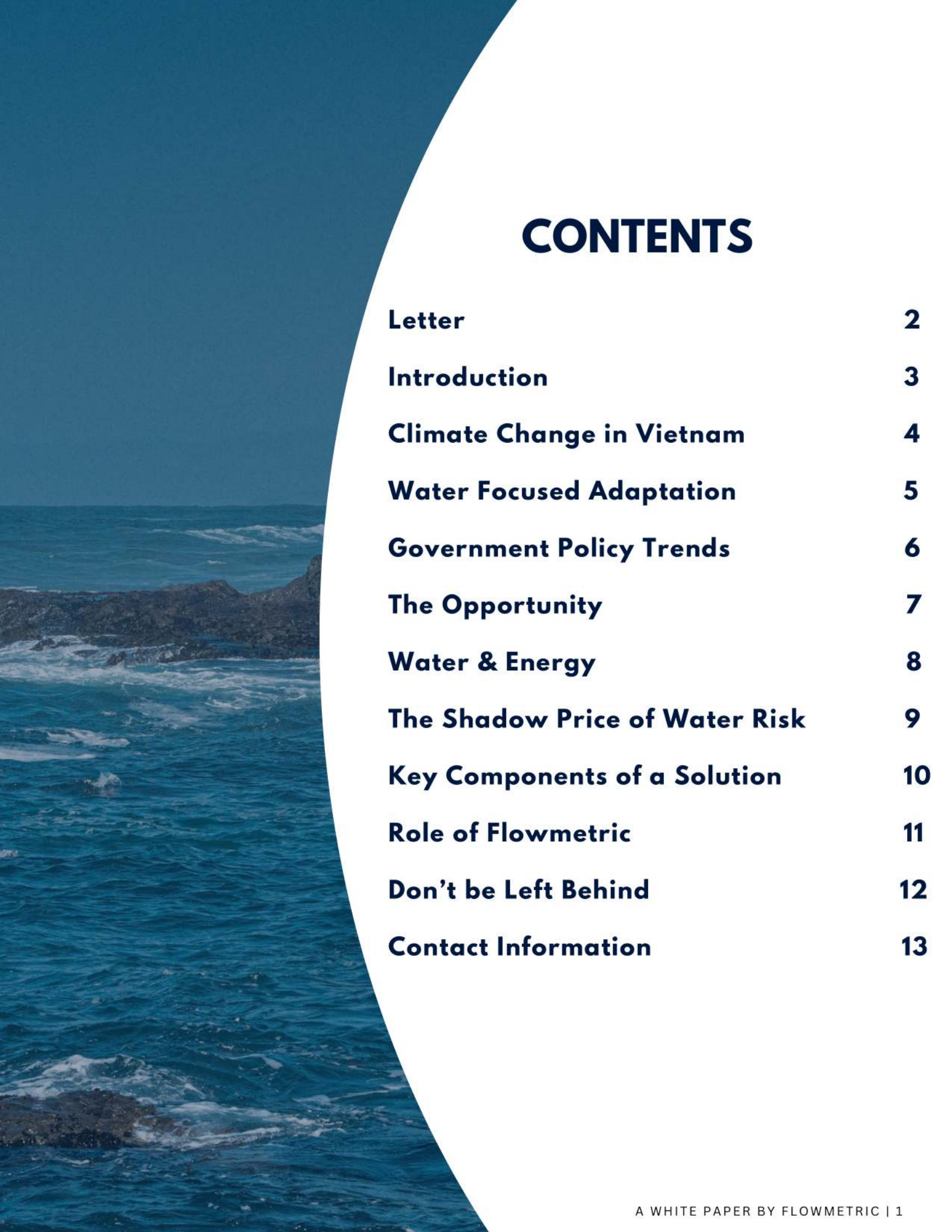


| NAVIGATING WATER STRESS:

Strategies for Water-Sensitive Organizations in Climate- Threatened Vietnam

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Letter on the Climate & Water Crisis

The 2023 United Nations Water Conference was a stark reminder of the global water crisis. Over 10,000 participants united to accelerate progress towards Sustainable Development Goal 6 (SDG 6) - ensuring access to water and sanitation for all. Studies by the World Bank, in their report highlighting Vietnam's climate vulnerability, pinpoint specific countries facing dire water stress due to climate change.

