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Comparative Assessment of Environmental Disclosure Practices: A Case Study of Two Leading Oil Companies in India

Alok Mishra*, Dr Nidhi Sharma**
*Research Scholar, Faculty of Commerce, Dayalbagh Educational Institute, Agra
**Professor, Faculty of Commerce, Dayalbagh Educational Institute, Agra

Abstract

This study conducts a comparative analysis of the environmental disclosure practices of two leading oil companies in India: OIL and Petronet LNG. By evaluating their sustainability reports and publicly available environmental information, the research assesses key performance areas such as energy consumption, greenhouse gas emissions, water management, waste treatment, and biodiversity conservation. The analysis reveals that both companies exhibit similar environmental disclosure practices, with strengths in energy and emissions management but significant gaps in compliance, biodiversity, and grievance mechanisms. A statistical t-test shows no significant difference between the environmental performance of the two companies, indicating comparable transparency levels. The study highlights the need for both organizations to improve their environmental reporting and align more closely with global sustainability standards, such as the Global Reporting Initiative (GRI) and Carbon Disclosure Project (CDP). Recommendations include enhancing biodiversity conservation efforts, strengthening supplier environmental assessments, and improving compliance with environmental regulations.

Keywords: Environmental disclosure, Oil industry, Sustainability reporting, Comparative analysis, India, Greenhouse gas emissions, Energy management, Water usage, Biodiversity, Compliance, Corporate social responsibility (CSR).

Introduction:

Environmental disclosure practices have become increasingly important in corporate governance, particularly in industries with a high environmental impact, such as oil and gas. These disclosures offer transparency about a company's environmental policies, risks, and sustainability initiatives, providing stakeholders with critical information regarding the firm’s environmental performance (Clarkson et al., 2008). In India, the environmental reporting landscape is evolving, driven by growing regulatory pressures and rising awareness among stakeholders about environmental sustainability (Kansal et al., 2014). Despite these changes, the quality and extent of environmental disclosures can vary significantly across companies.

This research paper aims to conduct a comparative analysis of the environmental disclosure practices of two major oil companies in India. By examining the similarities and differences in their disclosure strategies, this study will provide insights into the factors influencing corporate environmental reporting and assess the alignment of these practices with global standards. Additionally, it will explore the extent to which these companies' disclosures reflect their commitment to environmental sustainability. Understanding these practices is vital, as it can shed light on how companies in environmentally sensitive industries are responding to both regulatory and societal demands for greater transparency (Wagner & Schaltegger, 2004).

The analysis focuses on publicly available reports and disclosures from both companies, evaluating them through a framework based on international guidelines such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP). This research not only contributes to the growing body of literature on corporate environmental disclosure but also highlights areas where further improvements can be made in the Indian context.

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Literature Review

The importance of environmental disclosure has gained significant attention over the past few decades, particularly in industries with high environmental risks, such as the oil and gas sector. The concept of environmental disclosure refers to the process through which companies communicate their environmental impact, risks, and management strategies to stakeholders (Gray et al., 1995). Companies engage in these disclosures to ensure transparency and accountability, often as part of corporate social responsibility (CSR) initiatives. While regulatory frameworks guide such disclosures, there is considerable variability in how companies adopt and report these practices, especially in developing countries like India (Kolk, 2008).

Evolution of Environmental Disclosure

Historically, environmental disclosures were largely voluntary and were often viewed as symbolic gestures rather than substantive reports (Deegan, 2002). However, with increasing environmental awareness and global frameworks such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP), the trend shifted toward more standardized and mandatory reporting (Clarkson et al., 2008). These frameworks have set global benchmarks for sustainability reporting, encouraging companies to adopt a more structured approach in their disclosures, making them comparable across different industries and geographies.

The oil and gas sector, given its significant environmental footprint, has faced growing scrutiny from governments, investors, and civil society organizations (Freeman & Reed, 1983). Environmental disclosure in this industry is often used to manage reputational risk and signal environmental responsibility to stakeholders (Patten, 2002). However, the extent to which companies are transparent in their disclosures is often questioned, with studies indicating significant differences in both the quantity and quality of information reported (Berthelot et al., 2003).

