ISSN : 3048-5320 (Online)

CSIBER International Journal - CIJ

Vol - 3, Issue No. - 2, April,2025

MULTIDISCIPLIANRY JOURNAL

MAKE IN INDIA

Published by : CSIBER Press, Central Library Building, CSIBER Campus, University Road,Kolhapur-416004, Maharashtra, India.

Find the Journal Online at
https://www.siberindia.edu.in/journals
E-mail : cij@siberindia.edu.in

CSIBER International Journal (CIJ)

CONTENTS

ISSN: 3048-5320 (Online)

Sustainability Practices in Indian Oil and Gas EPC Firms: Evaluating Environmental, Social, and Economic Indicators

Vikrant Huddar
Ph.D. Research Scholar, Dr. V. N. Bedekar Institute of Management Studies

Dr. Nitin Joshi
Director, Dr. V. N. Bedekar Institute of Management Studies

Abstract

Purpose: This study assesses the adoption of GRI-11 Sustainability Indicators in the Indian oil and gas Engineering, Procurement & Construction (EPC) industries with reference to environmental, social, and economic indicators.

Design/methodology/approach: A comparative analysis was conducted based on sustainability reports of nine major oil and gas EPC companies. This study employs a scoring methodology based on the GRI-11 guidelines and evaluates companies across three key dimensions: economic, environmental, and social. The overall sustainability performance was in the range of 49 – 56; overall performance, environmental management, and social responsibility were higher in Aker Solution and Bechtel. However, Samsung and Worley were less impressive, with lower scores, specifically in the social area, which involved the consideration of labor and community aspects. Although there was a steady position of companies for overall operating conditions and economic importance, both environmental and social positions fluctuated slightly.

The findings of this study extend the existing knowledge about the state of sustainability reporting in the oil and gas sector by examining the practices of EPC firms operating in India. This highlights the aspects of development, particularly social responsibility and environmental management, and underlines the need to provide comprehensive and comparable information. This study covers only one year of sustainability reports, which means that it has limited capability to identify trends over time

Keywords: Sustainability, GRI, Reporting, Indicator, Economic, Environmental, Social, Oil and Gas, EPC Companies.

Data Access Statement: Research data supporting this publication are available from
https://www.worley.com/en/sustainability
https://www.kbr.com/en/who-we-are/sustainability
https://www.akersolutions.com/sustainability/sustainability-reports/
https://www.bv.com/resources/2023-sustainability-report/
https://www.bechtel.com/about/annual-reports/
https://www.ten.com/en/media/document-library/sustainability-reports
https://www.samsung.com/global/sustainability/digital-library/sustainability-report/
https://www.tataprojects.com/sustainability/integrated-report/
https://www.lntsustainability.com/integrated-report/
https://www.globalreporting.org/

Plain Language Summary

In this study, sustainability reporting practices in oil and gas EPC companies are measured using GRI-11 standards. These standards focus on three key areas: social, environmental or economic. To assess the performance of these areas, we collected sustainability reports of nine key companies and compared them among each other. The findings show that Aker Solution and Bechtel are more environmentally and socially sustainable than Samsung and Worley, but the latter of which has slightly lower social responsibility indices. It was revealed that there was more variability in the reporting on the environmental and social factors comparing to the reporting of the economic performance. This study identifies the need to enhance the practice and adoption of sustainability reporting and implementation; with more focus on the labour standards and relations to time response with the business and society by the Indian oil and gas EPC firms to therefore operate sustainably for the common good.

Introduction

The oil and gas sector is one of the most important contributors to the overall economic development and plays an essential role in energy security, employment generation, and industrialization (Wan A. et al., 2016). Sustainability reporting, which started in the 1990s, is much younger than mandatory financial reporting, which has roots in the Great Depression. However, it is now turning into a legal necessity rather than a choice, as more governments, stock exchanges, market regulators, investors, civil societies, and other stakeholders claim more elaborate information on the sustainability effects of organizations. Corporate governance is also essential for the fulfilment of sustainable development goals, as captured by insight number 12.6, which calls on member states of the United Nations (UN) Sustainable Development Goals (SDGs) to promote such practices within businesses, to undertake sustainable practices and provide sustainability information in their reporting. Sustainability reporting assumes the role of a critical factor for firms in conveying an indicator of their environmental, social, and

ISSN: 3048-5320 (Online)

economic performance to stakeholders (Chopra S. et al., 2024). In the Indian oil and gas sector, sustainability reporting is not well practiced, and because of the variation in the dimensions of companies, it becomes quite difficult to establish a standard and certified reporting methodology that can clearly depict the safety culture and sustainability happenings in the organization (Pati 2023, Frank et al. 2016). Sustainability reporting frameworks offer business organization guidelines that can be used to identify, evaluate, and disclose sustainability themes and indicators, compare them with industry standards, and disseminate trends to stakeholders, including shareholders and consumers (Paridhi, & Ritika. et al, 2024). These are the Global Reporting Initiative (GRI), CDP, Sustainability Accounting Standards Board (SASB), and Task Force on Climate-related Financial Disclosures (TCFD). These goals also aid organizations in establishing sustainable goals for themselves with the help of the UN SDGs. A report by KPMG in 2020 noted that the GRI remained the most popular sustainability reporting standard in the world, where it was adopted by about 75% of the world's 250 largest companies (Threlfall et al., 2020).

The GRI is currently the most popular form of sustainability reporting, which assists organizations of all kinds from different industries in reporting sustainability impacts sustainably and comparably (Brown et al., 2009). GRI-11: Oil and Gas Sector Disclosures contain recommendations for companies in the oil and gas sector for the disclosure of topics such as emissions, energy, biodiversity, indigenous rights, and economic impact (GRI, 2021, Al Amin, et al., 2022). This framework is designed to increase organizational responsibility and longevity by suggesting a fuller and standardized disclosure. The process of applying GRI-11 sustainability indicators by oil and gas Engineering, Procurement and Construction (EPC) companies in India is a spectrum of issues. These are regulatory, operational, and cultural issues that represent the situation in India, where sustainability practices are often difficult to implement.