Vietnam, unfortunately, ranks among the top five most threatened nations. Recognizing this looming climate threat, the Vietnamese government is developing policies and technology to address the impending water challenges. This proactive approach is crucial, as many water-sensitive companies, particularly those in the Mekong Delta, are understandably concerned about how to adapt to the new normal of climate-water unpredictability.



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This white paper bridges the gap between the global message of an impending water crisis and the day-to-day operational considerations faced by businesses in Vietnam. It serves as a roadmap for leaders seeking to engage in proactive water management, ensuring long-term business sustainability in the face of water scarcity, floods, and more. Figure 1 depicts how water issues have trailed behind in conversation on sustainability and why increasing attention is now being sought.

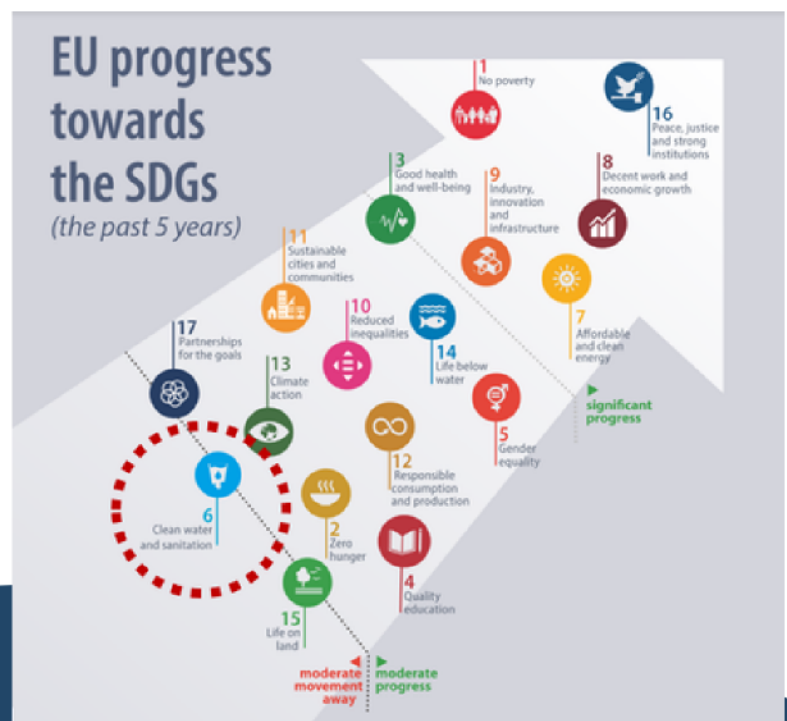


Figure 1: Overview of EU SDG Progress 2019-2024
(Source: EU)

Introduction

This white paper explores the challenges and opportunities faced by water-sensitive organizations operating in Vietnam and grappling with water stress exacerbated by climate change. It provides a framework for public and private institutions to adapt their operations, build resilience, and contribute to national water security in Vietnam.

As many cities globally begin to face ‘Day Zero’, or a critical point when a city's water supply is predicted to be almost completely depleted, companies and politicians alike are forced to pay more attention. As of July 2024, Mexico City is currently grappling with these issues; the government has already cut off water access to over 70 industrial sites¹. The trend of rising water risk globally begs the question of what can be done to insulate businesses from a changing climate.



Climate Change in Vietnam

Climate change is a reality of the 21st century that is already being felt.

People, countries, and companies alike are all struggling for a way to adapt to climate change and its impacts. With much of the global focus on climate mitigation and discourses around carbon, the conversation around adaptation and water resources management has been lost. However, a changing climate is intrinsically linked to

hydrological variability through increased flooding, droughts, and water quality issues from rising sea levels and pollution. **Water is the lens through which climate adaptation is most effectively realized.** Figure 2 below highlights the economic sectors with the highest relative exposure to water risk.