Environmental Disclosure in India

In India, environmental reporting and sustainability disclosure practices have gradually developed, influenced by global trends and national regulations. The Companies Act of 2013 introduced mandatory CSR reporting for certain companies, including those in the oil and gas sector, which has increased the focus on environmental disclosure (Kansal et al., 2014). Despite regulatory advances, the level of environmental transparency among Indian companies varies, with many still opting for minimal disclosure or emphasizing only positive environmental aspects (Mahapatra, 2014).

Empirical studies on Indian companies have shown that external pressures, such as investor demands, global competition, and public scrutiny, significantly influence the level of environmental disclosure (Kansal et al., 2014). Moreover, larger companies and those with a more substantial international presence tend to provide more comprehensive environmental information compared to smaller, domestically focused firms (Rajput et al., 2013). However, gaps remain in terms of the consistency and depth of environmental disclosures across Indian industries, especially in sectors like oil and gas, which are inherently linked to environmental degradation.

Comparative Analysis of Environmental Disclosure in the Oil and Gas Sector

Research comparing environmental disclosure practices within the oil and gas sector reveals considerable heterogeneity across companies, even within the same regulatory environment (Hahn & Kühnen, 2013). Studies have highlighted that while some firms disclose detailed environmental metrics, others offer vague statements lacking quantifiable data (Al-Tuwaijri et al., 2004). The variation in reporting can be attributed to factors such as corporate governance structures, managerial perceptions of sustainability, and the degree of external stakeholder pressure (Michelon et al., 2015).

In the Indian context, research comparing environmental disclosures between firms in the same industry remains limited. Kansal et al. (2014) conducted a study on Indian companies and concluded that while some firms in the oil sector report environmental metrics in line with global standards, others fail to meet these benchmarks, often

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presenting selective or incomplete information. This suggests a need for more comparative studies to identify the drivers behind such disparities and to propose strategies for improving environmental transparency.

Gaps in the Literature

Despite a growing body of research on environmental disclosure, several gaps remain, particularly in the context of developing economies like India. Much of the literature focuses on Western countries, with relatively few studies analyzing environmental reporting practices in emerging markets (Kolk, 2008). Additionally, while there is substantial work on the motivations behind environmental disclosure, less attention has been given to the consequences of inadequate or selective reporting, particularly in high-risk industries like oil and gas (Hahn & Kühnen, 2013).

Furthermore, while some comparative studies have been conducted globally, there is a dearth of research specifically comparing environmental disclosures between Indian oil companies. This study aims to address this gap by conducting a detailed comparative analysis of two major oil companies in India, offering insights into their disclosure practices and the factors influencing these practices.

Need for the Study

The need for this study arises from the gap in the existing literature on comparative environmental disclosure practices within India's oil and gas sector. A comparative analysis of two prominent oil companies in India will help identify the factors influencing their reporting practices, highlight areas for improvement, and contribute to the broader discourse on corporate transparency in developing economies. Moreover, it will provide valuable insights into how Indian oil companies align their environmental disclosure practices with global standards.

Objectives of the Study

The main objectives of this study are as follows:

- **To assess the environmental disclosure practices** of two leading oil companies in India by analyzing their sustainability reports and publicly available information.
- **To compare the extent and quality of environmental disclosures** between the selected companies, focusing on key areas such as energy consumption, greenhouse gas emissions, waste management, and water usage and others.

Hypotheses:

H01: There is no significant difference in the GRI compliance of Both the sample companies.

Research Methodology

The research adopts a comparative case study approach to assess the environmental disclosure practices of two leading oil companies in India. This method enables a detailed examination of each company's disclosure practices and a comparative analysis of their environmental reporting. The study will focus on evaluating the content and quality of publicly available environmental disclosures, such as sustainability reports, annual reports, and any specific environmental impact reports released by the companies.

Data Collection: In this paper, two (2) oil companies are selected for the purpose of checking the level of Environmental Disclosure Practices. These are as given:

Table 1: Sample companies

S. No.	**Name of the Selected Companies**	**Market Capitalisation (Rs. Cr)**
1	Oil India Limited	87649.76
2	Petronet LNG	54645

(Source: BSE index)

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Justification of the Sample:

1. Both the companies are well established and reputed oil companies in India.
2. Both the companies are listed in BSE and NSE.
3. Both the companies are having business in India and also have overseas operation.

