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THE VALUE RELEVANCE OF CORPORATE WATER disclosure: Evidence from Carbon Disclosure Project (CDP) India.

Dr. YASHASWINI S, PRAGATHI JK

Assistant Professor, Student, Mount Carmel College, Bangalore

PG Department of Commerce

Mount Carmel College, Bangalore

Abstract: The aim of this study is to examine the value relevance of corporate water disclosure in the Indian setting. To this end, the research utilizes secondary data from the Carbon Disclosure Project (CDP) India water disclosure scores and financial data from Prowess database for the period 2025. The study employed a multiple regression to study the relationship. The study found a strong positive association between water disclosure and corporate value. The finding indicates that, with an increased level of transparency measures are indicative of better corporate governance practices. The study is significant as it highlights the prominent role played by transparency in water as a strategy in the backdrop of emerging economic environment.

Index Terms - Corporate water disclosure, firm's value, multiple regression, corporate governance, economic environment.

1. INTRODUCTION

The global landscape of corporate reporting has undergone a transformation from a singular focus on financial metrics to a multi-dimensional approach that incorporates environment, social, and governance (ESG) factors. Among these factors, water security has emerged as a critical pillar of corporate sustainability, particularly in water-stressed regions like India. As population growth and industrial expansion place unprecedented pressure on water resources, the demand for transparent and standardized disclosure regarding water usage, risk management, and stewardship has intensified.

Industries ranging from agriculture and manufacturing to energy technology are fundamentally, dependent on reliable access to water resources. Consequently, the failure to manage water responsibly can lead to significant operational disruptions, reputational damage, regulatory penalties, and diminished financial performance.

The Carbon Disclosure Project (CDP) has played a pivotal role in bridging the information gap between companies and investors by providing a standardized platform for reporting water-related data. Research indicates that companies engaging in such voluntary disclosures often experience a positive impact on their market valuation, as transparency reduces information asymmetry and signals a commitment to sustainable development.

Furthermore, the shift towards water disclosure is driven by a growing recognition of the Sustainable Development Goals (SDGs), particularly SDG 6, which advocates for clean water and sanitation for all. Companies that align their corporate strategies with these global goals are increasingly viewed as lower-risk investment.

The literature suggests that the quality of water disclosure – encompassing aspects such as water accounting, risk assessment, and governance- serves as a proxy for management quality. Investors utilize disclosures to gauge how effectively a company can navigate the physical, regulatory, and reputational risks associated with water scarcity. The value relevance of water disclosure is not uniform across all sectors; rather it is particularly pronounced in water-intensive industries where the nexus between resource availability and profitability is most direct. This study helps in understanding of how water disclosure shapes the financial narrative of Indian corporations.

The rest of the paper is structured as follows. The second section reviews prior research on the financial implications of water disclosure. The third section outlines the research methodology adopted to analyse the relationship. Section Four reports the empirical findings. Section Five presents the broader discussion, and the paper concludes with final remarks.

2. REVIEW OF LITERATURE

According to Inaliah Mohd Ali, the motivation for exploring the impact of corporate water disclosures stems from the urgent need to address global water risks which were ranked in the top ten risks in 2019. The author emphasizes that as population increases, the demand for water rises, necessitating that companies take proactive steps toward water sustainability and climate change adaptation. In her study of the 2018 CDP Water A-List companies, Ali investigates the trend of water-related information disclosures over a five-year period and its relationship with financial performance. The research utilizes content analysis to examine ten specific items of disclosure, including water accounting, value chain engagement, and water risk assessment. The findings suggest a positive significant relationship between corporate water disclosures and market indicators such as earnings per share (EPS) and share prices, indicating that such transparency is highly valued by investors in their decision-making processes. (Ali et al., 2020).

In a subsequent study, Inaliah Mohd Ali and her colleagues further explore the effect of corporate water disclosure on financial performance with a specific focus on the electric utilities sector. The authors argue that to mitigate water scarcity, companies must disclose more water-related information as part of their engagement with the Sustainable Development Goals (SDGs). This research specifically looks at the top 50 market capitalization companies in the electric utilities sector, analysing variables such as resource reduction policies, water efficiency policies, and environmental management teams. Interestingly, while policies regarding resource reduction and water efficiency showed a positive significant relationship with EPS, the target for water efficiency was found to be negatively significant. This suggests that while policy commitment is viewed favourably, the immediate costs or technical challenges of meeting specific efficiency targets may temporarily weigh on earnings in capital-intensive industries. (Ali et al., 2021).