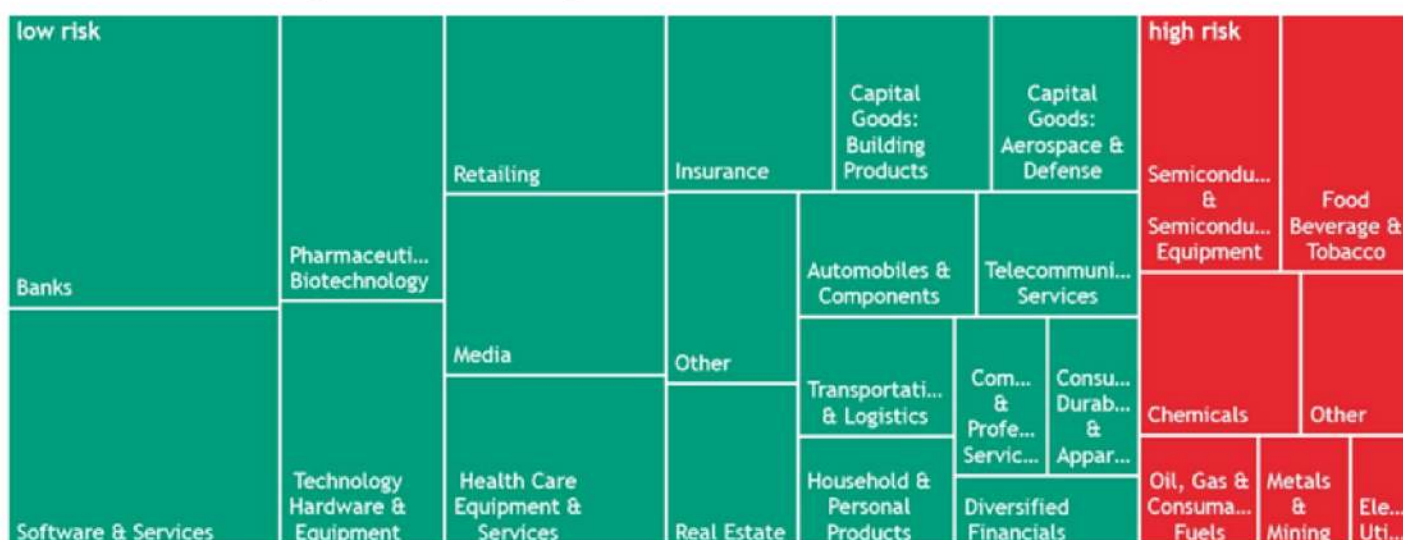


Figure 2: Economic Sectors' Relative Exposure to Water Risk (source: Actiam)

Given Vietnam's massive coastline of over 3,000 kilometers and the country's low-lying regions like the Mekong Delta, Vietnam has some of the highest climate risk globally. Furthermore, **over 60% of Vietnam's water resources originate from outside the county**, primarily from China through the Mekong and Red Rivers, giving water management one of the highest priorities in terms of national security for the government.

