

ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) REPORTING PRACTICES IN INDIA: EVIDENCE FROM LISTED POWER SECTOR COMPANIES

Bideharanjan Swain*, Sujata Kerketta*, Sanjeeb Kumar Dey**

Abstract Globally, G20 has been recognised as a catalyst in building environmentally sustainable growth and promoting energy transitions towards more flexible, transparent and cleaner energy systems through sustainability reporting practices. Sustainability reporting practices, an umbrella of Environment, Social and Governance (ESG) reporting practices review a specific set of criteria that evaluate a business on how effectively implements ESG projects and the impacts its factors have had on the business towards sustainable growth. By burning fossil fuels and emitting greenhouse gases, the power sector companies are more directly contributing to the global energy transition. For the net-zero transition, it is crucial to concentrate on sustainability and incorporate ESG reporting practices. The purpose of this study is to analyse the reporting practices of ESG indicators by 10 listed power sector companies; that have high market capitalisation operated in India. Sustainability, ESG and annual reports of selected companies are taken for five years spreading from the year 2017–2018 to 2021–2022. The presence of ESG indicators in power sectors is measured by Business Responsibility and Sustainability Report framework issued by SEBI guidelines. Descriptive cum exploratory research methods are used to analyse the ESG indicators in reporting practices of power sector companies. The finding of the analysis shows that all the sample power sector companies are disclosing ESG indicators and National Voluntary Guidelines in their sustainability reporting. The paper found that all the sample companies are disclosing the social indicators, more than the environmental and governance indicators in the sustainability report by top 10 power sector companies listed in NSE. Irrespective of ownership of companies, discloser of sustainable reports remains persistent over the years.

Keywords: ESG Disclosure, Power Sector Companies Sustainability Reporting, BRSR Indicators

INTRODUCTION

Corporate reporting refers to the presentation and disclosure of relevant information about the company to the various stakeholders, reporting practices included in integrated reporting, financial reporting and non-financial reporting. The reporting practices are developed to provide information to the various users to support decision-making and the long-run survival of the firm, without harm to the environment and society. The sustainable development agenda set up in 2030, represents the financial and non-financial reporting practices of different corporate sectors for effectively running the business, considering their environmental, social and economic value. Thus, Environmental, social and governance (ESG) reporting practices have been developed to fulfill the main objective of sustainability reporting practices at a global level. In the

corporate sector, sustainability is gaining attention from shareholder wealth maximisation to the value creation of stakeholders (Harrison et al., 2007). An organisation should adopt Sustainable Development Goals (SDG) to create long-term sustainable value which provides positive outcomes to the environment, economy and society at enormously (Moynihan & Schwab, 2020).

The G20 summit acknowledges the significance of group action for effectively addressing environmental concerns and climate change action. This is for a more adaptable, transparent and cleaner energy system. The 2023 goal of “One Earth, One Family, and One Future” can be reached, according to the G20 summit in New Delhi, by leveraging the region’s extensive expertise in green growth, clean and climate-resilient infrastructure, fossil fuel subsidies, green finance and investment, energy regulation, environmental taxation and a greater focus on ESG indicators. ESG

* Research Scholar, Department of Commerce, Ravenshaw University Cuttack, Odisha, India.

** Assistant Professor, Department of Commerce, Ravenshaw University Cuttack, Odisha, India.
Email: kumarsanjeedey@yahoo.co.in (Corresponding author)

frameworks are used for Environmental, social and governance (ESG) reporting, which is the process of companies tracking, documenting and publicly disclosing the achievement of ESG goals. This reporting discloses ESG metrics like environmental metrics, social metrics and corporate governance metrics and disclosed qualitative information instead of accounting metrics. In 2006, ESG practices become more popular after the introduction of the Principal for Responsible Investment (PRI) by the UN, where the necessity of disclosing ESG were emphasised (Naeem & Cankaya, 2022). ESG looks beyond the financial disclosure practices which influence the stakeholder perception of the performance of the company. Hence, the companies' members assist the ESG performance by disclosing its indicators to society in a significant manner, in which the development of stakeholder relations; reduces managerial risk and opportunity derived from the ESG profile (Li et al., 2021).

The energy sector plays a crucial role in climate change by burning fossil fuels and increasing GHG emissions, so the energy sector focuses on sustainable and integrated ESG practices for net-zero transition (Karlupudi & Reddy, 2022). According to the climate change performance index (CCPI), 2023, India has been ranked 8 being the world's third-largest energy consumer. The SDGs 2030 emission targets to keep on track towards the energy sector which is compatible below -2°C . At present, the energy sector has focused more on reducing the environmental impact to enhancing its production capacity considering its social value (Gielen et al., 2019). Therefore, companies must integrate their business activity with an effective ESG model, to mitigate the harm to their natural environment and enhance productivity (Karwowski et al., 2021).

ESG in the Power Sector

After the introduction of the SDGs 2030 agenda, the energy sector took a major initiative towards managing the ESG issues in power sector companies in 2021. In addition, to lower the carbon emission and to reduce the exposure of fossil fuel generation in the power sector holistic approach to sustainability reporting is adopted. However, with the adoption of an integrated ESG strategy the power sector reduces their emission at a significant level through renewable energy or by decarbonising emissions from fossil fuel sources (Rissman et al., 2020). Now consumers are more demanding renewable energy for reducing climate change and its effects on society.

