

Environmental Performance of Environment Sensitive Industries: A Study on Selected Indian Companies

Prarthana Mishra

Research Scholar

*P.G. Department of Commerce, Rama Devi Women's University,
Bhubaneswar, Odisha*

E-mail id: prarthanacommerce333@gmail.com

Jayashree Jethy

Assistant Professor

*P.G. Department of Commerce, Rama Devi Women's University,
Bhubaneswar, Odisha*

E-mail id: jayashreejethy@rdwu.ac.in

Sabat Kumar Digal

Associate Professor

*P.G. Department of Commerce, Rama Devi Women's University,
Bhubaneswar, Odisha*

E-mail id: sabatdigal@gmail.com

Abstract

Environmental report communicates an organization's environmental performance to the stake holders and the public at large. Environmental performance can be in the form of a simple public relation statement or a detailed report on environmental performance with future. Among the three sectors of Indian industries i.e., primary (Agriculture), secondary (Manufacture), tertiary (Service sector), the secondary sector which is the manufacturing sector contributes adversely to the environment. This adverse impact is due to its bad waste management. This paper has considered twelve Environmental Sensitive Industries (ESI) of Nifty. Environmental information's are collected from annual reports and sustainability reports by the help of content analysis. The objective of the paper is to study the impact of environmental reporting on environmental performance.

Key words: Content Analysis, Environmental performance, Environmental information, Environmental report, Environmental Sensitive Companies.

1. Introduction

In 2020, India was placed 179th out of 180 countries on the Environmental Performance Index (EPI) for air quality. This started an inquiry to learn how the Environmentally Sensitive Industries (ESI) falling under Nifty report their environmental dimension in the sustainability reports. Reducing emissions is essential to maintain the challenge of making global warming as manageable as possible. Greenhouse gas (GHG) emissions have raised global temperatures over the past few decades, causing many significant consequences, including fluctuations in temperatures and precipitation, melting of glacier and increase in sea levels. Rapid urbanisation and industrialization have created tremendous environmental problems, particularly in terms of energy use and carbon emissions. Their approaches stimulate rapid increase in fossil fuel consumption, resulting in significant amounts of CO₂ and other greenhouse gas emissions. Greenhouse gas emissions from industry are mostly caused by the burning of fossil fuels for energy, as well as some chemical reactions required to make things from raw

materials. The growth of industrialization ultimately means the use of more natural resources. Increase industrial activity and focus on production in for the country to become self-sufficient, which affects environment.

India has taken many important steps to address this issue. The Government of India plans to revise its air quality standards and has recently strengthened its vehicle and industrial emission standards. The Government of India's National Clean Air Program (NCAP) is an important step in recognizing and resolving the problem of poor air quality. NCAP has set time-limited targets to improve air quality across the country. India's efforts to address air pollution include a major focus on renewable energy, the promotion of electric vehicles, and the provision of LPG cooking fuel to millions of homes. Air quality control is a continuous procedure. It must be integrated into the government's capacities as well as commercial and individual behaviour.

The India GHG program, coordinated by the World Resource Institute (WRI) and the Energy and Resource Institute (TERI), is a voluntary framework for measuring and managing greenhouse gas emissions in India. The GHG protocol outlines corporate standards and guidance for preparing GHG emission inventories. The program aims to create a pool of appropriately qualified and certified GHG practitioners, as well as measurement and management professionals, to help businesses become more competitive, lucrative, and sustainable. The standard divides GHG emissions into three scopes. Companies need to report greenhouse gas emissions in three areas. Scope 1 deals with direct emissions from owned and controlled sources and indirect emissions according to Scope 2. However, most Indian companies have adopted the Global Reporting Initiative (GRI) standards for reporting in their sustainability reports. The GRI Standards include disclosures, which give organisation's a formal way to report on themselves and their impacts. This method of reporting provides a comprehensive view of a company's most significant economic, environmental, and human impacts. This paper considers the GRI Reporting Criteria as a benchmark for environmental performance and disclosure.

The next section provides an overview of the literature on CSR then this is followed by research methodology. After outlining the research methodology each objective is addressed succeeded by the conclusion, limitation.

2. Literature Review

Iredele, O.O. (2020) made an empirical study to measure the level of performance of environmental reporting in Nigeria and to determine variation in Corporate Environmental Reporting (CER) with respect to firm characteristic. The statistical tools like descriptive analysis, one-way analysis of variance (ANOVA) and content analysis are used. It was inferred that the environmental reporting is low, and the firm size is the significant characteristics that accounts for variation in the level of Corporate Environment Reporting.