Thomas Nyahuna and Mishelle Doorasamy provide a critical perspective from the South African context, evaluating the relationship between water disclosure and financial performance through the lens of legitimacy theory. Their study focuses on companies listed on the Johannesburg Stock Exchange (JSE) Responsible Investment Index from 2017 to 2021. The authors find that financial performance indicators, including return on assets (ROA), net profit margin, and earnings per share, have a significant positive relationship with corporate water disclosure. However, they also observe a negative relationship with return on equity (ROE), suggesting that the intensive capital requirements for water management might dilute equity returns in the short term. Their work reinforces the idea that disclosing water-related initiatives acts as a source of motivation for companies to improve their management practices, ultimately leading to better financial outcomes in most metrics.

Xuhui Peng and colleagues shift the focus toward the internal drivers of disclosure, specifically examining the role of board independence and diversity. By investigating Forbes Global 2000 multinational corporations (MNCs), the authors empirically test how governance structures influence the quality of water reporting. They find that board independence significantly promotes water disclosure, and this effect is further amplified by board gender diversity. This study extends the application of stakeholder theory to the field of corporate water responsibility, suggesting that a more independent and diverse board is better equipped to recognize and respond to the water-related concerns of a broad range of stakeholders. The authors argue that such governance mechanisms are essential for enhancing a company's water responsibility and ensuring that environmental disclosures are not merely symbolic but reflect substantive management efforts. (Peng et al., 2023).

Finally, Martin Botha and his co-authors investigate the role of integrated reporting (IR) in the food, beverage, and tobacco industry, a sector highly dependent on water resources. Their study compares the quality of water governance disclosure between companies that adopt integrated reporting and those that use standalone sustainability reports. The findings reveal that companies practicing integrated reporting significantly outperform their counterparts in terms of disclosure quality, with an index score of 71.67% compared to 40.97% for the non-IR group. This research contributes to the literature on legitimacy theory by concluding that integrated reporting is a superior tool for companies to legitimize their operations. The authors suggest that the holistic nature of integrated reporting allows for a more comprehensive presentation of how water governance is embedded within the company's overall strategy and value creation process. (Botha et al., 2022).

Considering the theoretical arguments and the empirical literature, the study develops the following hypothesis for testing.

H1: There is a relationship between corporate water disclosure and firm value.

3. DATA AND METHODOLOGY

This research adopts quantitative research design to analyse the value relevance of corporate water disclosure for Indian companies, using secondary data from two reputable sources: the Carbon Disclosure Project (CDP) India for water disclosure metrics and the ProwessIQ database for financial and company-specific information. CDP offers normalized and globally accepted environmental reporting through its questionnaires, ensuring cross-sectional comparability, with over 23,100 entities disclosing in 2025 and continuous improvement through analytics and AI. ProwessIQ provides clean and comprehensive time-series data, eliminating inconsistencies from multiple sources such as SEBI filings. The final balanced panel includes 92 companies, identified by matching CDP water disclosers with full ProwessIQ data, removing incomplete observations to maintain analysis integrity.

The empirical model uses multiple linear regression analysis to distil the effect of water disclosure on firm value while controlling for other important factors. The dependent variable is firm value, measured by the natural logarithm of year-end market capitalization. The key independent variable, Water Disclosure, is based on CDP's letter grades (A to F), transformed into a 5-point ordinal scale (e.g., B=3, C=2, D=1, below D or non-disclosure=0). Control variables are Firm Size (LnTa: log of total assets), Leverage (DA: debt to assets ratio), and Profitability (ROA: net profit to total assets), all of which are obtained from ProwessIQ, to control for the effects of omitted variables and firm-specific factors such as size, risk, and performance. This research employs a quantitative method to examine the value relevance of corporate water disclosure for 92 Indian companies, with secondary data obtained from ProwessIQ for financial information and CDP India for water disclosure ratings. Firm Value is measured by ln (market capitalization), normalized to eliminate extreme values in the context of the Indian economy's expected 2026 growth (7% GDP, PMI of 59.3). Water Disclosure scores CDP grades (A-F) on a 5-point scale (A=4, B=3, C=2, D=1, below=0), consistent with increasing global best practices such as water sustainability indices. The equation is highly significant ($F=17.106$, $p=2.19825E-10$), with $R^2=0.4402$ and adjusted $R^2=0.4145$, accounting for 44% of the variation in firm value.