The energy sector is subject to strict emission regulation, and compliance with local and national environmental protection laws. Global Data - 2021 identified a few key technology trends impacting the ESG theme in the power industry.

Hydrogen Technology: Hydrogen gas is a “source of cleaner power (zero-emission fuel) on a massive scale and does not produce direct carbon emission of greenhouse gases (GHGs)”.

Carbon Capture and Storage (CCS): This technology comprises for reduction of global carbon CO_2 emission into the atmosphere from fossil fuel power plants by the process of capturing, transporting and storing in a deep geological formation.

Electrification Technology: A key enabler of a decarbonised future is the universal provision of access to electricity; it is one of the SDG 2030. As of 2019, 90% of people have access to electricity.

Energy Storage System: By facilitating energy management, improving the quality and dependability of the power and distributing renewable energy sources, this technology can assist in managing power during peak demand periods. In 2020, there were 12.65 GW of installed batteries for energy storage globally.

Renewable Energy Use: Wind, Solar, biofuels and geothermal are clean energy power uses for an indefinite period due to the infinite supply. It is expected that by 2030, almost 40% of global power will be generated from renewable energy.

These technological practices are developed to mitigate climate change and maintain a healthy ecosystem and population. So, it is observed that the power sector companies play a crucial role in environmental degradation. Every power sector company should implement ESG reporting practices for their sustainability in the economy. Hence, corporate firm performance depends upon corporate sustainability performance (CSP) of the ESG dimension (Jha & Rangarajan, 2020). The present study is to observe how power sector companies that are listed in NSE disclosed their ESG indicators in their sustainability report to the various stakeholders, in which to generate value for the organisation and long-run survival of the power sector companies without hurting to the environmental, social and corporate governance system.

LITERATURE REVIEW

The integrative perspective of reporting refers to a balanced, equitable and concurrent consideration for each ESG indicator to be used, which provides a way for businesses to engage with various stakeholders and communicate with them about sustainability (Benjamin et al., 2015). The cross-sectional study examines the highly reputed public sector firms in Asia (high profitability, good economic position, high leverage and large-size firm) that faces problems

from media, regulators and society at large, hence these organisations not only disclose the ESG information to various stakeholder groups for their accountability to society but also communicate and convince the public for achieving a legitimate status in society (Rahman et al., 2021). The energy sector plays a crucial role to disclose ESG report to society because the energy sector has more impact on the environment due to the burning of fossil fuels and the emission of GHG which create climate change and affect sustainability position. This paper analysed ESG reporting practices of five public power sector and five private power sector companies using an annual report, and sustainability report of the power sector and applying one sample *t*-test and independent sample *t*-test to prove that there is significant variation of ESG disclosed practices of private and public power sector companies (Karlupudi & Reddy, 2022). The authors found that there is some significant differences in the sustainability reporting practices followed by NSE-50 listed companies (Dash & Dey, 2022).

The financial performance of power sector companies is also affected by undisclosed the sustainability report of ESG indicators to the social community, by using data from the Thomson Reuters Eikon database suggest that ESG performance has both positive and significant impact on the profitability of corporation but a negative impact on the market value of the corporation (Naeem & Cankaya, 2022). Economy, environmental and social (EES) sustainability in Asian firms largely depend on ESG reporting practices of the corporation to the various stakeholders and also create economic value for the society considering the environmental and good governance system (Alsayegh MF et al., 2020). The power sector companies must analyse their financial performance, and moral action towards ESG disclosing practices for achieving the target of net zero transition and integrated sustainability performance, through using the case study ad content analysis shows that NTPC, Adani Power and Adani Green are below-average sustainability and Tata power shows above average sustainability integration (Sampat & Malaki, 2022). Considering the sustainability parameters and data of the Gas Authority of India Limited, observed that the financial factors are dependent and change to some extent due to the changing trends of sustainability factors (Mandal & Mitra, 2023). This article analysed how ESG reporting practices greatly affected the financial performance, profitability and investment pattern of the China energy power market based on a panel regression model (Zhao et al., 2018). The international comparative analysis of sustainability report by considering the top 30 companies UK, USA and India to analyse CSR\ESG\BRR reporting practices (Pareek & Pasumarti Subbarao, 2021).

Most manufacturing and energy sectors in the Indian economy adopting regression model suggest that the present