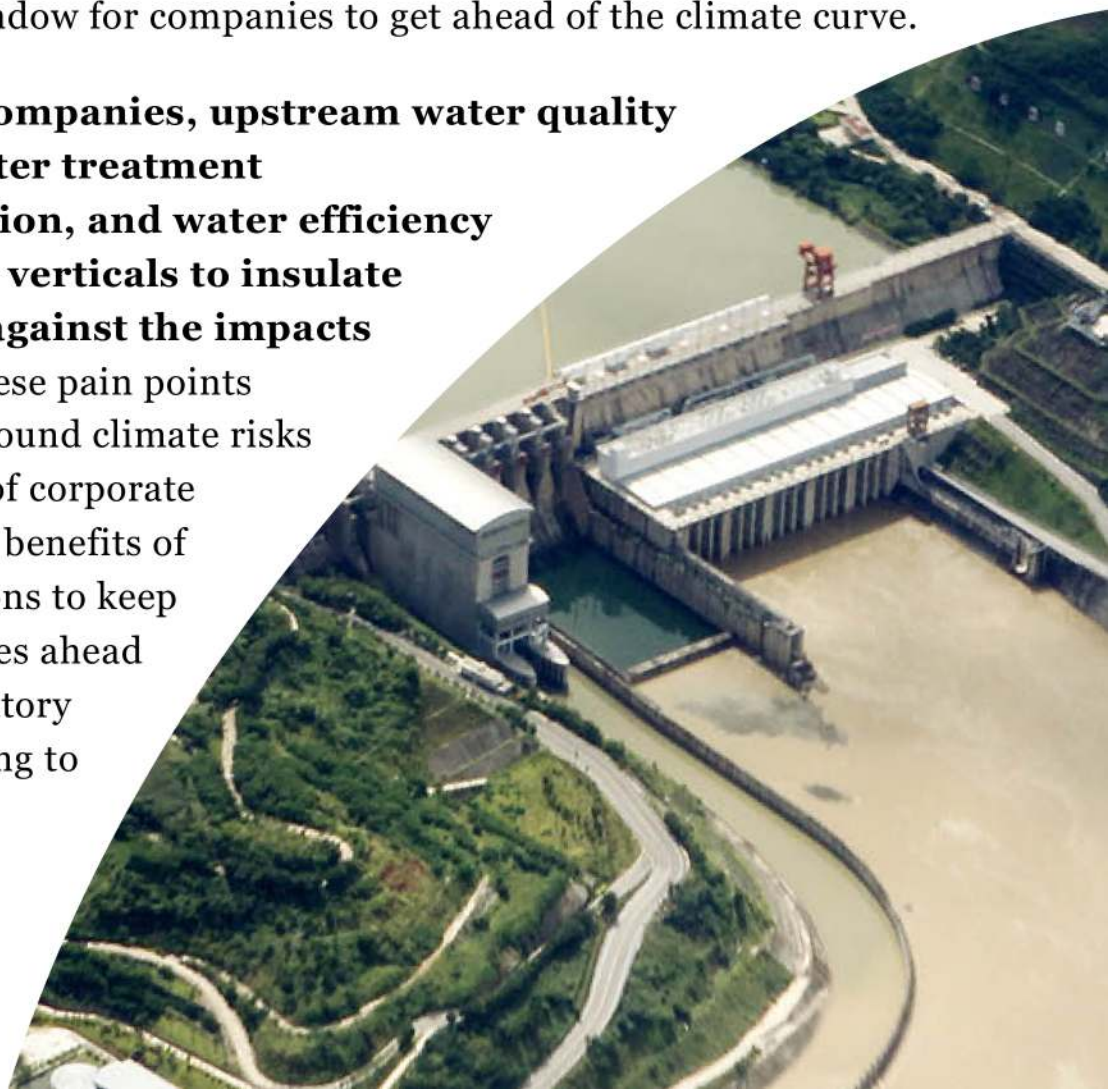
Compounding these vulnerabilities, Vietnam's economy has enjoyed impressive growth in export output – namely textiles, agriculture/aquaculture, and other manufacturing, all of which are highly water-sensitive industries. With many G20 countries adopting a 'China plus one' strategy to diversify their base of production due to geopolitical tensions, Vietnam is well poised for continued growth in the manufacturing sector; however, **increasing water risks in the region stand in the way as one of the largest inhibitors of potential growth.**



Water-Focused Climate Adaptation

It is becoming increasingly clear that water risks have an impact on the profitability of companies from drivers like increased water treatment costs, disrupted supply chains from drought/flooding, and regulatory measures currently being taken in European and American markets². Adaptation to climate change is a nuanced topic; understanding how it can be tackled through proactive water asset management offers a window for companies to get ahead of the climate curve.

For water-sensitive companies, upstream water quality monitoring, wastewater treatment improvement/validation, and water efficiency improvement are key verticals to insulate business operations against the impacts of climate change. These pain points demand transparency around climate risks and greater monitoring of corporate water use. The costs and benefits of water management options to keep water-sensitive companies ahead of the climate and regulatory curve is increasingly rising to the top of corporate mandates.



Government Policy Trends

The environmental, social, and historically public nature of the water governance makes government cooperation in the space of water resources management crucial. Acknowledging the role of government in national water management along with the private sector's role in utilizing the country's water resources is fundamental. **The Vietnamese Ministry of Natural Resources (MONRE)** is the institution largely in charge of water resources monitoring and data collection.



**Bundesanstalt für
Geowissenschaften
und Rohstoffe**

The Vietnamese government, through cooperation with EU agencies, has built a formidable and proprietary network of groundwater monitoring stations across the country. However, there is a gap between national efforts to collect water and climate related data and its implementation in the larger economy. There is potential to leverage regional water and climate data at specific facility locations to mitigate upstream water risks and protect business operations.

Enhancing Vietnam's water resources collection and monitoring, the **German Federal Institute for Geosciences and Natural Resources (BGR)** has a decades-long collaboration with MONRE. MONRE, BGR, and other water-focused national institutions are now looking to the private sector to utilize these tools, implement the policy it has promulgated, and adopt a data-driven approach to water management.