The purpose of this study is to analyze the application of GRI-11 sustainability indicators by oil and gas EPC companies, and the aspects of sustainability that have been addressed by companies. This study sought to evaluate the extent to which these companies implement the GRI-11 guidelines in their reporting systems (Sana et al., 2022). The key research questions guiding this study are as follows: How well are EPC companies implementing the GRI-11 sustainability indicators? It is pertinent to examine how these companies fared about the three components of the triple bottom line: environmental, social, and economic. Answering these questions, this research provides insight into the trends of sustainability reporting in contemporary Indian oil and gas EPC organizations and directions for improvement/success stories (Modi et al., 2017).

Literature Review

Evolution of Sustainability Reporting

In the last few decades, developments in sustainability reporting have changed significantly in terms of the areas covered, approaches used, and the effects felt (Li A. et al., 2021). Introduced as a means of addressing environmental issues, sustainability reporting has evolved into covering social issues and governance based on changes in regulations, stakeholder pressure, and the availability of technology. This transition suggests a movement from a system of 'best efforts' annual disclosures towards more rigorously defined structures of annual reporting that are more formal and often prescriptive to increase the levels of accountability of companies' operations. TNS, created in the 1990s by Dr. Karl-Henrik Robèrt, is a methodology of sustainability that outlines the requirements for sustainable human impact on the environment and provides guidance on how organizations may follow these requirements (Robèrt, K. H. 2002).The Triple Bottom Line (TBL) framework, created by John Elkington in 1994 – 1995, focuses on three key areas: physical surroundings, people, and the financial system. There is the "3Es concept," where the goal is economic, environmental, and social sustainability and the "3Ps model," where the primary objectives are people, planet, and profit. This framework assists organizations in their thinking of sustainable business practices. Sustainability reporting was initially environmental reporting in the 1990s and later turned into Corporate Social Responsibility (CSR) reports in the early 2000s and broader sustainability reports by 2010. This shift demonstrates an increasing understanding of the relationship between environmental, social, and economic problems (Weder 2023). Over time, the overall themes of sustainability reports have shifted, and, more recently, there has been an emphasis on linking sustainability reports to the United Nations Sustainable Development Goals (SDGs) (Li & Rockinger 2024).

The UN SDGs outline the global objectives for prosperity and environmental conservation, including GRI, CDP, ISO 14001, B-Corporation Certification, SASB, TCFD, Integrated Reporting, and LEED, which assist organizations in issues such as transparency, resource management, ethical conduct, climate change risk reporting, and building design sustainability.

ISSN: 3048-5320 (Online)

Role of Global Reporting Initiative (GRI) in Sustainability Reporting

Therefore, the GRI has a fundamental function in the governance of sustainability reporting by offering a structure that organizations use globally to report their environmental, social, and economic impacts (Massari, G. et al, 2023). GRI-11 standards offer a clear framework that can be followed by the oil and gas sector when presenting sustainability and performance data (Abeysekera, I. (202). This global reporting initiative standards seek to improve the transparency of companies and their ability to report on specific facets to allow informed decision-making (Menéndez-Sánchez, J. et al, 2023). This standardization is essential to allow various stakeholders to compare the level of sustainability practices within various organizations (Pandin et al., 2024). Through participation in global intentions, such as the SDGs, GRI-11 standards enable organizations to ensure that their claims help explain other large concepts of sustainable development and improve their credibility with stakeholders to ensure that decisions made ensure that they are aligned with sustainable development goals. (Molnár et al., 2024). Nevertheless, the scalability and increasing complexity of the GRI-11 standards have become a challenge for transparency. Compliance with GRI standards is influenced by institutional factors, organizational size, and external audits (Sarrakh, R., et al, 2022) (Friske et al., 2023). The GRI's impact is truly international, with a particular emphasis on the growing intent of the European Union to harmonize GRI-11 standards with local legislation. Such geographical diversification is indicative of GRI's influence on global sustainability reporting practices (Alexenko 2024).

Assessing Research Needs in Oil and Gas Sector Sustainability Reporting

Indian oil and gas sector organizations use sustainability reports and fail in systematic reporting, especially in safety culture reports; hence, the use of these reports will not allow an organization to confidently portray its safety performance (Pati 2023). A study on some Brazilian oil companies reveals that the use of GRI guidelines is also partial; it only means that sustainability reports are as much instrument of image-building as truth-telling about sustainability reporting is missing (Gaudencio et al. 2020). Little research is available focusing on the ability to formulate clear approaches that support the engagement of the concepts of economic, environmental, and social sustainability in the sphere of the oil and gas industry but disregards valuable context-specific conditions (Ahmad et al. 2017). Thus, the present environmental sustainability indicators do not capture all specific features of the oil and gas industry (Kaupke & Knyphausen-Aufseß 2023). A study of sustainability performance indicators of construction projects found that no specific KPIs were identified during the execution phase, which is essential for EPC companies, especially in the Oil and Gas sector (Rajabi et al. 2022) (Aljanadi, et al. 2023). The case of the scores used in Indian firms reveals that while some indicators are vital to sustainability performance, others, especially in governance structures, require further attention and innovation (Rajesh 2020).