Data Sources: The study will utilize secondary data sources, including Annual Reports & Sustainability Reports. The research will cover data from a period of ten financial years (i.e. 2013-14 to 2022-23) to identify trends in disclosure practices over time.

Limitations: The study relies solely on publicly available information, which may not capture all aspects of the companies' environmental impacts or internal reporting practices. The analysis is confined to two companies, limiting the generalizability of the findings to the broader oil and gas sector in India.

Data Analysis: For the purpose of analysis, GRI index on Environmental disclosure has been taken and filled by the researcher separately for each years and then Average scores for the ten years have been taken to check and compare the compliance of both the companies.

Table 2: Average score of GRI compliance of OIL and Petronet LNG

S. No.	Environmental Performance Indicators	OIL	Petronet LNG
1	Materials	2	2
2	Energy	4.8	5
3	Water	2.9	3
4	Biodiversity	1.4	2
5	Emissions	6.8	5.9
6	Effluents and Waste	4.6	5
7	Products and Services	2	2
8	Compliance	1	1
9	Transport	0.9	1
10	Overall	1	1
11	Supplier Environmental Assessment	2	1.8
12	Environmental Grievance Mechanisms	1	1
	Total	30.4	30.7

(Researcher Calculation)

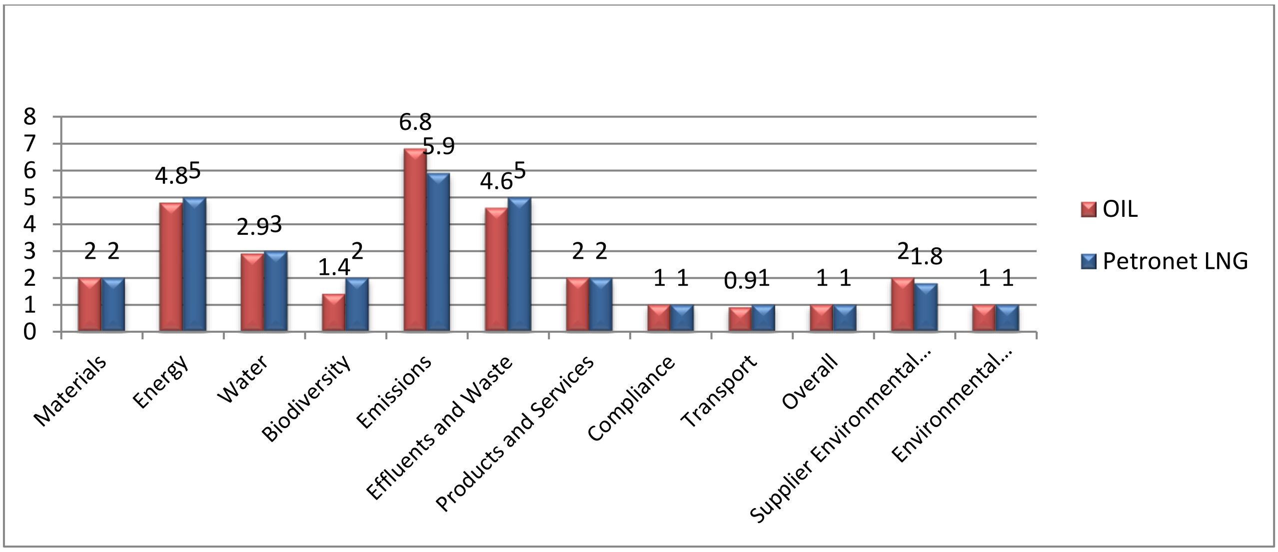

Figure 1: Average score of GRI compliance of OIL and Petronet LNG

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Interpretation:

The total scores for both companies are nearly identical (30.4 for OIL and 30.7 for Petronet LNG) showing overall similar levels of environmental performance. Both companies show moderate to low levels of performance across the various categories, with neither significantly outperforming the other in the total assessment. Both companies demonstrate relatively strong performance in managing emissions, energy, and waste, indicating a focus on reducing direct environmental impacts related to core operations. Compliance, biodiversity, transportation, and environmental grievance mechanisms are weak areas for both companies, suggesting that these aspects of their environmental management strategies require more attention. Petronet LNG tends to outperform OIL in areas such as water, biodiversity, and effluent management, while OIL has an edge in emissions control and supplier environmental assessment. However, the differences are marginal, and both companies exhibit a need for improvement in several key environmental areas. The close total scores suggest that while both companies are making efforts toward environmental sustainability, neither has achieved a high level of environmental performance, and both could benefit from adopting more comprehensive environmental strategies aligned with global standards.

