

DIVING INTO WATER MANAGEMENT ACCOUNTING: A CASE STUDY AT A MULTINATIONAL MANUFACTURER

1 INTRODUCTION

The Global Risk Report held by the World Economic Forum (2020) draws water crises as one of the top five global risks in terms of impact. Despite efforts to achieve SDG 6, current progress suggests that only 77% of the world's population will have access to safe and affordable drinking water by 2030. This leaves 2 billion people without safe, well-managed drinking water services (United Nations, 2023). Nevertheless, the current global water situation suggests a not-very-optimistic outlook. According to UNESCO (2023), water use has been increasing globally at approximately 1% per year over the last four decades, driven mainly through population growth, socio-economic development, and changing consumption patterns. This scenario poses concerns and opportunities for businesses to address, especially considering that effective water management is a challenge that both influences and is influenced by businesses (Hazelton, 2015).

The increasing attention given to the impact of companies' actions regarding water resources made community stakeholders pressure businesses and direct their water actions (Egan, 2018). After all, since water is a shared resource, one user's activities can harm others, and its usage in one location may have significant effects elsewhere (Chapagain & Tickner, 2012; Karimi et al., 2012). And, as businesses play a significant role in global water systems, often being "water-intensive" and increasing water shortages and quality problems, they must evolve those systems and respond to shocks and stresses (Chapagain et al., 2022; Martinez, 2015). Therefore, corporate water management accounting practices emerge to mitigate the inherent conflicts that comprise water-related actors and concerns (Ostrom, 2010; Pretorius & Turton, 2012). It comprises assessing the water context, identifying the impact on water beyond the firm boundaries, recognizing risks and opportunities, guiding actions and setting targets, and reporting it to meet stakeholders' expectations (Christ & Burritt, 2017; WBCSD, 2012).

While meeting the stakeholders' expectations, companies can also explore several opportunities when addressing water-related concerns in their strategy. According to the UN Global Compact (2022), investing in water management accounting practices can help companies save costs and reduce risks. Furthermore, manufacturing companies have identified water-related opportunities with potential benefits estimated at over US\$ 183 billion (CDP, 2023a). As a result, companies are incorporating water conservation into their strategies and establishing responsibility for meeting water targets while reporting it (CDP, 2021).

Therefore, the purpose of this paper is to understand the water management accounting practices of a multinational consumer goods manufacturer. To address this research inquiry, the authors employed a semi-structured interview approach in a case study spanning 2023-2024. By investigating its experiences, engagement with stakeholders, and motivations driving these practices, besides identifying the inherent limitations, the study aims to provide valuable insights into the field of corporate sustainability and environmental management accounting moving toward corporate water responsibility. After all, studies of corporate water responsibility could benefit significantly from considering the motivational antecedents and the possible tensions in water management accounting practices (Martinez, 2015).

2 WATER MANAGEMENT ACCOUNTING: ADVANCING TOWARD CORPORATE WATER RESPONSIBILITY

Environmental accounting raises a fundamental question about the compatibility of the core values of advanced financial capitalism – e.g., growth, profit, expansion, consumption,

and economic efficiency – with a genuine concern for the environment and whether these values can coexist with an active consideration of the natural world (Bebbington et al., 2021). So, since water is considered an essential part of “natural capital” (Hoekstra, 2009; NCC, 2016), it poses an extension to environmental accounting concerns. Therefore, corporate water management accounting is designed to support corporate management decisions and improve economic and environmental water-related business outcomes (Christ, 2014; Christ & Burritt, 2017).

Despite increased scrutiny of corporate initiatives related to water management accounting, the academic community has not yet reached a consensus on its classification. More than a decade ago, Pretorius and Turton (2012) recognized water accounting as a system capable of avoiding or solving water-related conflicts. For that, the authors noted the necessity of identifying and understanding water-related risks. According to the CEO Water Mandate (2014, p. 50), water risk is identified as “the possibility of an entity experiencing a water-related challenge (e.g., water scarcity, water stress, flooding, infrastructure decay, drought)”, although different weightings of water risk information are available (Hewawithana et al., 2023).

Regarding water management, some authors recognized it into three classifications: water protection, participation, and innovation (Ji et al., 2023). Then, we can understand water protection as the activities related to protecting water resources and striving for water security. Water security might be understood as “the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water” (UN-Water, 2013, p.1). Water participation pertains to the water consumption activities conducted in the daily operations of a corporation, encompassing actions like water consumption and water supply. Finally, water innovation encompasses innovations related to water technologies, equipment, and strategies (Ji et al., 2023).

The WBCSD - World Business Council for Sustainable Development (2012) extends this approach when proposing five stages of water management to help managers use water management in practice. First, managers should assess the global and local water situations. Second, they might account for water use and understand its impacts on the local water context. Third, by doing so, they can identify water risks and opportunities. Later, actions and targets should be set. Finally, monitoring their performance and communicating it to their stakeholders is critical. Sengupta (2017) would define this last stage as “water profiling”, which involves water risk disclosure and water accounting report. Moreover, stakeholder engagement is also recommended at every stage, particularly at the watershed level (WBCSD, 2012).

In the face of a range of different water management accounting concepts, tools, and applications among different companies, they all rely on a key concern – corporate water responsibility. While corporate water responsibility might be understood as a subfield of corporate social responsibility embracing the environmental responsibility of water resources (Gu et al., 2023; Zhang et al., 2021), many other sustainability concerns are embedded. In spite of water concerns sometimes generating conflict of interest in who to hold responsible (Ostrom, 2010), businesses have a responsibility to promote water efficiency while supporting the right to adequate clean water – this is the main direction to drive towards corporate water responsibility (Gu et al., 2023). Thus, water management accounting relies on a shift to a more sustainable usage of water resources, depending on the business’s capacity to propose and implement corporate water responsibility solutions (Martinez, 2015).