Shahab, Ntim, Chen, Ullah, Li and Ye.Z. (2020) examined the attributes of Chief Executive Officer (CEO) OF LISTED Chinese firms on sustainability and environmental performance and environmental reporting. It is concluded that the CEOs with research background, financial expertise and foreign exposures focuses on sustainable and environmental performance than others. It is also observed that the young CEO'S focused on the aspect than the others. Descriptive statistics and regression analysis are used as tools to reach with the conclusion.

Jagadish R. Raiyani (2019) reviewed the environmental and financial performance of 32 NSE listed companies. The environmental performance was measured by developing a checklist of environmental performance disclosures. Earnings per share was used to measure the financial performance of the companies. The study found no significant association between financial performance and environmental performance.

Hardi and Chairina (2019) worked on "The effect of sustainability reporting disclosure and its impact on companies' financial performance". The purpose of the study was to examine empirically the effect of sustainability reporting disclosures on the financial performance of the companies. A sample of 40 observations were derived from companies that consistently became Indonesia Sustainability Reporting

Award (ISRA) nominee and were listed in Indonesia Stock Exchange (BEI) during 2016-2017. Multiple linear regression was used for analysis purpose. It was concluded that economic dimension has impact on financial performance, whereas environmental dimension and social dimension have no effects.

Yi-Chun, Mingyi, and Yongxiang (2017) examined how mandatory disclosure of CSR impacts firm performance and social externalities. It was inferred that CSR disclosure has a positive effect on the pollution level. It was further observed that CSR spending is driven by political and social factors. Similarly, mandatory disclosure puts pressure to increase their commitment to CSR disclosure.

He and Loftus (2014) tried to establish relationship between environmental reporting and environmental performance by large Environmental Sensitive Industries (ESI). For the study a sample of 100 companies based on the market capitalization of China were taken into consideration. The corporate environmental disclosures are obtained from annual report and sustainability report. Tools used for the analysis are content analysis, regression analysis and ordinary least square. It was concluded that there is a positive association between corporate environmental reporting and corporate environmental performance. Further it was reflected that the firm size with better environmental performance provide a greater proportion of objective and verifiable environmental disclosure.

Agarwal (2013) made a study on “Sustainability Reporting and Impact on corporate financial performance- A literature review.” The objective of this study was (i) to provide an overview of the concept of sustainability reporting and GRI framework and, (ii) to study the impact of sustainability reporting on financial performance of companies. The findings show various indicators of sustainability (environment, community, employment) have varying impact on different measures of financial performance.

Clarkson, et al. (2008) tried to resolve the relationship between environmental performance and environmental disclosure. A GRI Index was developed basing on which 191 firms belonging to five sectors that have high impact on environment were evaluated. Actual pollution data and total toxic waste recycled. To arrive at a conclusion, descriptive statistics, Pearson correlation, regression analysis, and sensitivity analysis were used. It was concluded that there is a link between environmental performance and discretionary disclosures in environmental and social reports or associated web disclosures.

Acar and Temiz (2019) investigated the association between environmental performance of firms and the level of voluntary environmental disclosure in emerging markets. 133 publicly traded Turkish companies were evaluated based on Wiseman index. Toxic Release Inventory (TRI) data was considered as the proxy for environmental performance. To reach at the conclusion descriptive statistics, Pearson correlation, regression analysis and sensitivity analysis was conducted. It was concluded that there is a positive relationship between environmental disclosure and environmental performance.

3. Research Methodology

- a) **Research Problem:** Whether environmental disclosure has an impact on environmental performance or is only a sort of social pressure.
- b) **Data Collection:** Data relating to environmental disclosure and environmental performance are collected from the sustainability reports. Financial data are collected from the annual reports.
- c) **Data Size:** The study relates to twelve Environmental Sensitive Industries (ESI) belonging to six industries. The six industries are petroleum, power, oil and gas, ferrous metal, non-ferrous metal and mining. These industries also fall under the NIFTY index of NSE.
- d) **Period of the study:** The period of the study relates to six years i.e., 2015-2016 to 2020-2021.
- e) **Research Tools:** Data were analysed using content analysis, descriptive, scatter plot, correlation, and regression analysis.

4. Objectives Of the Study:

- a) To investigate the effect of environmental disclosure on ESI firms' environmental performance.
- b) To study the impact of financial performance on environmental disclosure of ESI companies.

5. Hypothesis Of the Study

H01: Environmental transparency in sustainability reports improves environmental performance.

H02: Environmental transparency and financial performance have a favourable relationship and influence.