status of ESG focus fund has a significant in cross-listing companies and a negative relationship with its green washing score (Sensharma et al., 2022). The companies that have better ROA, large size, high leverage and environmental accreditation certificate would provide more reliable environmental and social information to society at large as evidenced by the study of 150 power sector companies listed in Shanghai and Shenzhen stock exchanges (Chiu et al., 2020). ESG pillars act a great role in the sustainability of the organisation through investor satisfaction and attract investors for future investment in different projects of the organisation in which overall economic growth and development can be achieved. For this purpose, the study suggests that Europe energy sectors are incorporating ESG practices for the investment strategy in which the risky investment can minimise and long-term customer value can be created (Wanday & El Zein, 2022). The energy sector plays a crucial role in global CSR activities for society because most environmental degradation was caused by the energy sector. This study observes how corporate social responsibility (CSR) practices affected the financial performance of publicly traded firms operating in the energy sector and affect investor perception, so a regression model is developed to test the hypothesis that a correlation exists between CSR and performance of the energy sector (Lloyd, 2017). The risk associated with ESG reporting practices creates a problem for the sustainability running of the business model. The findings of this paper were the way that companies disclosed ESG in their business model should depend upon each company's sector, size, & geographical location and incorporating ESG consideration into companies business model (Zioło et al., 2023). The above paper also found that MSME, large organisation & service sector takes more initiative for ESG risk management system rather than the small and manufacturing sector. The polluting or 'red' category industries in India listed in NSE should strict adoption of systematic reporting framework set by GRI, to bring uniformity, reliability and responsibility in their sustainability achievement (Narolia & Sapra, 2023). Wealth maximisation of any firm depends upon the ESG-disclosed practices to link with the firm value creation such as sales increase, cost reduction, legal integration, productivity enhancement and increase market capitalisation. By using four waves cross-lagged panel structural equation modeling found that the relationship between the individual element of ESG and the value of the energy sector is not bidirectional (Behl et al., 2021). The analysis indicates that energy efficiency and renewable energy technology are used to achieve the energy transition to 2050 by limiting global surface temperature increases below 2°C (Gielen et al., 2019). The sustainability performance of a firm can be achieved by voluntarily disclosing non-financial report which is associated with

ESG factors (Rezaee et al., 2017). Naeem and Cankaya (2022) suggested that the ESG-disclosed practices of environmentally sensitive industries are highly adopted in developing countries and positively influenced the financial performance and market value of the firm. Corporate social performance (CSP) is improved by developing the motivational aspect of employees under the CSR agenda. Four motivational factors philanthropic, enlightened self-interest, normative and coercive are considered to find that private power sectors are highly significantly influenced by these four motivational factors to develop CSR activities and to promote CSP rather than, the public power sectors are influenced by only philanthropic motivation factor. Hence, CSP score was significantly higher in the private-sector firm than in the public-sector firm (Acharyya & Agarwala, 2022). The article concluded that there has been no significant difference in CSR expenditure towards environmental sustainability compared yearly, mutually and collectively (Maheshwari et al., 2023). However, it is necessary for the power sectors to formulate effective strategy for managing the ESG issues and enjoying the long-term sustainable benefit with competitive advantages.

Research Gap

Managing ESG issues are critical for every power sector company. As sustainability goal achievement, the power sector companies are more concerned about their ESG reporting practices. Exploring sustainability performance and disclosure practices of environmentally sensitive industries has been an active area of research. Prior studies have mostly done work on ESG reporting practices adopted by various sector companies other than power sector companies but specific sector sustainability reporting in India is insufficient. Hence, this paper attempts to describe each indicator of ESG reporting carried on by the top 10 power sector companies, those that have high market capitalisation and are listed in NSE, from the year 2018–22. The recent five subsequent previous year data were taken from 10 power sector companies to elaborate the trends of sustainable reporting practices are followed which helpful

to estimate the goal achievement power of G20 submission in 2023 and SDG agenda 2030 in India. Present study contributes to the existing literature by exploring ESG reporting practices of Indian power sector considering the combination of Business Responsibility and Sustainability Report (BRSR) guidelines by SEBI and NVG guidelines by Ministry of Corporate Affairs (MCA). The following hypothesis is formulated for our study.

H_0 : There is no significance difference in ESG reporting practices of public and private power sectors in India.

H_1 : There is significance difference in ESG reporting practices of public and private power sectors in India.

Research Objective

- To examine the extent of ESG reporting practices in the Indian power sector companies.

RESEARCH METHODOLOGY

To study the extent of ESG reporting practices in the Indian power sector, the descriptive cum exploratory research method was taken into consideration. For analysis, SEBI-issued BRSR guidelines are taken as base. Data were collected from the top 10 power sector companies, listed on National Stock Exchange (NSE) that have high market capitalisation. ESG information of sample companies for a period of 5 years from 2018 to 2022 is taken from the annual report, website and BRSR. The recent past 5 years data were taken from power sector companies to analyse the trends of sustainability reporting practices to prohibit the serious climate changes and achievement off G20 emission target set by the India in 2023. Content analysis is used to quantify and analyse the presence of ESG information in the annual report of power sector companies in India. SEBI issued BRSR guidelines, and a total number of 19 indicators are classified into environmental (7 indicators), social (7 indicators) and governance (5 indicators) have been taken for the study. A list of ESG indicators is presented in Table 1.

Table 1: ESG Indicators are Classified As Per the BRSR Report

Environmental	Social	Governance
1. Energy and GHG emissions	1. Employee well-being	1. Anti-corruption and anti-Bribery policies
2. Solid waste management	2. Health and Safety of Workers	2. Conflict management Process
3. Water consumption and Withdrawal	3. Training	3. Retention policies
4. 3R practices (Reduce, Reuse, Recycle)	4. Human rights	4. Remuneration policies
5. sustainable sourcing	5. Social impact assessment	5. Stakeholder engagement
6. Extended Producer Responsibility (EPR)	6. Gender equality- women at the top level	
7. Life cycle assessments	7. CSR activities and detail of beneficiaries	

Source: SEBI guideline BRSR report.