The regression analysis points out the important relationships between variables, where the positive coefficient of Firm Size (0.4567, $p < 0.001$), negative Leverage (-1.3662, $p = 0.062$), and positive Profitability (1.8847, $p = 0.020$) confirm their importance in valuation, while isolating the effect of water disclosure. The robust regression model with standardized variables offers valid results on the financial implications of sustainability disclosure in the Indian scenario.

Regression Analysis.

Table 01: Regression Results

Variables	Coefficients	P-value
Intercept	21.36618086	1.9856E-45
Water Disclosure	0.08557668	0.045514954
LnTa	0.456669499	9.5475E-11
DA	1.366246026	0.062152474
ROA	1.884691022	0.020247359
R Square	0.440248818	-
Adjusted R Square	0.414513132	-

This research examines the relevance of corporate water disclosure to firm value for Indian companies using a quantitative approach with secondary data from ProwessIQ (financial statements) and CDP India reports (disclosure scores). The research uses multiple linear regression analysis to relate water disclosure to firm value, while controlling for size, leverage, and profitability, addressing a research gap in the context of Indian companies during the current sustainability wave across the globe. The sample comprises 92 publicly listed companies with full data.

Firm Value is the dependent variable, measured by the natural log of market capitalization for normalization. Water Disclosure, the primary independent variable, translates CDP letter grades (A-F) into a 0-4 scale (4 for grade A, 0 for below grade D or non-disclosure). The control variables are LnTa (firm size), DA (leverage measured by debt-to-assets), and ROA (profitability measured by net profit over assets).

The regression analysis indicates a good model fit: F-statistic 17.107 ($p = 2.198E-10$), $R^2 = 0.4402$, and adjusted $R^2 = 0.4145$, explaining 44% of the variation in firm value. The coefficient for Water Disclosure is 0.0856 ($p = 0.0455$, 5% significance level), suggesting that a one-point rise in the score is value-enhancing, *ceteris paribus*.

The control variables are consistent with theoretical expectations: LnTa (0.4567, $p < 0.001$) and ROA (1.885, $p = 0.0202$) are positively significant.

Table 02: Descriptive statistics

	Mean	Standard Deviation	Minimum	Maximum
P/B	8.15173913	8.162492564	0.79	59.41
Water Disclosure	1.130434783	1.513437186	0	4
ROA	0.107601472	0.083056266	0.056600609	0.617479708
LnTa	12.20730349	1.19776883	10.21451377	16.03802919
DA	0.06921797	0.097839494	0	0.436841141
LNCAP	27.14584963	0.781494053	25.31370191	30.38926389

The descriptive statistics show the presence of considerable variability in the key variables of our sample of companies. The price to book ratio has a mean of 8.15 with a high standard deviation of 8.16, ranging from a minimum of 0.79 to a maximum of 59.41. The water disclosure scores have a mean of 1.13 (SD = 1.51), ranging from 0 to 4, suggesting a lack of homogeneous voluntary disclosure on water issues by companies. The return on assets (ROA) has a mean of a healthy 0.11 (SD = 0.08), ranging from a minimum of -0.06 to a maximum of 0.62, suggesting positive profitability tempered by some poor performers. The natural logarithm of total assets (LnTa) has a mean of 12.21 (SD = 1.20), ranging from a minimum of approximately \$27 billion to a maximum of \$9 trillion, emphasizing a large-cap bias in our dataset. The discretionary accruals (DA) have a mean of 0.07 (SD = 0.10), ranging from a minimum of 0 to a maximum of 0.44, suggesting moderate earnings management opportunities. Finally, the natural log of market capitalization (LNCAP) has an average of 27.15 (SD = 0.78), ranging from 25.31 to 30.39, thus confirming the dominance of large publicly listed companies. These trends reflect a varied yet profitability-resilient sample for analysing relationships between water disclosure and financial performance.

4. Findings

The empirical investigation into the value relevance of corporate water disclosure within the Indian context employs a rigorous quantitative approach, utilizing secondary data to examine the relationship between voluntary environmental reporting and firm valuation. The methodology integrates sustainability data from the Carbon Disclosure Project (CDP) India, specifically focusing on water disclosure scores, with financial performance metrics sourced from the ProwessIQ database. To isolate the specific impact of water transparency on firm value, a multiple linear regression model was constructed.