6. Empirical Variables and Analysis

The GRI 300 that deals with environmental dimension is considered as the yardstick to assess the environmental disclosure of ESI companies. GRI 300 standard has total eight standards with thirty disclosures. Each disclosure is allotted with one point. Companies who declare any disclosure in their sustainability report receive one point throughout the period of the study. Then it is added to reach at the GRI disclosure score. For environmental performance purpose GHG intensity was selected as variable. The intensity is computed by dividing the absolute emissions with the organisation's specific metric. GHG emissions intensity, when combined with an organization's absolute GHG emissions, helps to contextualize the organization's efficiency, including in comparison to other organisations. The units of GHG intensity were found to differ from sector to sector. Even within the same industry, the units differ from one organisation to the next. So, if the companies have reported GHG intensity in quantitative figures, one point is awarded for understanding. As a result, each ESI company's total score is calculated.

Financial performance refers to a company's overall financial health. When you hear a company's financial performance is good, it usually indicates it has expanding sales, manageable debt, and plenty of free cash flow. The organization's ability to align people and resources to strategic tasks for achieving organisational performance in a moral and ethical manner that results in long-term competitive advantage. For long term competitive advantages, the paper has considered the last years financial ratios like Return on Asset (ROA), Leverage (LEV) and Capital Intensity (CAPINTEN).

ROA assesses how well a corporation can manage its assets to generate profits over time. This ratio aids managers and investors in determining how well a company can transform its assets into profits. The ratio is determined by net income by total asset. A higher ratio is more appealing to investors since it indicates that the company is better managing its assets to generate more net income. The ROA of twelve ESI companies were positive which indicates there is an upward profit trend.

Leverage is an investment strategy that uses borrowing, specifically various financial products and borrowed capital, to increase the potential return on investment. The ratio of liabilities to assets is commonly used by creditors to determine the level of a company's liabilities, its ability to repay its liabilities, and whether the company has access to additional borrowing. Investors, on the other hand, use this ratio to enable companies to be affordable, fulfil their current and future obligations, and get a return on their investment. Therefore, leverage is calculated here by dividing total liabilities by total assets. It was observed that leverage ratios of all ESI companies were less than one that means the companies own more assets than liabilities.

Capital intensity indicates how effectively the firm's capital and assets are put to work in the production process. A high capital intensity ratio (CIR) indicates that a company has made significant capital investments to generate income. Whereas a low CIR means that a company can generate higher profits despite having fewer assets. Capital intensity can be calculated by dividing total asset with sales. The paper has calculated the capital intensity ratio by dividing capital expenditure with sales (Acar and

Temiz,2019).

7. Empirical Results

As briefly mentioned in the research tool, after the content analysis the information's are converted to data set.

Table-1: Data sets of ESI companies

COMPANY	GHG INTEN	GRI DIS	ROA	LEV	CAPINTEN
GAIL	6	166	0.08	0.07	0.05
ONGC	0	96	0.02	0.05	0.49
RIL	1	120	0.04	0.29	0.29
BPCL	6	150	0.02	0.33	0.03
IOCL	6	166	0.06	0.29	0.06
TATA	6	37	0.09	0.26	0.03
JSW	6	80	0.07	0.35	0.83
COAL	0	133	0.02	0.11	0.16
NTPC	5	160	0.04	0.51	0.37
POWER G	0	117	0.04	0.56	0.28
HINDALCO	4	139	0.01	0.36	0.45
VEDANTA	4	108	0.07	0.44	0.74

From table-1 it can be inferred that three companies i.e., ONGC, Coal India and Power Grid have not reported rest companies have reported their GHG intensity ratio in quantitative form in the annual report. As the units of measurement was not same in sample, so one point has allotted for each year. As a result, the maximum score is six. The second column indicates the GRI environmental disclosure, where one point is allotted to each disclosure. As there are thirty disclosures so the maximum score in a year is thirty which is later multiplied with the number of years. The rest column represents the financial figures which are discussed earlier. After preparing data set descriptive statistics analysis was done in table 2.