In the first step of conducting analysis, information identified from published documents is categorised as ESG indicators. Thereafter, the total 19 indicators scores were assigned for disclosure of information as 1 and non-discloser as 0, and then aggregated each categorised ESG indicator to rank their reporting practice adapted to stakeholders. We have applied descriptive statistics, correlation and paired *t*-test to analyse our data with the help of excel and SPSS 23 version.

Research Framework

This framework is a clear structure and guidelines to represents the sustainability reporting practices adopted by power sectors in India. It also describes the ESG indicators that are 7 from environmental, 7 from social and 5 from governance formulated by SEBI with BRSR guidelines and the nine NVG principles by MCA for effectively disclosing the sustainability report in company’s annual report.

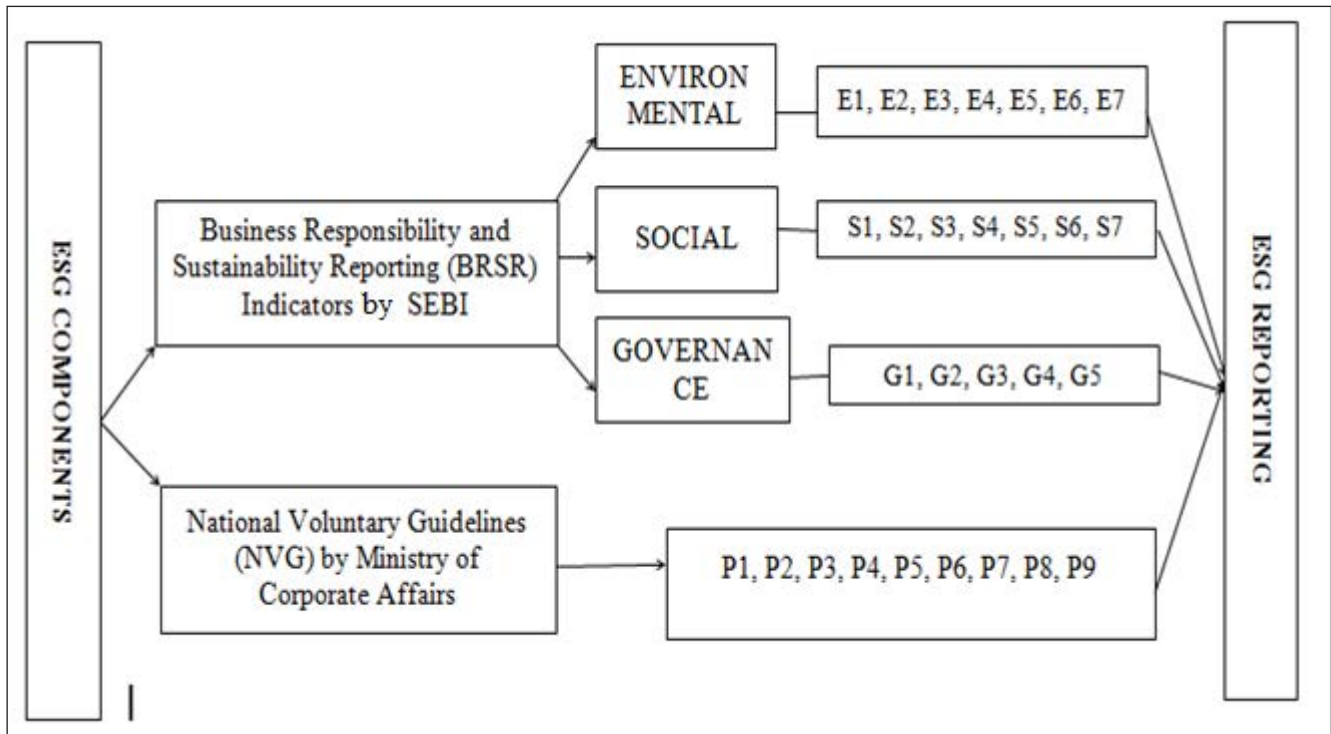


Fig. 1: Proposed Research Framework

ANALYSIS AND DISCUSSION

The result of the study is presented in different parts. Firstly it shows the extent of ESG indicators are disclosed by the 10 sample power sector that is 5 from public (NTPC, PGC, NHPC, IEX and SJVN) and 5 from private sectors (Adani

Trend, Adani Power, TATA Power, JSW energy, Torrent Power) with diagrammatic representation of ESG indicators individually and secondly it focuses upon the nine NVG principles are disclosed in sustainable report formulated by MCA for the achievement of sustainable growth and development.