The Opportunity

The institutional tie between Vietnam and European governments in the water sector translates to market ties. Vietnam exports nearly \$10 billion of goods to Germany annually. The companies in Figure 3 below are German companies with a manufacturing footprint in Vietnam, only a fraction of the entire European and American corporations using significant amounts of water resources in Vietnam.

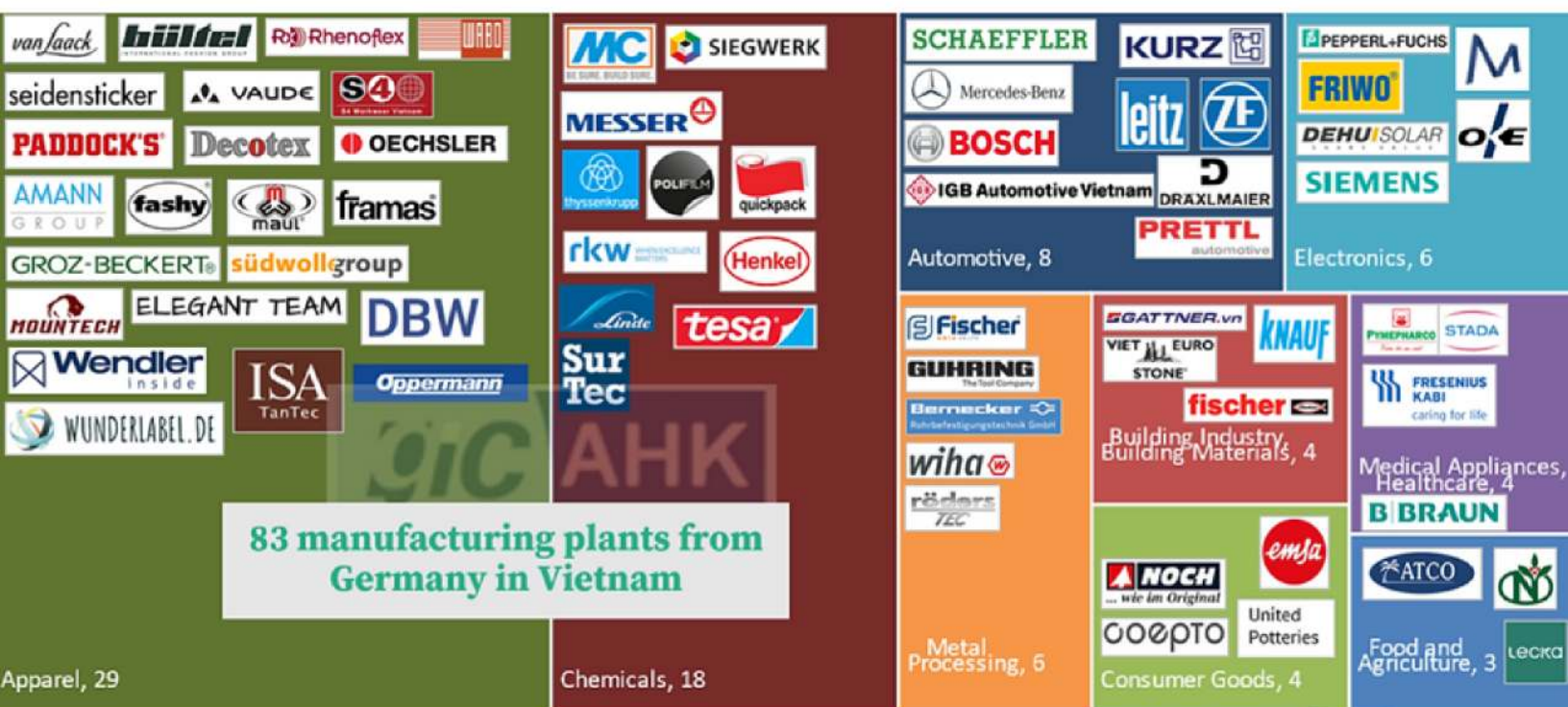


Figure 3: German Manufacturing Investments in Vietnam by Industry (AHK)

With many companies facing increasing pressure from emerging regulations in the European Union (the EU Taxonomy) and the USA (SEC-mandated water disclosures), climate adaptation is not only about physical water risk, but also regulatory risks. Companies face the possibility of their goods being banned in certain markets if they do not meet specific wastewater discharge or water footprint standards. For corporations, the discourse has transitioned from ‘considering sustainability’ to ‘accounting for and internalizing climate risk/return scenarios’ to ensure that disruptive events such as upstream pollution or being cut off from markets are addressed proactively.