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
GHGINTEN	12	6	0	6	3.67	2.640
GRIDIS	12	129	37	166	122.67	38.606
ROA	12	.08	.01	.09	.0467	.02674
LEV	12	.51	.05	.56	.3017	.16281
CAPITALINTEN	12	.80	.03	.83	.3150	.27325
Valid N (listwise)	12					

The table shows descriptive statistics of twelve ESI companies where the mean of GHG intensity is 3.67 with a standard deviation of 2.640. This reflects that the data are widely dispersed that means some companies are reporting their GHG intensity whereas some companies are not reporting. Similarly, the financial data are also widely scattered from the mean. Whereas the mean of GRI disclosure is 122.67 with a standard deviation of 38.66 that means most of the companies are reporting environmental disclosure as per GRI. Then we tried to find out the relation between GRI disclosure and GHG intensity and financial variable. Test of normality was carried out to find out whether the data are normally distributed or not. It was observed that in Shapiro-wilk test the p value is more than 0.05 (Table-2) that means the data are normally distributed. A study was conducted in table-3 to determine the relationship between GRI disclosure, GHG intensity, and financial performance.

Table-2: Test of Normality

Shapiro-Wilk		
Statistic	Df	Sig.
.773	12	.005
.924	12	.323
.947	12	.599
.898	12	.151
.928	12	.357

Table-3: Correlation Analysis

	GHGINTEN	GRIDIS	ROA	LEV	CAPINTEN
GHGINTEN	1	.093	.549	.120	-.121
GRIDIS		1	-.362	.025	-.309
ROA			1	.012	-.006
LEV				1	.303
CAPINTEN					1

The table-3 shows that GHG intensity and GRI disclosure have a strong positive association. But it is not significant as the p- value is more than 0.05. Similarly, because the p-value is greater than 0.05, the association between environmental disclosure and financial metrics is insignificantly negative. Further for impact study regression analysis is carried out in table-4 and table-5.

Table-4: Model Summary

Model	R	R Square	Adjusted RSquare	Std. Error of theEstimate
1	.093 ^a	.009	-.090	2.75678

The hypothesis was regressed in table-4 to see if environmental transparency in sustainability reports affects environmental performance. The dependent variable GHG intensity was regressed on the predicting variable GRI environmental disclosure to test the hypothesis H01. GRI disclosure do not predict the environmental performance, r square is .009 that means the model explains only 0.9% of the variance and the p-value is greater than 0.05.

Hypothesis	Regression Weight	Beta coefficient	R Square	F	p-value	Hypothesis supported
H01	GRIDIS- GHGINTEN	.006	.009	.088	.773	No

Table-5 :Model Summary

Model	R	R Square	Adjusted RSquare	Std. Error of theEstimate
1	.333 ^a	.111	-.222	42.68194

a. Predictors: (Constant), CAPINTEN, ROA, LEV

Similarly, the second hypothesis was regressed to see environmental transparency has any influence on financial performance or not. Table 5 shows the dependent variable environmental disclosure regressed against the independent variables return on asset, leverage, and capital intensity. The table reflects that the r square is .111 which means only 11% is explained by the dependent variable and the p- value is more than 0.05. So, the H02 is rejected and the regression equation is

$$\text{Env disclosure} = 128.412 + 2.100 \cdot \text{ROA} + 31.654 \cdot \text{LEV} - 49.159 \cdot \text{CAPINTEN}$$

8. Conclusion

The study provides two major findings. First how environmental reporting effects environmental performance where We concluded that environmental reporting had no impact on environmental performance, implying that corporations publish information that has a positive impact and concentrate on disclosures that demand less effort in correcting activities that have an environmental impact. GHG intensity is one of the major areas where the corporates need to focus as it deals with volume of emission per unit of production. ESI companies' operation and their products effect the environment in large extent as compared to other type of manufacturing companies. Second, the study attempted to determine how financial performance influenced environmental transparency. It was observed that financial performance has no influence on environmental transparency. This shows that generating a standalone sustainability report is entirely dependent on the managers' attitude and sense of responsibility toward society, rather than financial facts.

9. Limitations

The study is confined to only ESI companies that are part of NIFTY index. The relationship between environmental transparency and environmental performance of all ESI enterprises in India, as well as other manufacturing companies, was not examined in the report.

References

- Acar, M., & Temiz, H. (2020). Empirical analysis on corporate environmental performance and environmental disclosure in an emerging market context. *International Journal of Emerging Markets*, 15(6), 1061–1082.
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4-5), 303– 327.
- Deswanto, R. B., & Siregar, S. V. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, 14(1), 180–193.
- Junior, R.M., Best, P.J. & Cotter, J. Sustainability Reporting and Assurance: A Historical Analysis on a World-Wide Phenomenon. *J Bus Ethics* 120, 1–11 (2014).
- Sen, M., Mukherjee, K., & Pattanayak, J. K. (2011). Corporate environmental disclosure practices in India. *Journal of Applied Accounting Research*, 12(2), 139– 156.
- Radhouane, I., Nekhili, M., Nagati, H. and Paché, G. (2020), "Is voluntary external assurance relevant for the valuation of environmental reporting by firms in environmentally sensitive industries?", *Sustainability Accounting, Management and Policy Journal*, Vol. 11 No. 1, pp. 65-98
- Nishitani, K., Haider, M. B., & Kokubu, K. (2019). Are third-party assurances preferable to third-party comments for promoting financial accountability in environmental reporting? *Journal of Cleaner Production*, 119199.

