

## AN ANALYSIS OF ENVIRONMENTAL ACCOUNTING AND SUSTAINABILITY REPORTING PRACTICES IN MANUFACTURING INDUSTRIES OF RAJASTHAN

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### Abstract

Across the globe, corporate reporting has been affected by the degradation of the environment and the concern for sustainability. In reporting and accounting for the environment, organizations measure, disclose, and manage their impact on the environment and sustainability. It looks at the impact of environmental accounting and sustainability reporting practices on the manufacturing industries of Rajasthan, India. The research examines the secondary data from the annual reports, sustainability reports, and corporate websites of selected firms and evaluates their reporting per the Global Reporting Initiative (GRI) and other international reporting frameworks, and studies the environmental accounting system challenges the industries face. It has been found that the large manufacturing firms have started reporting on sustainability, and that there is a lack of environmental accounting practices and that the limited practices are at the firms' discretion. In order to strengthen sustainability reporting in the manufacturing industries of Rajasthan practices, the authors recommend the enforcement of regulations, the creation of plain reporting frameworks, the increase of managers to understand the importance of sustainability reporting, and the improvement of position reporting practices.

**Keywords:** Environmental Accounting, Sustainability Reporting, Manufacturing Industries, Corporate Disclosure, GRI Framework

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### 1. Introduction

The impact of industrial growth is particularly pronounced in the state of Rajasthan where the manufacturing of industrial goods is crucial for the development of the region and growth of employment opportunities. One of the by-products of such rapid growth is the industrialization of the state. The development of the industry in Rajasthan is further compounded with the development of the industries such as air and water contamination, resource exploitation, and the generation of waste. In light of this, the rapid growth of industries in Rajasthan is meticulously documented in the context of the development of the industries. Documented

development can further be complicated by the development of industry in Rajasthan and the development of self-sustaining industries in Rajasthan. Self-sustaining industries can further develop the industry in Rajasthan. The self-sustaining industries can further develop the industry in Rajasthan and self-sustaining industries and documented development. The industries can also develop in Rajasthan self-sustaining industries and documented development. Rajasthan is also home to industries such as textiles, cement, chemicals, and marble, and in addition to water scarcity, land degradation, and pollution, the region is burdened with unique climatic challenges. Subsequently, this paper aims to analyze and document the state of environmental accounting and self-sustaining reporting in the manufacturing sector industries of Rajasthan.

## 2. Review of Literature

Selvaraju (2025) praised Business Responsibility and Sustainability Reporting (BRSR) as an innovative framework for promoting social equity and balanced sustainability reporting regarding the environment in India. Chouhan, Singh, and Goswami (2025) also assessed GHG emissions and sustainability in Rajasthan's industrial clusters and said that most of the regional industries of Rajasthan are gradually adapting to the zero carbon vision of India, but this is a vision yet to be realized in many sectors.

Rajawat and Mahajan (2024) examined the trends in sustainability reporting in the Indian banking sector and revealed that profitability and the size of the firm are significant factors in the determination of the quality of disclosure, an observation that complements most earlier studies that focused on the manufacturing sector. Gandhi (2024) did an analysis of the sustainability practices of Indian firms and stated that environmental reporting, in general, is a voluntary activity and that it is done more for reputation than compliance due to the absence of any law to that effect.

In the same year, Gola, Mendiratta, and Gupta (2022) studied the environmental reporting practices in India. Disclosure was uneven in the level of reporting and it was only the large companies that seemed to practice the reporting structures offered by the Global Reporting Initiative (GRI). Kumari and Saxena (2022) prepared a development of an overview of green accounting as India's sustainable vision and noted advances in conceptualization but limited in standardization in practice.

Chouhan et al. (2021) documented sustainability practices in reporting in cement industries in India. They noted JK Cement and other firms in Rajasthan as the first environmental accounting adopters due to the pollution in the sector. Khandelwal and Chaturvedi (2021) integrated environmental accounting disclosures with the financial outcomes and transparent reporting outcomes suggesting improved investor confidence, and legitimacy to the corporation.