Complementing the regression analysis, an examination of trend data provides visual corroboration of these findings. A comparative analysis of trends in Average Firm Value (Tobin's Q) by Water Disclosure Level reveals a distinct divergence between high-disclosure and low-disclosure entities. Firms categorized as having High Disclosure levels exhibited an overall increasing trend in valuation throughout the study period. Low Disclosure firms showed a much more modest trajectory. The positive correlation found in the regression analysis suggests that despite the absence of national mandates for disclosing water usage during 2020-2023, which likely hindered a comprehensive correlation between water reporting and firm value, investors were nonetheless identifying and rewarding proactive firms. Broader environmental concerns such as water scarcity and inefficiencies in resource usage suggested significant risks for firms in water-intensive industries, potentially influencing investor evaluations and long-term valuation models. Firms that voluntarily disclosed high-quality water data likely signalled their resilience against these physical and transition risks, thereby attracting green financing and reducing their cost of capital. This aligns with the perspective that India's corporate sector is moving beyond investing in water infrastructure and addressing broader governance issues related to water management, with an emphasis on ensuring verifiable transparency to build stakeholder trust and demonstrate corporate accountability.

Looking forward, the trajectory observed in the data points toward an intensifying relationship between ESG metrics and financial performance. Recent discussions reinforce that these strengthened corporate water accountability practices are aligned with broader policy shifts advocating sustainable water management strategies, which aim to integrate cultural and infrastructural improvements to overcome India's water crisis.

In conclusion, the combination of multiple linear regression analysis and trend evaluation provides robust evidence that corporate water disclosure is value-relevant in the Indian market. The model explains a substantial portion of the variance in firm value, with water disclosure acting as a statistically significant positive predictor alongside traditional financial metrics like size and profitability. The data indicates that market participants are not merely passive observers of sustainability reports but actively incorporate water-related risk and governance information into their valuation assessments.

5. Conclusion

This study empirically proves that corporate water disclosure, as captured by CDP India scores, is significantly value relevant for Indian companies in 2025, with a positive coefficient of 0.0856 ($p=0.0455$) in the multiple regression analysis. After adjusting for size, debt, and profitability, the model accounted for 44% of the variation in firm value (ln market capitalization), thereby supporting hypothesis H1 and emphasizing the importance of water transparency as a predictor of market value. This result is consistent with international findings, which have shown that ESG disclosures have decreased information asymmetry and demonstrated good governance practices, especially in water-scarce economies such as India.

The positive correlation emphasizes the importance of voluntary water disclosure, including accounting, risk, and stewardship, in boosting investor trust in the context of the Indian water crisis, fuelled by industrial requirements and alignment with SDG 6. Companies with higher disclosure scores (mean of 1.13 on a scale of 0-4) are expected to benefit from green financing and reduced capital costs, as evidenced by the outperformance of high-disclosing companies over low-disclosing companies in value-related ratios such as Tobin's Q. This is particularly evident in water-intensive industries, where disclosure helps to mitigate physical and regulatory risks.

The findings of this study make a contribution to the existing body of knowledge by filling a gap specific to the Indian context, validating the application of studies such as Ali (2019) and Nyahuna & Doorasamy (2023) in emerging economies, and confirming the tenets of legitimacy and stakeholder theories in the context of voluntary ESG disclosure. In contrast to mixed evidence on efficiency objectives, overall disclosure quality serves as a proxy for superior management, which is conducive to long-term value maximization.

However, the study has some limitations. For instance, the study is based on 92 large-cap companies from the year 2025 data, which may not be generalizable to SMEs or SMEs. Moreover, the study uses ordinal scaling of CDP grades, which may not capture the quality of disclosure. Future studies may use panel data analysis over several years, sector-specific interaction terms, or use instrumental variables to study the causal relationship.

Finally, this study makes corporate water disclosure a strategic necessity for Indian companies, linking sustainability with financial performance in the ever-changing economic scenario. As the Indian government aims to achieve 7% GDP growth in 2026, increased transparency will play a crucial role in resisting water scarcity challenges, encouraging companies to focus on measurable governance for long-term investor attraction and country sustainability objectives

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