Table 3: Independent sample t-test

	2	*2*
Mean	**2.581818182**	**2.609090909**
Variance	**3.929636364**	**3.416909091**
Observations	**11**	**11**
Pooled Variance	**3.673272727**	
Hypothesized Mean Difference	**0**	
Df	**20**	
t Stat	**-0.033372084**	
P(T<=t) one-tail	**0.486854342**	
t Critical one-tail	**1.724718243**	
P(T<=t) two-tail	**0.973708684**	
t Critical two-tail	**2.085963447**	

(Researcher calculation on MS-Excel)

Interpretation:

The p-values for both the one-tailed (0.4869) and two-tailed (0.9737) tests are much higher than 0.05, meaning we fail to reject the null hypothesis. This indicates that there is no statistically significant difference between the means of the two groups. Although there is a small numerical difference between the means of the two groups (2.58 vs. 2.61), this difference is not statistically significant. The small t-statistic (-0.0334) and high p-values indicate that the variation observed between the two groups is likely due to random chance rather than any meaningful difference in their environmental performance or the metric being measured. Therefore, both groups can be considered as having similar performance based on the data provided.

Findings of the study:

The research aimed to assess and compare the environmental disclosure practices of two leading oil companies in India, focusing on key areas like energy consumption, emissions, waste management, and water usage. Based on the analysis of sustainability reports, publicly available information, and the statistical t-test results, the following key findings were made:

1. Overall Similarity in Environmental Disclosure Practices: The environmental performance indicators for both companies, OIL and Petronet LNG, were found to be very similar. Both companies scored equally in several key areas such as materials, products and services, compliance, and environmental grievance mechanisms, indicating that they follow comparable disclosure practices in these aspects.

2. Energy and Emissions: Both companies showed relatively strong disclosure in energy management, with Petronet LNG slightly outperforming OIL. However, OIL had a higher score in emissions management, which suggests it may be taking more proactive steps in reducing its carbon footprint. These two areas represent the companies' strengths in environmental performance.

3. Water and Waste Management: Petronet LNG had a slight edge over OIL in water and waste management. While both companies have made moderate efforts to manage water resources and waste, the scores indicate there is still room for improvement, particularly in aligning with international standards.

4. Weakness in Biodiversity and Compliance: Both companies performed poorly in biodiversity conservation and environmental compliance. Low scores in these categories suggest that neither company places a significant emphasis on protecting biodiversity or strictly adhering to environmental regulations.

5. Supplier Environmental Assessment: OIL outperformed Petronet LNG in assessing the environmental practices of their suppliers. This suggests that OIL has slightly more rigorous criteria or processes in place for ensuring that its supply chain aligns with environmental sustainability goals.

6. Statistical Analysis: The statistical t-test comparing the means of the two companies' environmental performance scores revealed no significant difference (p-value = 0.9737). This means that any observed differences in the scores are likely due to chance and are not statistically significant. Both companies exhibit similar overall environmental performance.

Conclusion: The comparative analysis of environmental disclosure practices between OIL and Petronet LNG indicates that both companies are performing at a similar level in terms of environmental sustainability reporting. While both have made notable efforts in areas like energy efficiency and emissions control, their overall environmental disclosures reveal significant gaps in compliance, biodiversity conservation, and grievance mechanisms. The statistical analysis further supports the conclusion that there is no substantial difference between the environmental performance of the two companies. Both organizations show a need for improvement, particularly in enhancing transparency and comprehensiveness in their reporting practices. Neither company is fully aligned with international benchmarks such as the Global Reporting Initiative (GRI) or Carbon Disclosure Project (CDP). The study highlights the importance of adopting more stringent and comprehensive environmental policies, with a particular focus on biodiversity, waste management, and compliance. By improving their environmental reporting practices, both companies could contribute more effectively to the global sustainability agenda and meet the growing expectations of stakeholders, including regulators, investors, and the public.

This study contributes to the literature on corporate environmental responsibility in the oil sector and provides a framework for further research and development of more sustainable environmental reporting practices in India's oil and gas industry.

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