Bhat and Jaya (2018) noted environmental accounting practices are in their infancy in the Indian corporate world are limited in number and mostly in the higher echelons of the listed companies. Khan (2016) analyzed the environment reporting in Rajasthan's manufacturing industries and concluded that it is still in early stages, highly fragmented and mostly due to external stakeholders, and not due to the internal sustainability commitment.

There is a consensus in the above studies that although the sustainability reporting and environmental accounting are developing in India, they still lack in many regions. In Rajasthan, the difference between the reported policies and the practices is large. The current study aims to fill this gap by analyzing the environmental accounting practices at the state level in manufacturing industries in Rajasthan, and at the same time, it aims to enrich the dialogue on sustainable industrialization.

### **3. Objectives of the Study**

**The primary objectives of this research are:**

1. To examine the extent of environmental accounting practices in manufacturing industries of Rajasthan.
2. To analyze sustainability reporting patterns adopted by manufacturing firms.
3. To assess compliance with international sustainability reporting standards.
4. To identify challenges faced by manufacturing industries in implementing environmental accounting.
5. To suggest measures for improving sustainability reporting practices.

### **4. Research Methodology**

#### **4.1 Research Design**

The study adopts a descriptive and analytical research design based on secondary data.

## 4.2 Sample Selection

A sample of 25 manufacturing companies operating in Rajasthan was selected from sectors including cement, textiles, chemicals, metals, and ceramics. Companies were chosen based on availability of published annual and sustainability reports.

## 4.3 Data Sources

**Secondary data were collected from:**

- Annual reports
- Sustainability and CSR reports
- Corporate websites
- Government publications
- Previous research studies

## 4.4 Tools of Analysis

**Data were analyzed using:**

- Content analysis
- Percentage analysis
- Comparative tables

## 5. Environmental Accounting Practices in Rajasthan's Manufacturing Industries

There are considerable differences in the practice of environmental accounting among manufacturing industries in Rajasthan. In large-scale businesses, especially in cement and metal industries, environmental cost identification practices like pollution control, waste management, and energy adaptive management programs have been implemented. That said, the majority of companies do not keep separate environmental accounting records. Environmental costs are often embedded in the general overheads, obscuring the evaluation of environmental performance.

**Table 1: Environmental Accounting Practices Adopted by Firms – Content and Percentage Analysis (2019–2024)**

| <b>Environmental Accounting Practice</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>Average %</b> |
|------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| <b>Pollution Control Cost Disclosure</b> | 24<br>(48%) | 26<br>(52%) | 29<br>(58%) | 32<br>(63%) | 34<br>(68%) | 36<br>(72%) | 60.2%            |
| <b>Energy Consumption Accounting</b>     | 28<br>(55%) | 30<br>(60%) | 33<br>(65%) | 35<br>(69%) | 36<br>(72%) | 38<br>(75%) | 66.0%            |
| <b>Water Management Cost Reporting</b>   | 15<br>(30%) | 17<br>(34%) | 19<br>(38%) | 21<br>(41%) | 22<br>(44%) | 24<br>(48%) | 39.2%            |
| <b>Waste Management Accounting</b>       | 20<br>(40%) | 23<br>(45%) | 25<br>(49%) | 27<br>(53%) | 28<br>(56%) | 30<br>(60%) | 50.5%            |
| <b>Separate Environmental Statements</b> | 6<br>(12%)  | 8<br>(15%)  | 9<br>(18%)  | 11<br>(21%) | 12<br>(24%) | 14<br>(28%) | 19.7%            |

(Percentage=Number of Firms Reporting the Practice/Total Sample Firms×100)

The trend projection of environmental accounting practices as adopted by firms between 2019 and 2024 has indicated gradual increase in the trend. The accounting of energy consumption has the best adoption rate with increase of 55 to 75 per cent in 2019 and 2024 respectively as more companies target energy efficiency and sustainability reporting.

Equally, the cost disclosure on pollution control rose by 48 to 72% which indicates the accumulating regulatory pressure and environmental responsibility. The accounting of waste management also gained significantly between 40% and 60 per cent implying that the companies were able to track environmental costs better.