Table 2: Average Discloser of Various Elements of ESG in Annual Report by Indian Power Industry (2018-22)

ESG Indicator	NTPC	PGC	ADANI Tr	ADANI Po	TATA Po	NHPC	JSW EN	TORRENT PO	IEX	SJVN	
Environmental	Energy &GHG/Scope Emission	1.00	1.00	1.00	1.00	0.60	1.00	0.60	0.80	1.00	
	Solid Waste Management	1.00	0.00	0.40	1.00	0.80	0.60	0.60	0.40	0.40	
	Water consumption and withdrawal	1.00	1.00	1.00	1.00	0.80	0.80	1.00	0.20	0.60	
	3R Practices	1.00	1.00	1.00	1.00	1.00	0.60	1.00	0.60	1.00	
	Sustainable sourcing	1.00	1.00	0.80	0.80	0.80	0.00	0.40	0.00	0.00	
	Extended Producer Responsibility	0.60	1.00	0.40	0.60	0.60	0.40	0.40	0.60	0.20	
	Life Cycle assessment	0.20	0.20	0.40	0.00	0.80	0.00	0.20	0.00	0.00	
	Total	5.80	5.20	5.00	5.40	5.80	2.40	4.60	4.40	2.60	3.20
	Employee Well-being	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Health & Safety of Workers	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Social	Training	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	
	Human Rights	0.80	0.60	0.20	1.00	1.00	0.60	0.80	0.40	0.00	
	Social Impact assessments	0.40	0.60	0.40	0.60	0.60	0.20	0.60	0.40	0.40	
	Gender Equality	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00	0.80	
	CSR Activities	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	Total	6.20	6.20	5.40	6.40	6.40	5.80	6.00	6.20	5.60	5.00
	Anti-corruption & anti-bribery policies	0.80	1.00	1.00	1.00	0.80	1.00	1.00	0.60	1.00	0.80
	Conflict Management Process	0.60	1.00	1.00	1.00	0.60	0.60	0.80	1.00	0.60	1.00
	Retention Policies	0.20	0.20	0.60	0.40	0.20	0.00	0.60	0.40	0.20	0.40
	Remuneration Policies	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80
stakeholder engagement	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Total	3.40	4.20	4.60	4.40	3.60	3.60	4.40	4.00	3.80	4.00	
Average	5.13	5.20	5.00	5.40	5.27	3.93	5.00	4.87	4.00	4.07	
Ranking	4	3	5	1	2	9	5	6	8	7	

Source: Compiled from annual reports of companies.

Table 2 explains the overall disclosure of various aspects of ESG in the Annual reports of sample companies during the last five financial years ending 2022. We have identified a total of 19 aspects under the ESG report to be disclosed by the Companies (Karpudi & Reddy, 2022 and SEBI issued BRSR framework) out of which seven are from environmental and social aspects each and five aspects representing governance aspects. We have assigned 1 for disclosing a particular aspect in the Annual report of the

corresponding companies and 0 for not disclosing it. The value shown in the above table is the average of individual aspects considering the last five years' discloser. Value 1 indicates that the company is disclosing a particular aspect in all five years under consideration. Any value below 1 indicates a non-discloser of a particular aspect in one or more years (s). Value zero indicates that the particular company is not at all disclosing that aspect in its ESG report.

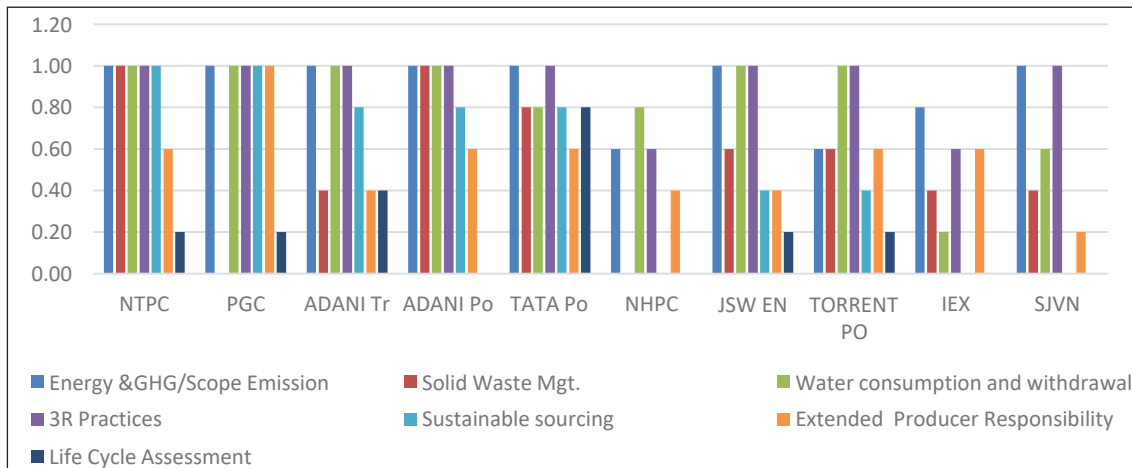


Fig. 2: Average Discloser of Environmental Aspects by the Indian Power Industry (2018-22)

So far environmental aspects are concerned (Table 2 and Fig. 2), the National Hydroelectric power corporation (NHPC), Indian Energy Exchange (IEX) and Satluj Jal Vidyut Nigam Ltd (SJVN) are disclosing very limited or no information regarding solid wastage management, sustainable sourcing and life cycle assessment. Similarly, with relation to social

parameters (Fig. 3), all the companies are disclosing most of the information in their annual report with a minor exception by Adani Transmission and SJVN. Regarding governance parameters (Fig. 4), most companies are disclosing all information in their annual report except the retention policy of the companies.