Methods and Methodology

The data for this study were mainly collected from secondary sources; therefore, the research relied heavily on the sustainability reports of the selected Indian oil and gas EPC companies. Information was collected through the annual sustainability reports of the companies to obtain a holistic idea of sustainability management in the selected industry. This study aims to assess sustainability reports from the perspective of the GRI-11 framework that applies to the oil and gas industry. These guidelines provide a structured framework for measuring sustainability across three key dimensions. The major categories people identify are environmental, social, and economic. Thus, this study aimed to determine the level of compliance of Indian oil and gas EPC companies with internationally accepted sustainability reporting standards, as provided by the GRI-11 standards. Nine oil and gas EPC companies were selected based on their market size and ability to disclose information related to sustainability. This selection criterion facilitated the study to correctly compare various reporting practices to determine the industry's prevalent trends and issues. Survey data were obtained by gathering sustainability reports for the year 2023. Information from the listed companies was gathered from the company's website. This approach ensured that the incorporated data were sufficient to reflect current sustainability practices. For the assessment of sustainability reports, a quantitative approach was adopted using numerical scores. This entailed rating the performance of the organization along the 22 indicators contained in the GRI-11 guidelines on a scale of 0 to 3. This study assigns scores to the reports considering the analysis data depending on the information and its quality reported, where higher scores indicate higher-quality reporting Al Amin, et al., 2022). This approach allowed for the evaluation of different organizations' stewardship based on sustainability reporting and GRI-11. In this study, the companies' scores were compared, and the results showed that this study has highlighted the positive and negative aspects of the sustainability reporting of the Indian oil and gas EPC sector. This approach not only reveals the status of sustainability practices but also the factors that organizations encounter in the implementation of GRI standards. This study seeks to understand the state of sustainability reporting in the oil and gas EPC industry in India and offers insights to stakeholders interested in further developing these reports.

Reasons for Selecting these Companies

 ISSN: 3048-5320 (Online)

The criteria used to select Indian oil and gas EPC companies for this study on sustainability reporting are based on different criteria. Some of the firms considered in the selection are Larsen and Toubro, Technip Energy, Tata Projects, Aker Solutions, Worley India, Samsung Engineering, KBR India, Black and Veatch, and Bechtel. These firms are EPC firms are deeply engaged in the oil and gas industry and contribute significantly to the development of India and the economy. Because of their large market share and economic contribution in India, these firms are suitable for evaluating sustainability practices in the Indian oil and gas EPC industry. Companies were selected because they have an annual turnover of over 10,000 crores and directly or indirectly employ more than 5,000 people in different projects in the country and internationally. These criteria helped to maintain relevance in the case of field selection and excluded companies that were not characterized by a high level of influence on the economy, society, and environment in their sustainability practices. These companies were chosen because they prepared their sustainability reports according to GRI-11 reporting standards for the oil and gas industry. Some companies were omitted from the analysis because they prepared sustainability reports that did not meet the GRI standards or because there were no sustainability reports available for such companies. To reduce redundancy, certain EPC companies with less extensive reporting methodologies are excluded to reduce redundancy. Furthermore, firms with exclusive specialization in sectors other than the oil and gas industry, including those established solely for developing renewable energy sources, were also omitted because the research was confined to the oil and gas industry. Applying the above criteria, this study was able to conduct a sound and general investigation of sustainability reporting practices among major actors in the Indian oil and gas EPC sector.

Numerical Pointing Method of Sustainability Reports for Indian Oil and Gas EPC Companies

The Numerical Pointing Method applied in this study is a systematic approach for assessing the sustainability reports of Indian oil and gas EPC companies based on the GRI-11 framework (Al Amin, et al., 2022). This method focuses on assessing companies' sustainability performance across three key dimensions – environmental, social, and economic. As depicted in Table-1, the 22 sustainability performance indicators used with reference to the GRI-11 guidelines, which are suitable for the oil and gas industries.

Table 1: Set of Indicator

Dimensions	Indicator	Code for Indicator
Environmental	GHG Emissions	GRI_ENV_A
	Climate adaptation, resilience, and transition	GRI_ENV_B
	Air emissions	GRI_ENV_C
	Biodiversity	GRI_ENV_D
	Waste	GRI_ENV_E
	Water and effluents	GRI_ENV_F
	Closure and rehabilitation	GRI_ENV_G
Social	Asset integrity and critical incident management	GRI_SOC_A
	Occupational health and safety	GRI_SOC_B
	Non-discrimination and equal opportunity	GRI_SOC_C
	Forced labor and modern slavery	GRI_SOC_D
	Freedom of association and collective bargaining	GRI_SOC_E
	Local communities	GRI_SOC_F
	Land and resource rights	GRI_SOC_G
	Rights of indigenous peoples	GRI_SOC_H
	Conflict and security	GRI_SOC_I
	Anti-competitive behavior	GRI_SOC_J
	Anti-corruption	GRI_SOC_K
	Public policy	GRI_SOC_L
	Employment practices	GRI_SOC_M
Economic	Economic impacts	GRI_ECO_A
	Payments to governments	GRI_ECO_B

 ISSN: 3048-5320 (Online)

These indicators allow for a comprehensive evaluation of companies' efforts across all the three sustainability dimensions. Each of the 22 indicators was assigned a score ranging from 0 to 3, as described in Table-2 below, based on the company's level of adherence to the GRI 11 guidelines:

Table 2. Numerical pointing method of Indicators

Sr. No.	Details	Rank	Score (0-3)
1	No disclosure or minimal effort in that area.	Poor	0
2	Limited disclosure with some evidence of effort.	Fair	1
3	Adequate disclosure meeting basic requirements.	Good	2
4	Comprehensive disclosure with best practices.	Excellent	3

The maximum score for each report was 66 points, as there were 22 indicators in the study, and each indicator could be assigned up to three points. This scoring system can assist in identifying how likely it is that a company has achieved sustainability over others and assists stakeholders in having an easy way to evaluate their company's performance. The Numerical Pointing Method offers an effective and simple method to evaluate and rank the sustainability performance of Indian oil and gas EPC companies. The sustainability scorecard assesses a firm's sustainability and ranks it as excellent, good, fair, or poor. Through this approach, companies can determine where they have gaps and where they are strong, and therefore work towards improving the effectiveness and efficiency of their operations in the sustainability framework.