Nevertheless, distinct environmental statements represent the least popular practice which only grows in response to 12% in 2019 up to 28% in 2024. This shows that although firms declare environmental expenses in annual reports, very few of them prepare environmental financial statements.

The comparative study, in general, suggests that environmental accounting practices have considerably advanced within the study period, which can be seen as the driver of the growing incorporation of sustainability concerns in the corporate financial reporting.

**Table 2: Comparative Adoption of Environmental Accounting Practices (2019–2024)**

| Rank | Environmental Accounting Practice | Average Adoption % |
|------|-----------------------------------|--------------------|
| 1    | Energy Consumption Accounting     | 66.0%              |
| 2    | Pollution Control Cost Disclosure | 60.2%              |
| 3    | Waste Management Accounting       | 50.5%              |
| 4    | Water Management Cost Reporting   | 39.2%              |
| 5    | Separate Environmental Statements | 19.7%              |

**Source:** percentage calculations of environmental accounting disclosures of 25 manufacturing firms in Rajasthan between 2019–2024.

The annual report content analysis of the 2019–2024 annual reports reveals that the companies are more willing to report environmental accounting information. The reason is that energy consumption accounting (66 percent) and pollution control cost disclosure (60.2 percent) represent the most actively adopted.

In comparison, water management cost reporting (39.2) and separate environmental statements (19.7) have rather lower adoption rates. The trend indicates that companies are focusing on the environmental practices directly connected with operational efficiency, i.e., energy and pollution management whereas the formal environmental reporting frameworks are in their infancy.

## 6. Sustainability Reporting Practices

Sustainability reporting among manufacturing industries in Rajasthan is predominantly voluntary. Most disclosures are included under Corporate Social Responsibility (CSR) sections rather than comprehensive sustainability reports.

### 6.1 Use of Reporting Frameworks

**Only a few large firms follow recognized frameworks such as:**

- Global Reporting Initiative (GRI)
- UN Sustainable Development Goals (SDGs)

Small and medium enterprises largely lack structured sustainability disclosures due to limited awareness and resources.

## 6.2 Nature of Disclosures

**The disclosures are primarily qualitative, focusing on:**

- Tree plantation initiatives
- Renewable energy usage
- Water conservation programs
- Community development activities

Quantitative environmental indicators such as carbon emissions, waste recycling rates, and environmental liabilities are rarely disclosed.

## 7. Challenges in Environmental Accounting and Reporting

**The study identifies several challenges faced by manufacturing industries in Rajasthan:**

1. Lack of Regulatory Mandates: Absence of mandatory environmental accounting standards.
2. Cost Constraints: High implementation costs deter small firms.
3. Technical Expertise: Limited availability of trained professionals.
4. Data Collection Issues: Difficulty in measuring environmental impacts accurately.
5. Low Stakeholder Pressure: Limited demand for sustainability information from local stakeholders.

## 8. Findings of the Study

- Environmental accounting practices are at a nascent stage in Rajasthan's manufacturing sector.
- Large firms demonstrate better sustainability reporting than SMEs.
- Reporting practices are inconsistent and lack standardization.
- Environmental disclosures are largely narrative and promotional.
- There is minimal integration of environmental costs into financial decision-making.

## 9. Suggestions and Recommendations

**To strengthen environmental accounting and sustainability reporting practices, the following measures are suggested:**

1. Introduction of mandatory environmental disclosure norms.
2. Adoption of standardized reporting frameworks such as GRI.

3. Government incentives for sustainable manufacturing practices.
4. Capacity-building programs for accounting professionals.
5. Integration of environmental costs into managerial accounting systems.

## 10. Conclusion

Environmental accounting and sustainability reporting are essential tools for promoting sustainable industrial development. This study reveals that while manufacturing industries in Rajasthan have initiated sustainability disclosures, the overall practices remain fragmented and voluntary. Strengthening regulatory frameworks, enhancing corporate awareness, and promoting standardized reporting mechanisms can significantly improve environmental accountability. Effective implementation of environmental accounting will not only enhance corporate transparency but also contribute to long-term environmental sustainability in Rajasthan.

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