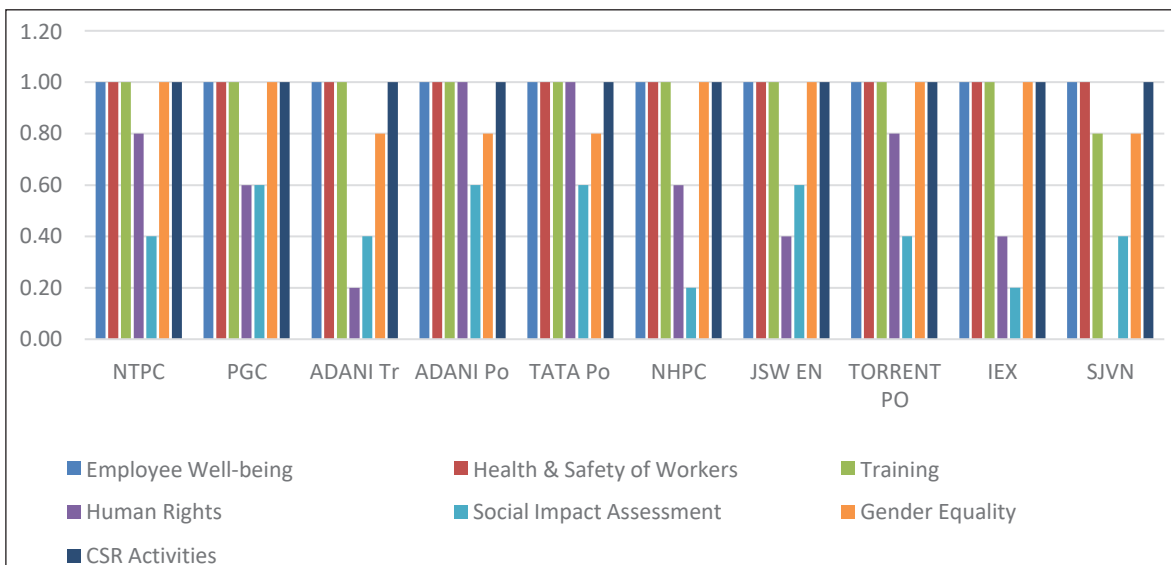


Fig. 3: Average Discloser of Social Aspects by Indian Power Industry (2018-22)

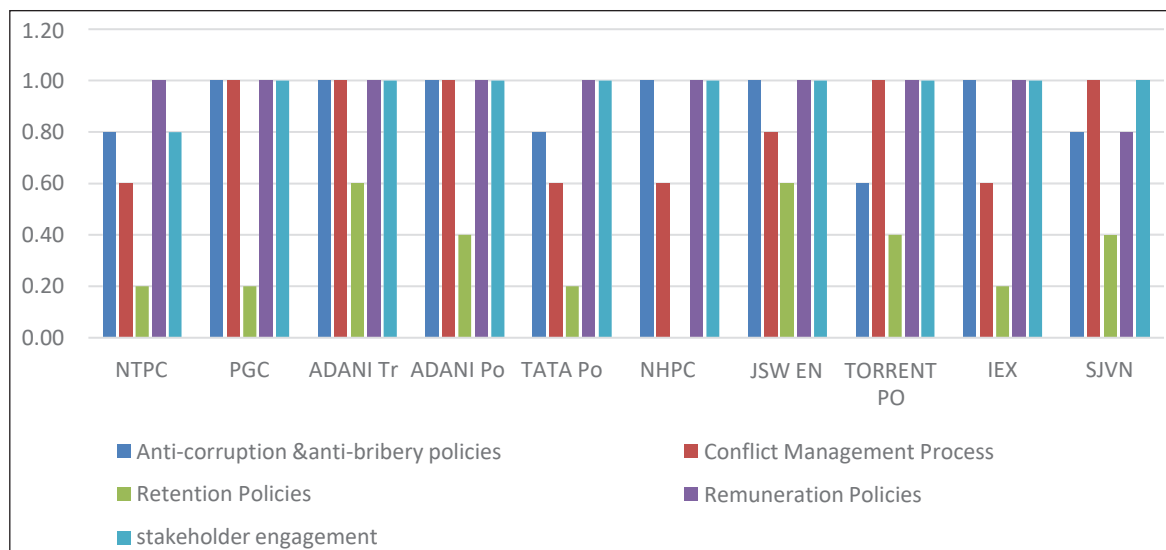


Fig. 4: Average Disclosure of Governance Aspects by Indian Power Industry (2018-22)

Based on the information disclosed, we have calculated the average of all parameters and ranked these companies based on disclosure value. Adani Power stood 1 rank in ESG disclosure during the last five years followed by Tata Power and Power Grid Corporation. IEX witnessed the last rank of 8 following to it was SJVN and Torrent Power.

It is seen from the above analysis that most of the companies are lacking behind in reporting a few environmental parameters like sustainable sourcing and life cycle assessment. Further, most companies are disclosing different parameters in different units/periods which creates difficulty in interfirm comparison.