3 RESEARCH DESIGN

To address the research inquiry, semi-structured interviews were conducted in a single-case study in a multinational consumer goods manufacturer (Creswell, 2013; Yin, 2014) using an abductive approach. We selected this company because its activity is classified with “very high” water impact, according to the Water Watch - CDP Water Impact Index (2023b). The

company has also been nationally awarded for its management and sustainable use of water resources. The accessibility and availability of the respondents were also decisive for the industry choice. Between October 2023 and July 2024, five individual interviews were carried out, either face-to-face or online, mostly around fifty to sixty minutes each. The interviewees were individuals in managerial positions selected for their engagement in sustainability and/or water management practices, and they were based in different countries.

Following the previous studies' approach (e.g. Venturelli et al., 2023), we divided the questions into introductory, core, and follow-up. All the interviews start with a brief presentation of the research and the concept of water management accounting, followed by a question concerning the engagement of the interviewee's position and experiences around the topic (introductory). The core questions that lead the interviews relate to the following aspects: the interviewee's perceptions of the company's engagement with water resources management, its drivers, its practices, and limitations. Then, follow-up questions are added to each case, increasing efficiency (Herriges & Shogren, 1996). This semi-structured approach allows researchers to add pertinent questions that emerge from the research process and are relevant to the subjects' problems (Hopper & Powell, 1985).

The data analysis is based on a triangulation method that allows the researcher to build an analysis through different sources of evidence - the transcribed interviews, the notes made during the visits, documents available from the interviewee, the company's sustainability report, and any other relevant data sources available during the process. Then, a content analysis is adopted. It allows the research to derive quantitative categories from the codifications of qualitative data (Krippendorff, 2018). Therefore, the ATLAS.ti software was used to better classify and analyze these data by coding from the transcript segments and text elements while adding richness to the findings developed (O'Dwyer, 2002).

4 MAIN FINDINGS

Among the main findings of the research, two key questions were posed to all interviewees: their perceptions of the motivations and challenges in the company's water management accounting practices. The interviewees identified several factors that motivate corporate engagement in water responsibility, highlighting an evolution within the company over the years. Beginning in the 1970s, the focus was primarily on identifying suitable materials for production, such as non-toxic substances. Over time, concerns expanded to include the development of sustainable products, cost reduction, and an increasing need to be a company leader in sustainability. Additionally, respondents emphasized the awareness that managing these aspects contributes to the sustainability of the business itself. After all, *"if you are not evaluating climate risk, you are not evaluating the future risk of the business"* (I3).

Understanding environmental management as a business strategy was also evident in the company's relationships with its stakeholders, as the pressure they exert appears to drive water management and accounting practices. *"All our plants are in capitalist countries, (...) the company is a reflection; it will do what society asks. So, if you have consumers pressuring, if you have investors pressuring, that changes the prioritization the company gives to the subject"* (I4). Moreover, engaged leadership proved decisive in enabling investments in water issues.

Another key stakeholder identified was the government. The reporting of corporate sustainable practices was mentioned as a valuable asset in negotiations with governmental bodies. However, many challenges highlighted during the case study appear to be associated with the government and regulatory agencies. When comparing the stringent regulations for energy and water resources in certain plants—such as those in Europe—the legislative weaknesses of other regions, notably Brazil, became evident. Additionally, there is a lack of governmental incentives for water-saving practices, which also impacts the financial viability

of water-related projects due to the very low cost of water. *"There comes a point when the real challenge is being able to transform the topic (water) into a business case to justify multi-million changes"* (I1). Furthermore, the lack of consumer engagement in purchasing products with lower water impact, as their priorities often clash with the price, is a significant limitation. This issue is even more pronounced in regions experiencing water stress. Challenges related to assessing water risk in different locations, the lack of automation in resource management processes, and the absence of a long-term strategic vision focused on water were also identified.

Beyond the motivations and challenges in water management and accounting, several other themes were identified after the researcher's immersion in the case study. These include the operational management of water resources, the development of sustainable products, global strategies and alignment with international standards, and water reporting practices. The following figure summarizes the main categories identified within each of these themes, developed from the interviews.

Figure 1 – Research Themes and Categories



Source: Authors, based on the research findings.

5 CONCLUSION

By aiming to understand the water management accounting practices of a multinational industry, the abductive interview approach was capable of identifying core themes that perpetuate its practices: operational management of water resources, innovation and development of sustainable products, and water reporting practices. As a multinational manufacturer, we have identified global water resource management strategies and an alignment with international standards. Besides, the pre-determined questions raised relevant challenges the experts face when implementing actions for water-saving initiatives and highlighted the interviewees' perception of what drives water management accounting practices – which we noticed strong motivations coming from the stakeholders' pressure and engagement on water issues.

While providing benchmarking on water management and accounting initiatives across companies, the study also highlights key challenges that hamper the topic's development. These insights open up avenues for future research, offering a foundation for further investigation. Moreover, the findings urge legislators, particularly in Brazil, to critically address the

regulatory gaps in water resource management, which currently hinder the advancement of numerous corporate initiatives.

Despite the research's limitations—such as a small number of interviewees and inherent methodological challenges, including the potential for restricted responses due to confidentiality—this study aims to contribute valuable insights to the broader discourse on corporate water responsibility by examining a real-world case. We hope our findings will advance water accounting and management practices, fostering greater corporate responsibility in water stewardship.

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