- Gallego- Álvarez, I., & Pucheta- Martínez, M. C. (2020). How cultural dimensions, legal systems, and industry affect environmental reporting? Empirical evidence from an international perspective. *Business Strategy and the Environment*.
- Pucheta-Martínez, M. C., Bel-Oms, I., & Rodrigues, L. L. (2020). Does stakeholder engagement encourage environmental reporting? The mediating role of firm performance. *Business Strategy and the Environment*.
- Adeyemi, A. A., Bakare, O. T., Akindele, A. J., & Soyode, O. (2020). Impact of the Oversight Role of NGOs on the Environmental Reporting and Social Responsibility of Listed Manufacturing Companies in Nigeria. *Environmentalism and NGO Accountability*, 107–121.
- Das, J., and Bhattacharjee, A. (2020). Environmental Reporting - An Evaluation of The Sustainability Performance Of Bhel.
- Negash, M., & Lemma, T. T. (2020). Institutional pressures and the accounting and reporting of environmental liabilities. *Business Strategy and the Environment*.
- Angela, P., and Handoyo, S., (2021). The Determinants of Environmental Disclosure Quality: Empirical Evidence from Indonesia. *Journal of Accounting Auditing and Business - Vol.4, No.1, 2021*,
- Zamil, I.A., Ramakrishnan, S., Jamal, N.M., Hatif, M.A. and Khatib, S.F.A. (2021), "Drivers of corporate voluntary disclosure: a systematic review", *Journal of Financial Reporting and Accounting*, Vol. ahead-of-print No. ahead-of- print.
- Gerged, A. M., Beddewela, E., & Cowton, C. J. (2020). Is corporate environmental disclosure associated with firm value? A multicountry study of Gulf Cooperation Council firms. *Business Strategy and the Environment*.
- Horváthová, E. (2012). The impact of environmental performance on firm performance: Short-term costs and long-term benefits? *Ecological Economics*, 84, 91– 97.
- Bednářová, M., Klimko, R., & Rievajová, E. (2019). From Environmental Reporting to Environmental Performance. *Sustainability*, 11(9), 2549.
- Pahuja, S. (2007). Environmental Reporting Verification: A Critical Evaluation of Accountants' Views and Corporate Practices in India. *Social Responsibility Journal*, 3(2), 22–31.
- Setra, H. S. (2021). A Framework for Evaluating and Disclosing the ESG Related Impacts of AI with the SDGs. *Sustainability*, 13(15), 8503.
- Gonçalves, A., & Silva, C. (2021). Looking for Sustainability Scoring in Apparel: A Review on Environmental Footprint, Social Impacts and Transparency. *Energies*, 14(11), 3032.
- Balluchi, F., Lazzini, A., & Torelli, R. (2021). Credibility of environmental issues in non-financial mandatory disclosure: Measurement and determinants. *Journal of Cleaner Production*, 288, 125744.
- Pedron, A. P. B., Macagnan, C.B., Simon, D.S., & Vancin, D.F. (2020). Environmental disclosure effects on returns and market value. *Environment, Development and Sustainability*.
- Jones, Thomas M. (1980). Corporate Social Responsibility Revisited, Redefined. *California Management Review*, 22(3), 59–67.
- Lindgreen, A, Swaen, V. (2010). Corporate Social Responsibility., 12(1), 1–7.
- Carroll, A. B. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. *Academy of Management Review*, 4(4), 497–505.
- Callan, S., Thomas, J. (2009). Corporate financial performance and corporate social performance: an update and reinvestigation., 16(2), 61–78.
- Jones, Thomas M. (1980). Corporate Social Responsibility Revisited, Redefined. *California Management Review*, 22(3), 59–67.
- Lindgreen, A, Swaen, V. (2010). Corporate Social Responsibility., 12(1), 1–7.
- Carroll, A. B. (1979). A Three-Dimensional Conceptual Model of Corporate Performance. *Academy of Management Review*, 4(4), 497–505.
- Callan, S., Thomas, J. (2009). Corporate financial performance and corporate social performance: an update and reinvestigation., 16(2), 61–78.