Findings of the study and Discussion

A comparison of the sustainability practices of nine leading organizations and the economic, environmental, and social impacts related to them showed that the overall approach of the organizations to sustainability was different. A higher percentage range indicates less conformity with sustainability reporting, meaning a lower standard for sustainability reporting, whereas a lower percentage range represents consensus in reporting. Therefore, the main objective of this study was to evaluate the extent of compliance with the GRI-11 Sustainability Indicators of Indian Oil and Gas EPC organizations. As shown in Table-3 below, the analyses showed that companies such as Aker Solution and Bechtel provided a high level of overall and specific sustainability compliance with different sustainability indicators, especially in economic and social aspects, and shared broad information on essential practices in sustainability. Companies such as Worley and Samsung had higher variability, where Worley faced issues with reporting on its social impact and Samsung had issues reported on the environmental side with GHG emissions and waste management. Overall, some firms demonstrate excellent examples of sustainability reporting and meet all GRI-11 requirements, whereas others should improve their disclosure completeness and coherence

Table 3: Sustainability reporting scores of various companies

Name of Companies	Dimensions			Total Score	Range of score
	Economic indicators	Environmental indicators	Social indicators		
Aker Solution	5	19	32	56	15.15%
Black & Veatch	6	16	29	51	22.73%
Bechtel	5	18	32	55	16.67%
Technip	5	17	30	52	21.21%
KBR	5	17	30	52	21.21%
Samsung	5	17	27	49	25.76%
TATA Projects	5	18	32	55	16.67%
Worley	4	18	27	49	25.76%
L&T	5	17	31	53	19.70%

The overall sustainability report score was between 49 and 56, as depicted in Fig 1, thus categorizing it as moderate in its range of performance. Among all the companies, Aker Solution topped the list with a score of 56 and a balance scorecard, followed closely by Bechtel with a score of 55, which shows a balanced companies tailored to excel in every aspect, especially the social responsibility of the company to foster sustainable growth.

 ISSN: 3048-5320 (Online)

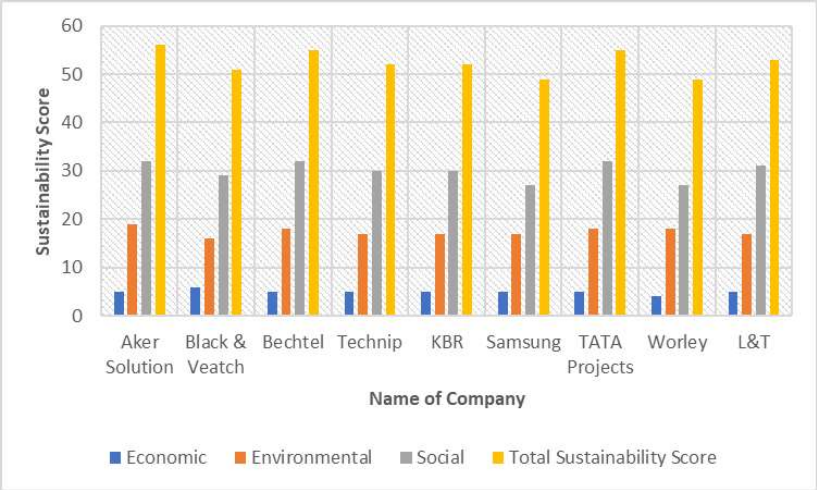

Fig 1: Overall sustainability score comparison

Samsung and Worley were at the lower end of the scale, indicating the need for change, especially in the social aspect, which showed the company's relatively weaker performance. The scores for the economic indicators are quite balanced; most firms are in the range of 5-6. The clear leaders are Black and Veatch, with six points for steady economic revenue and more significant transparency in their financing plans, whereas Worley only scored four, and the company evidently had some issues with demonstrated financial contributions, such as payments to government. Similar to social performance, environmental scores exhibit more fluctuation, with scores ranging between 16 and 19, with Aker Solution having the best score of 19 for disposing emissions and waste management. It can be observed that social indicators have the most fluctuation range, while the other indices represent the Aker Solution as the most responsible company. Bechtel and TATA Projects are less responsible, especially in labor rights and worker safety, scoring 32 compared to 27 for Samsung and Worley. Fluctuations in companies suggest the need for better assessment and integration of sustainable management practices among companies. Although consistency is clearly demonstrated through the cases of the Aker Solution, Bechtel, and Tata Projects, there remains potential for improvement in social and environmental sustainability for companies such as Samsung and Worley. As illustrated by the scores presented in the table 3, there is potential for enhancing sustainability performance, and for carefully balancing their practices across all three dimensions. Balancing economic, environmental, and social indicators is crucial for companies to improve their sustainability performance and meet global sustainability targets.

Reporting on Environmental Indicators

The analysis of the evaluated companies on environmental sustainability reporting indicates the level of compliance with the key GRI 11 indicators including greenhouse gas emissions, climate protection, air emissions, biodiversity, waste management, water and effluents, and closure and rehabilitation. After analyzing Table 4 below, all companies had a good record concerning the reporting of GHG emissions, with all the companies scoring a maximum of three, meaning that the companies are serious in cutting down on emissions and supporting climate change targets. Similarly, most companies fared well in terms of climate adaptation and resilience, although Black and Veatch had slightly lower scores, indicating moderate activity. However, the variation is evident in air emission reporting, where players such as Aker Solutions and Samsung are excellent in reporting, whereas Bechtel and Technip, for example, need improvements in how to control and report air pollutants.