Water: Following the Path of Renewable Energy

Whether regarding private investment, government incentives, or speed of construction, water infrastructure investment has lagged behind the energy sector. Learnings on business models and corporate adoption can be taken from the renewable energy space, especially from the commercial and industrial (C&I) solar industry.

In 2018, Vietnam Electricity, or EVN, began an uncapped feed-in-tariff program. The government-supported solar scheme led solar output to grow from 106 megawatts in 2018 to over 17 gigawatts in 2024, with C&I solar accounting for over 40% of that growth. To date, over 30% of large industrial facilities in Vietnam have adopted solar solutions, demonstrating deep market penetration. The story of C&I solar is a lesson on how government regulation ushered in a green investment era in Vietnam. Vietnam's National Water



Resources Strategy 2030 already includes targets for reducing water usage and improving water efficiency. **Given the transboundary considerations of Vietnam's water resources and national security implications, MONRE is considering mandating water disclosure to incentivize investment, as was done with energy.**





The Shadow Price of Water Risk

The fundamental property of water in nearly all economies is its financially undervalued status. Whether in the form of a subsidized water tariff, lacking attention to water-related climate risks, or an overriding focus on energy, **the cost of water risk is typically externalized. Ignoring the impacts of climate change leaves companies exposed** to shocks in the water cycle that scientists agree will only continue to rise.

Some authors have termed water's 'real' value as the shadow price of water, or the price at which climate risk externalities are adequately accounted for. **Studies have shown that the shadow price of water is typically 2-3 times higher than what current water tariffs suggest.**³

Properly valuing water and its emerging climate/regulatory dimensions is not only beneficial to the profitability of companies but also pays clear environmental dividends through the sustainable use of water resources.





Key Components of a Solution

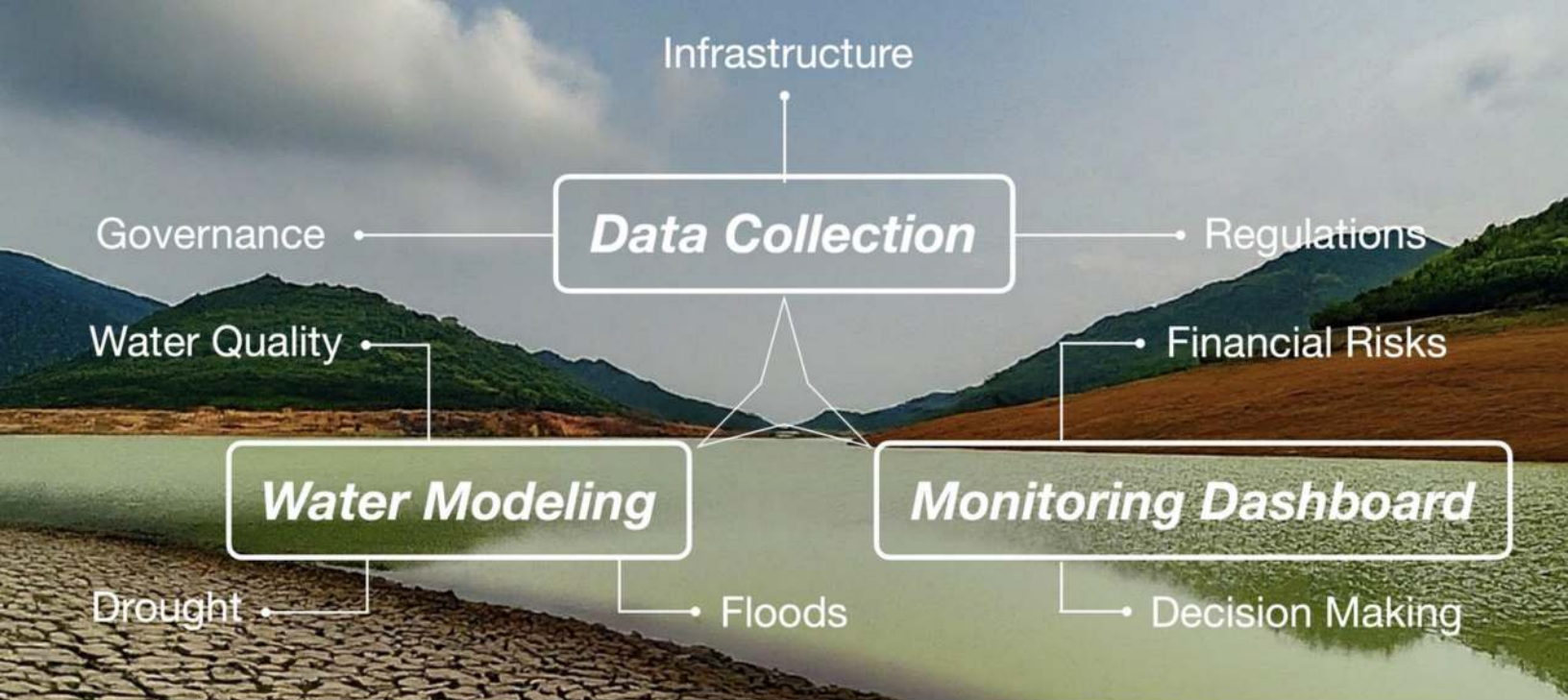
Given the acute rise in climate risk, companies are grappling with the new normal. Below are typical questions posed by executives in various water-sensitive industries:

“How do I know that the water treatment system I choose will fit properly with my water consumption tracking system?”

“How would a local government's 25% reduction in the amount of available water impact chip production?”

Pain points such as these must be addressed by solution providers. However, water-focused adaptation requires combining multiple dynamic system capabilities:

- **A Water System Model** encapsulating water input, consumption, and output modules matching manufacturing operations; capable of running various simulation scenarios based on potential adverse events;
- **A Financial Monitoring Dashboard** integrating the business impact of the Water System Model and capable of providing actionable insights at various levels of the supply and manufacturing chains;
- **A Data Collection System** capable of ingesting real-life measurements about water flow and quality from a diversity of heterogeneous sources;
- **An AI-based Predictive Model** integrating global data from industry-wide systems to provide early warnings of adverse events increasing time available to implement mitigation.



The Role of Flowmetric

Flowmetric, as a B2B water asset management platform, helps companies optimize water management. Whether through improved water efficiency on the factory floor, wastewater compliance, or calculating business exposure to water risk, the platform is designed to create cost savings and foster climate adaptation. As a partner of both the Vietnamese (MONRE) and German (BGR) Governments bringing climate adaptation solutions to the private sector, Flowmetric is a bridge between government policy and the localized means of production.

Given the demand for water-focused solutions, Flowmetric developed a Water System Model in partnership with GIZ Vietnam and SAITEX Garments. The platform employs Government data to analyze **Physical Water Risks (water quality, scarcity, and flooding)**. Then, it deploys cloud-connected water/wastewater meters at the facility to measure **Operational Water Risks (water efficiency, wastewater compliance, reputational implications)**. However, the key lies in translating water data and insights into actionable scenarios.

The key module within Flowmetric's platform is its proprietary Financial Monitoring Dashboard which translates physical and operational water risks into risk-return scenarios for company management to review. Through AI-powered predictive modeling, the engine can optimize water resource management at the factory level.



Don't be Left Behind

The global dialogue around climate made a fundamental shift in the last decade through acknowledging the role of the private sector in driving adaptation investment. Realizing that government and trade organizations will be increasingly scrutinizing corporate water use under the premise of national water security is a reality of the 21st century.

Water-sensitive industries like textiles, food & beverages, technology and other manufacturing sectors are now grappling with the new paradigm. While the market for climate adaptation is still nascent, corporate and government interest is spiking. **Corporate leadership is rushing to demonstrate a commitment to business resiliency in the face of rising climate risks and not be left behind the climate curve.**

Reach Out



or press [here](#) to go to calendar

Set up a free discovery meeting in the QR code below, or feel free to reach out on email:

wilder.mccoy@flowmetric.io



End Notes

- 1 <https://www.manufacturing.net/operations/news/22912416/mexico-drought-impacts-chemical-plants-manufacturing>
- 2 <https://www.waterplan.com/blog/water-reporting-for-sustainability-managers-the-new-sec-climate-risk-requirements-on-water>
- 3 <https://www.springerprofessional.de/the-water-credit-risk-tool-and-corporate-sensitivity-to-the-shad/24040706>
- 4 http://vepg.vn/wp-content/uploads/2021/02/VEPG_RTS_Factfile_Dec_2020_EN_fin.pdf