Table 3, discloses the nine principles which were set up by the National Voluntary Guidelines (NVG) for responsible

business conduct by the top 10 power sector companies, those are listed in NSE. We have identified that principles 1–8 are mostly disclosed by all the sample companies in a significant manner but principle 9 (customer value creation) is not more focused by National Thermal Power Corporation Ltd (NTPC), Torrent Power and SJVN. It is also found that the power grid corporation has not followed the policy advocacy principle related to several affiliations with trade and anti-competitive conducted by the entity. Finally, it is seen that all sample power sector companies are more conscious about disclosing NVG mentioned nine principles were released by the MCA in July 2011 responsible for conducting business to operating in an economically, socially and environmentally sustainable manner.

Table 3: Disclosure of 9 Principles Mentioned in National Voluntary Guidelines (NVG) by the Indian Power Industry

		NT PC	Power Grid	Adani Trans	Adani Power	Tata Power	NH PC	JSW Energy	Torrent Power	IEX	SJVN
P1	Ethics, transparency & accountability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P2	Product lifecycle sustainability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P3	Employee well-Being	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P4	Stakeholder engagement	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P5	Human right	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P6	Environment	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P7	Policy Advocacy	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
P8	Inclusive growth and equitable development	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
P9	customer value creation	N	Y	Y	Y	Y	Y	Y	N	Y	N

Source: Collected and compiled from annual reports.

Table 4: Disclosure of CSR Spending by the Indian Power Sector Industry 2018-2022 (Rs. in Cr.)

Year	NTPC	Power Grid	Adani Trans	Adani Power	TATA	NHPC	JSW Energy	Torrent	IEX	SJVN
2017-18	242.00	157.99	8.23	5.65	21.43	38.55	20.25	23.28	3.01	38.76
2018-19	285.46	195.52	17.91	2.07	36.75	27.16	5.82	19.51	5.67	40.25
2019-20	304.92	346.21	18.14	8.50	27.10	126.43	13.25	20.35	3.57	36.35
2020-21	461.96	240.48	25.26	10.56	39.24	79.63	6.86	33.74	4.26	52.87
2021-22	419.00	271.14	23.14	12.87	32.80	72.82	6.82	28.61	6.05	51.67
AVG	342.67	242.27	18.54	7.93	31.46	68.92	10.60	25.10	4.51	43.98

Source: Collected and complied from Annual Reports

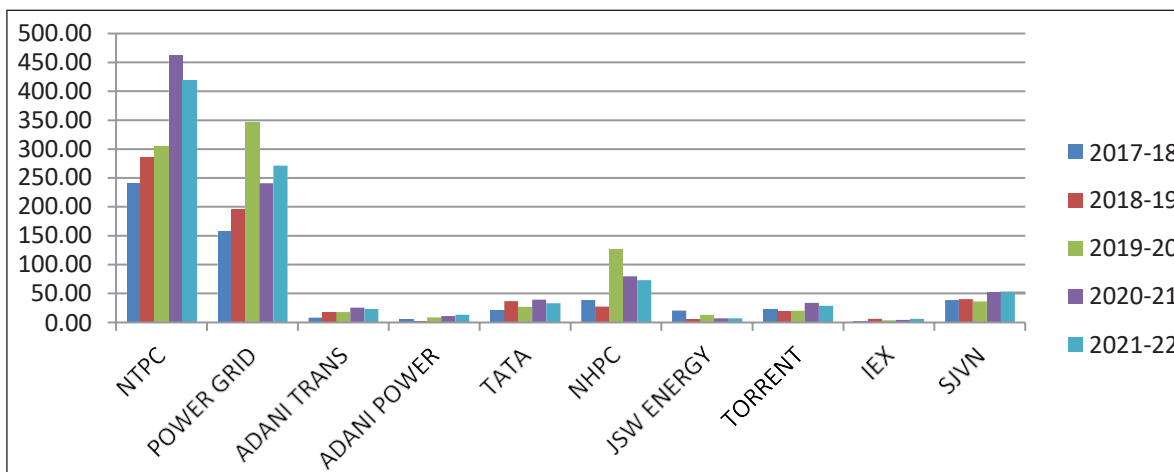


Fig. 5: Discloser of CSR Spending Rate by Indian Power Industry from 2018-2022 (RS. In Cr.)

Table 4 and Fig. 5 disclose the CSR spending rate of the top 10 power sector companies, that have high market capitalisation listed in NSE. CSR spending is one of the vital social indicators in ESG reporting practices for sustainable growth and development of any Industry. In this table and figure, we have found that National Thermal Power Corporation (NTPC) and IEX spend highly more and less amount for CSR, respectively. The average CSR spending rate of NTPC is 342.67 Cr. And IEX is 4.51 Cr. It is also found that the top three power sectors companies like NTPC,

Power Grid and NHPC are more involved in CSR spending rate. It is seen that most power sector companies are gradually increasing their CSR spending rate year by year to achieve ethical and moral sustainability values in society.

The average ESG disclosers of all sample companies are grouped under two broad heads, that is, public sector and private sector power companies, that is, five from public (NTPC, PGC, NHPC, IEX and SJVN) and five from private (Adani Trend, Adani Power, TATA Power, JSW Energy and Torrent Power) and pair *t*-test is used to see their association.