 ISSN: 3048-5320 (Online)

Table 4: Environmental Indicators reporting scores of various companies

Environmental indicators	Name of Company								
	Aker Solution	Black & Veatch	Bechtel	Technip	KBR	Samsung	TATA Projects	Worely	L&T
GHG Emissions	3	3	3	3	3	3	3	3	3
Climate adaptation, resilience, and	3	2	3	3	3	3	3	3	3
Air emissions	3	3	2	2	2	3	2	2	2
Biodiversity	2	2	2	2	2	2	2	3	2
Waste	3	2	3	3	3	3	3	3	3
Water and effluents	3	3	3	3	3	3	3	3	3
Closure and rehabilitation	2	1	2	1	1	0	2	1	1
Total Score	19	16	18	17	17	17	18	18	17
Range of score	9.52%	23.81%	14.29%	19.05%	19.05%	19.05%	14.29%	14.29%	19.05%

Biodiversity management is a major issue for most companies, with Worley being the only company with a score of three, meaning that it has made a good effort in the conservation of ecosystems, whereas the other companies have a score of two, meaning that they have not done adequate work in the conservation of ecosystems. Waste management was another area where most of the companies performed well, with a few companies scoring a maximum score of three, but Black and Veatch scored lower in this area, implying that there are still areas where some of the companies need to improve in terms of waste reduction and recycling. All companies complied with water and effluent management, with an average score of three for water conservation and effluent treatment. However, there are concerns regarding the aspects of closure and rehabilitation. The scores range from 0 to 2, which indicates that there are major deficiencies, especially with Samsung, which has a score of 0 for the site rehabilitation of operations. The total environmental scores varied between 16 and 19, with the highest score of 19 given to the Aker Solution, which shows that they have good and stable environmental management in all aspects. On the other hand, Black and Veatch received the lowest score of 16 on the checklist, indicating their weaknesses in areas such as waste management and climate change adaptation. Fig-2 below provides a graphical representation of the range of the scores and variability.

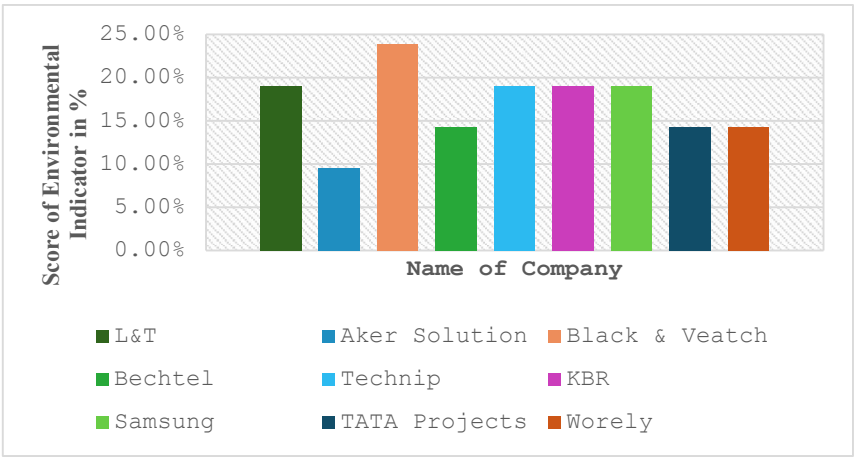

Fig 2: Environmental Indicators score variation

The scores ranged from 9 to 12, which could be attributed to the variation in the students' abilities and understanding of the concepts taught. Companies such as Aker Solution and Bechtel have more balanced and consistent reporting, followed by Black, Veatch, and Samsung, which have higher variability and need improvement in certain areas of the industry benchmark. In conclusion, this study suggests that there is a need to improve current environmental reporting and extend it to other areas that are not well reported but are crucial to the sustainability of the environment in the long run, such as the conservation of biological diversity and site rehabilitation.

 ISSN: 3048-5320 (Online)

Reporting on Economic Indicators

In this study, we evaluated companies' reporting practices using two key economic indicators: payments to the government and economic effects. The goal was to evaluate the extent of the organization's transparency and compliance with GRI-11 reporting standards, particularly the economic aspect, which is important for evaluating the roles of these firms in local and national economies. As shown in table-5 below, for economic impacts, the overall expected score was six, whereas the maximum possible score for Payments to Government was estimated to be two.

Table 5: Economic Indicators reporting scores of various companies

Economic Indicator	Name of Company								
	Aker Solution	Black & Veatch	Bechtel	Technip	KBR	Samsung	TATA Projects	Worely	L&T
Payments to governments	2	3	2	2	2	2	2	1	2
Economic impacts	3	3	3	3	3	3	3	3	3
Total Score	5	6	5	5	5	5	5	4	5
Range of score	16.67%	0.00%	16.67%	16.67%	16.67%	16.67%	16.67%	33.33%	16.67%

From this study, there is some inconsistency between firms in their disclosures of payments made to the government. Black and Veatch received the highest possible score of 3 because they made clear disclosures on the amount of financial payments offered to government agencies. This finding shows a high level of compliance with GRI-11 economic reporting standards. On the other hand, Worley scored the lowest with 1 in transparency concerning payments made to the government, and this is viewed as a company failing in the aspect of credibility of economic reporting. The other companies included Aker Solutions, Bechtel, Technip, KBR, Samsung, TATA Projects, and L&T, which obtained a score of 2 in this index, as they showed a moderate level of compliance, suggesting that companies need to improve more, especially at the level of disaggregation of financial statements.

As far as the economic impact indicator is concerned, all firms had a score of three because they were transparent with adequate information on their economic returns. This comprises the financial capital deposited in national and local economies, job creation, and structural development. The cohesiveness of the scores of this indicator suggests that firms in the oil and gas EPC segment have come to understand the relevance of the economic consequences of sustainability reporting and are gradually incorporating the same into their reports. The total of the two economic indicators was between 4 and 6. Among the participants, Black and Veatch secured a maximum of six, which endorsed their concerns for transparency and economic impact reports. On the other hand, Worley posted a low figure, registering a total of four, suggesting significant shortcomings in terms of economic reporting, particularly in payments to governments. The rest of the companies (Aker Solution, Bechtel, Technip, KBR, Samsung, TATA Projects, and L&T) scored 5, which also showed a moderate level of transparency, which means that the companies could do more to enhance efforts aimed at enhancing the quality of financial reports.

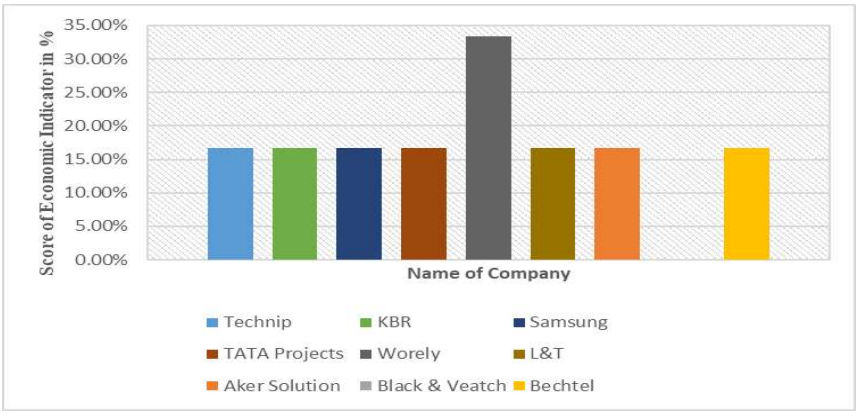

Fig 3: Economic Indicators score variation

The Range of Score column provides supplementary information on the degree of difference in reporting practices across firms, as depicted in Fig-3. Worley had the highest percentage range (33.33%) because it consisted of both a high degree of vertical differentiation and a high level of horizontal differentiation, 33.33%, which indicates that economic reports fluctuate significantly. Therefore, this high range suggests that, while Worley may only be

 ISSN: 3048-5320 (Online)

relatively satisfactory in its reports about the share of the economy it controls, its report on payments to the government is less uniform, which may be due to a lack of or inadequate disclosure in this area. However, Black and Veatch recorded zero fluctuations of 0%, which means that their reporting was similar for the two economic indicators. The remaining companies, including Aker Solution, Bechtel, Technip, KBR, Samsung, TATA Projects, and L&T, have a range of 16. 67%, meaning that it oscillated moderately, but was rather stable in the reporting practices of the two economic indicators. Most firms report a good extent of conformity to the GRI guidelines for economic reporting; however, the leaders here are Black and Veatch, which are the most transparent and consistent. The volatility ratio is very high in Worley's case, and this requires extra effort to enhance the level of transparency, particularly in relation to payments to governments that note disclosure. As most of these economic indicators are essential to prove that a company benefits society and is financially responsible, it is crucial to maintain stability and accuracy to gain stakeholder trust and ensure firm sustainability.

Reporting on Social Indicators

The analysis of social indicators for the companies in this study reveals a wide range of performance in areas such as labor practices, human rights, anti-corruption, and community engagement, as per the GRI-11 guidelines.

Table 6: Social Indicators reporting scores of various companies

Social indicators	Name of Company								
	Aker Solution	Black & Veatch	Bechtel	Technip	KBR	Samsung	TATA Projects	Worely	L&T
Employment practices	3	3	3	3	3	2	3	3	3
Public policy	2	2	2	2	2	3	2	2	2
Anti-corruption	3	3	3	3	3	3	3	2	3
Anti-competitive behavior	3	3	3	3	3	2	3	1	3
Conflict and security	2	1	2	1	1	0	2	1	1
Rights of indigenous peoples	1	1	1	1	1	2	1	2	1
Land and resource rights	2	1	2	1	1	0	2	1	2
Asset integrity and critical incident management	3	2	3	3	3	2	3	3	3
Occupational health and safety	3	3	3	3	3	3	3	3	3
Non-discrimination and equal opportunity	3	3	3	3	3	2	3	3	3
Forced labor and modern slavery	2	2	2	2	2	3	2	1	2
Freedom of association and collective bargaining	2	2	2	2	2	2	2	2	2
Local communities	3	3	3	3	3	3	3	3	3
Total Score	32	29	32	30	30	27	32	27	31
Range of score	17.95%	25.64%	17.95%	23.08%	23.08%	30.77%	17.95%	30.77%	20.51%

As represented in Table-6, for employment practices, the aggregated score of most firms, including the Aker Solution, Bechtel, and TATA projects, was good, with the highest score indicating 3, indicating that firms have decent labor standards and workforce management. Ultimately, there is an indication that Samsung could improve, represented by a score of 2, meaning that there can be changes where fair wages and employment are concerned. The degree of reporting on public policy was fair, considering that the mean was two, while the company got three, meaning that the company had a better relationship with public institutions. The scores for anti-corruption were high, with most of the companies indicating full compliance, while Worley score 2 showed poor anti-corruption compliance. Although higher variability was noted in the conflict, security, and rights of indigenous people, the scores of some firms, such as Samsung and Worley, were low, which indicated that they had poor practices in the management of conflicts and the engagement of indigenous people. The Aker Solution, Bechtel, and TATA Projects were in between these indices, which suggests that they have initiated changes in these areas but have not properly implemented the right practices. Altogether, all the companies operating in the business were effective in terms of occupational health and safety risks to the highest value of three, reflecting the concern of the organizations for the well-being of their employees. However, the ratings were different for the subcategories, where Black and Veatch scored 2 on asset integrity, which implies that the company has challenges in managing operational risks. In the non-discrimination and forced labor indicators, companies' performance was different, and Samsung and Worley were lower. Thus, it could be stated that these companies need to improve their diversity, inclusion policies, and forced labor risk management. The freedom of association scores was moderate, and their average was similar in all the companies, indicating that while the basic labor rights are respected more can be done to enhance the rights of the workers. Regarding general engagement with local communities, most firms scored equally well, indicating that they are more willing to support or invest in the communities from which they operate.

 ISSN: 3048-5320 (Online)

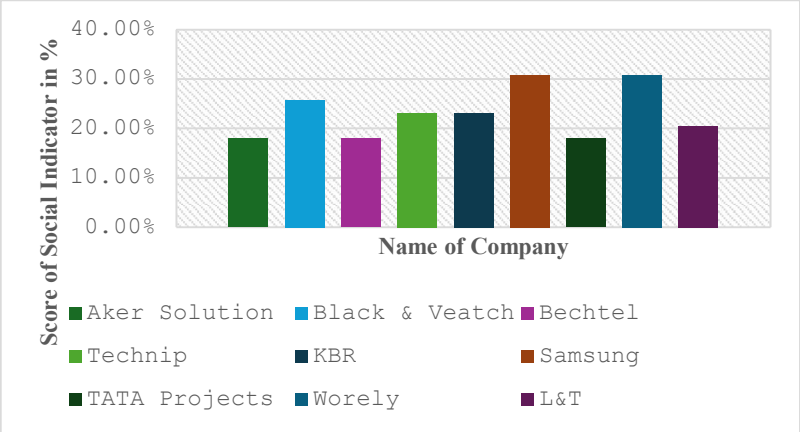

Fig 4: Social Indicators score variation

Thus, the received results showed that the three top-performing organizations were Aker Solution, Bechtel, and TATA Projects, scoring 32, which meant that these organizations had good reporting and complied with social sustainability policies. Samsung and Worley, which scored 27, had some of the following gaps: conflict management, forced labor, and indigenous people. The range of scores also captured variations in social performance, with Samsung and Worley having the highest scores of 30. Fig-4 provides information on the scan range and variability. A similar percentage (30.77%) said that their companies have different approaches to the social responsibility of products, thus confirming our hypothesis. Among these, the Aker Solution, Bechtel, and TATA Projects presented a more standardized social sustainability performance with a narrower score range. Overall, the findings discussed in this paper indicate that most organizations know that social sustainability is important for their businesses; however, there are significant weaknesses in the standardized and systematic reporting of human rights and labor conditions, which should be implemented according to managing best practices to produce positive effects in the long term.

Conclusion

Sustainability reporting is a common feature in modern business environments and has several advantages at the global level. Sustainability reporting helps a company be marketed and branded as a responsible corporate citizen, which applies to environmental and social aspects. This study evaluates the sustainability reports of various Indian oil and gas EPC companies using a numerical evaluation system based on the GRI-11 norms. This system enabled the identification of the strengths and weaknesses of reporting practices and was built to improve companies' sustainability disclosures.

Companies such as the Aker Solution, Bechtel, and TATA Projects were found to provide excellent sustainability reporting concerning social and environmental contexts and most of the existing indicators. The same was especially observed with social aspects, such as conflict and the treatment of indigenous people, where some companies, such as Samsung and Worley, were observed to have some weaknesses in their reports. Overall, the level of economic reporting was similar for all firms; however, Black and Veatch were the most forthcoming. Similarly, Worley's performance was the lowest in this dimension. Almost all firms made reasonably good disclosures of environmental details such as GHG emissions and waste management, and some firms, such as Aker Solutions and Bechtel, were excellent.

The conclusions can be drawn from the fact that further environmental reporting is being encouraged since enterprises are appreciative of the fact that ecological economy and longevity are possible. This has been a plus in some ways that natural resources have been well-managed, leading to economic growth. However, there is still a huge potential for the development of the social aspect, which can be viewed as one of the weaknesses of companies in terms of labor practices and human rights. In supporting the notion that sustainability reporting must progress towards strategic reporting for the business, companies should ensure that they get at the very least the score to the minimum threshold on each of the dimensions according to GRI 11. This will not only help reduce the number of disadvantages closely related to environmental and social aspects but will also correspond to financial goals.

The findings of this study imply that organizations that pay attention to sustainability reporting have less negative environmental and social impacts, overall organizational operational effectiveness, and responsible use of resources. Following the common management adage that says, 'If you cannot measure it, you can change it,' sustainable reporting has emerged as an inherent part of managing a sustainable global economy. This provides

 ISSN: 3048-5320 (Online)

the basis for assessing long-term profitability through social justice and care of the natural environment. A special sustainability report indicates the company's interests and the entire society's concerns, and offers a reference source for everyone. This study confirms that the integration of sustainability reporting and responsibility practices positively affects companies and society.

Limitations

One limitation of this study is its focus on Indian companies, which makes the findings less applicable to other regions with different regulations and market conditions. Additionally, the scoring method is subjective and is based on a single year of data, which limits its ability to assess long-term trends. A multiyear analysis provides a more comprehensive view of sustainability.

Future Study and Direction

Future studies should analyze sustainability reporting over multiple years to track trends and improvements in practice. Expanding the scope to include other frameworks, such as SASB or TCFD, as well as gathering primary data from stakeholders, will offer a more comprehensive view of the real-world impacts. Additionally, comparative research across regions and sectors, along with exploring technologies, such as AI and blockchain, can enhance transparency and reporting accuracy in sustainability practices.

Funding statement

The funders had no role in the study design, data collection and analysis, decision to publish, or manuscript preparation.

ISSN: 3048-5320 (Online)

References:

Abeysekera, I. (2022). A framework for sustainability reporting. Sustainability Accounting, Management and Policy Journal, 13(6), 1386-1409. doi: 10.1108/sampj-08-2021-0316

Ahmad, N. K. W., de Brito, M. P., Rezaei, J., & Tavasszy, L. A. (2017). An integrative framework for sustainable supply chain management practices in the oil and gas industry. Journal of Environmental Planning and Management, 60(4), 577-601. doi: 10.1080/09640568.2016.1178105

Al Amin, M., Islam, M. R., & Halim, M. A. (2022). Sustainability Reporting Based on GRI Indicators. Journal of Sustainable Business and Economics, 5(1), 1-13.

Alexenko, A. (2024). Stakeholder Engagement in the Development of the Sustainability Reporting Standards of the Global Reporting Initiative (GRI) and of the International Sustainability Standards Board (ISSB). doi: 10.35511/978-963-334-499-6-alexenko

Aljanadi, Y., & Alazzani, A. (2023). Sustainability reporting indicators used by oil and gas companies in GCC countries: IPIECA guidance approach. Frontiers in Environmental Science, 11, 1069152. doi: 10.3389/fenvs.2023.1069152

Brown, H. S., De Jong, M., & Lessidrenska, T. (2009). The rise of the Global Reporting Initiative: a case of institutional entrepreneurship. Environmental politics, 18(2), 182-200.

Chopra, S. S., Senadheera, S. S., Dissanayake, P. D., Withana, P. A., Chib, R., Rhee, J. H., & Ok, Y. S. (2024). Navigating the Challenges of Environmental, Social, and Governance (ESG) Reporting: The Path to Broader Sustainable Development. Sustainability, 16(2), 606. doi: 10.3390/su16020606

Frank, A. G., Dalle Molle, N., Gerstlberger, W., Bernardi, J. A. B., & Pedrini, D. C. (2016). An integrative environmental performance index for benchmarking in oil and gas industry. Journal of cleaner production, 133, 1190-1203. doi: 10.1016/J.JCLEPRO.2016.06.064

Friske, W., Nikolov, A. N., & Morgan, T. (2024). Making the grade: An analysis of sustainability reporting standards and Global Reporting Initiative adherence ratings. Corporate Social Responsibility and Environmental Management, 31(3), 2098-2108. doi: 10.1002/csr.2686

Gaudencio, L. M., de Oliveira, R., Curi, W. F., Santana, C. F. D., Silva, J. N., & Meira, C. M. B. S. (2020). Oil and gas companies operating in Brazil adhere to GRI-G4 essential sustainability indicators: a critical review. Environment, Development and Sustainability, 22, 1123-1144. doi: 10.1007/S10668-018-0239-3

Global Reporting Initiative (GRI). (2021). GRI 11: Oil and Gas Sector 2021. https://www.globalreporting.org/standards/gri-standards-download-center/

Kaupke, K., & zu Knyphausen-Aufseß, D. (2023). Sustainability and firm value in the oil and gas industry—A vicious circle?. Corporate Social Responsibility and Environmental Management, 30(3), 1129-1144. doi: 10.1002/csr.2409

Lai, A., & Stacchezzini, R. (2021). Organisational and professional challenges amid the evolution of sustainability reporting: a theoretical framework and an agenda for future research. Meditari Accountancy Research, 29(3), 405-429.

Li, Y., & Rockinger, M. (2024). Unfolding the Transitions in Sustainability Reporting. Sustainability, 16(2), 809. doi: 10.3390/su16020809

Massari, G. F., & Giannoccaro, I. (2023). Adopting GRI Standards for the Circular Economy strategies disclosure: the case of Italy. Sustainability Accounting, Management and Policy Journal, (ahead-of-print). doi: 10.1108/sampj-07-2021-0284

Menéndez-Sánchez, J., Fernández-Gómez, J., & Araujo-de-la-Mata, A. (2023). Sustainability Strategies by Oil and Gas Companies, Contribution to the SDGs and Local Innovation Ecosystems. Energies, 16(6), 2552. doi: 10.3390/en16062552

ISSN: 3048-5320 (Online)

Modi, A., Bühler, F., Andreasen, J. G., & Haglind, F. (2017). A review of solar energy based heat and power generation systems. Renewable and Sustainable Energy Reviews, 67, 1047-1064.

Molnár, P., Tóth, Á., & Lukács, B. (2024). Linking Sustainability Reporting and Energy Consumption Through Global Reporting Initiative Standards and Sustainable Development Goals.

Pandin, M. Y. R., Wijaya, R. M., Postel, M. Y., & Manalu, M. U. S. (2023). Analysis of Sustainability Reporting Disclosure Based on the Global Reporting Initiative (GRI) Standards. EKSYAR: Jurnal Ekonomi Syari'ah & Bisnis Islam, 10(2), 324-331.

Pati, S. (2023). Sustainability reporting pathway–Is it a true reflection of organisational safety culture: Insights from oil and gas and process sector of India. Safety science, 159, 106006. doi: 10.1016/j.ssci.2022.106006

Paridhi, & Ritika. (2024). Sustainability reporting for boosting national commitment and overcoming challenges: A hierarchical model. Business Strategy & Development, 7(1), e334.

Rajabi, S., El-Sayegh, S., & Romdhane, L. (2022). Identification and assessment of sustainability performance indicators for construction projects. Environmental and Sustainability Indicators, 15, 100193. doi: 10.1016/j.indic.2022.100193

Rajesh, R. (2020). Exploring the sustainability performances of firms using environmental, social, and governance scores. Journal of Cleaner Production, 247, 119600. doi: 10.1016/J.JCLEPRO.2019.119600

Robèrt, K. H. (2002). The Natural Step story: Seeding a quiet revolution.

Sana, A. K., & Basak, S. (2022). Sustainability Reporting Practices Of Indian Oil And Gas Industry: An Empirical Analysis. The Management Accountant Journal, 57(3), 22-26.

Sarrakh, R., Renukappa, S., & Suresh, S. (2022). Evaluation of challenges for sustainable transformation of Qatar oil and gas industry: A graph theoretic and matrix approach. Energy policy, 162, 112766. doi: 10.1016/j.enpol.2021.112766

Threlfall, R., King, A., Shulman, J., Bartels, W., & McKenzie, M. (2020). The KPMG Survey of Sustainability Reporting 2020. Retrieved from UK.

Wan Ahmad, W. N. K., de Brito, M. P., & Tavasszy, L. A. (2016). Sustainable supply chain management in the oil and gas industry: A review of corporate sustainability reporting practices. Benchmarking: An International Journal, 23(6), 1423-1444.

Weder, F. (2023). The Evolution of the Sustainability Story: Strategic Sustainability Communication as Niche Construction. International journal of strategic communication, 17(3), 228-244.