Table 5: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ESG Public	4.4660	5	.64049	.28644
	ESG Private	5.1080	5	.21879	.09785

Table 6: Paired Sample Correlations

		N	Correlation	Sig.
Pair 1	ESG Public & ESG Private	5	.357	.555

Table 7: Paired Samples Test

		Paired Difference					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	ESG Public – ESG Private	-.64200	.59826	.26755	-1.38484	.10084	-2.400	4	.074

Tables 5, 6 and 7 show the result of *t*-test. As the p-value is 0.074 which is more than 0.05 at 5% level of significance, null hypothesis is accepted. Hence, we may conclude that there is no significant difference in ESG reporting practices of sample 10 power sectors irrespective of ownership in India. It is also observe that the mean of ESG discloses by private power sectors (5.1080) are more than the public power sectors (4.40). Overall the private sectors are more conscious about the ESG reporting practices than public power sectors.

CONCLUSION

In recent decades, climate change is mainly caused by human activities. For sustainability development of any corporation is to be achieved by adopting an environmentally sensitive business, with more focus on issues related to climate degradation activities. In addition, ESG reporting and research have been rapidly increasing day by day for maintaining overall sustainability development. Therefore, this study deals with the extent of ESG indicators reporting practices of power sector companies in India, which is the largest contributor to GHG emission and environmental degradation. Using the sustainability report, ESG and annual report of the top 10 power sector companies listed in NSE, the indicators were categorised into ESG dimensions. By using the descriptive cum exploratory research method, we have found that all of the sample companies are much more aware of disclosing ESG reports to the various stakeholders, but the private power sector companies are much more aware about disclosing ESG report than private power sectors. Adani Power is a high-ranking position to disclose average ESG indicators and the lowest rank is given to IEX and NHPC, respectively. NTPC and Power Grid Corporation have more focused on CSR activities. The study also observed that the social and governance indicators are disclosed more than the environmental indicators by sample power sector companies. The reason for this disparity is that the companies want to enhance their overall discloser score to meet the expectation of various stakeholders. Therefore, it is suggested that for future research the researcher must focus more on the companies in which our power sector has taken more indicators on evaluation of ESG reporting practices and expected timeframe.

Acknowledgement

The authors are thankful for the JRF scholarship support provided by UGC and NFST India for this study. We are also thankful for the valuable comments of esteemed reviewers to enrich and improve our study.

REFERENCES

- Acharyya, M., & Agarwala, T. (2022). Relationship between CSR motivations and corporate social performance: A study in the power industry in India. *Employee Relations*, 44(3), 663-685.
- Alsayegh, M. F., Rahman Abdul, R., & Homayoun S. (2020). Corporate economic, environmental, and social sustainability performance transformation through ESG disclosure. *Sustainability*, 12(3910), 2-20.
- Behl, A., Kumari, R. P., Makhija, H., & Sharma, D. (2021). Exploring the relationship of ESG score and firm value using cross-lagged panel analyses: A case of the Indian energy sector. *Annals of Operations Research*.
- Buniamin, S., Nazli, N., & Ahmad, N. (2015). An integrative perspective of environmental, social and governance (ESG) reporting: A conceptual paper.
- Chiu, L. C., Zhang, J., Li, M., Wei, S., Xu, S., & Chai, X. (2020). A study of environmental disclosure practices in the Chinese energy industry. *Asian Journal of Sustainability and Social Responsibility*, 5(9), 2-21.
- Dash, S., & Dey, S. (2022). Sustainable reporting practices of Indian corporate sector: A case study of listed companies. *Journal of Commerce and Accounting Research*, 12(3), 63-71.
- Gielen, D., Boshell, F., Saygin, D., Bazilian, M., Wagner, N., Gorini, R., & 2019. (2019). The role of renewable energy in the global energy transformation. *Elsevier*, 24, 38-50.
- Harrison, J. S., Bosse, D., & Phillips, R. (2007). Stakeholder theory and competitive advantage. *Academy of Management 2007 Annual Meeting: Doing Well by Doing Good, AOM*, 1-6.
- Jha, K. M., & Rangarajan, K. (2020). Analysis of corporate sustainability performance and corporate financial performance causal linkage in the Indian context. *Asian*

- Journal of Sustainability and Social Responsibility*, 5(10), 1-30.
- Karlapudi, P., & Reddy, G. N. (2022). ESG disclosure practices of power sector companies in India - A comparative study. *Madhya Bharti*, 82(14), 130-138.
- Karwowski, M., & Grzybek, R. M. (2021). The application of corporate social responsibility (CSR) actions for mitigation of environmental, social, corporate governance (ESG), and reputational risk in integrated reports. *Corporate Social Responsibility and Environmental Management*, 1-15.
- Li, T. T., Wang, K., Sueyoshi, T., & Wang, D. D. (2021). ESG: Research progress and future prospects. *Sustainability*, 13(11663), 2-28.
- Lloyd, R. (2017). The impact of CSR efforts on firm performance in the energy sector. *Doctor of Business Administration (DBA)*, 15, 1-131.
- Maheshwari, M., Gupta, A., Bhayani, S., & Gaur, P. (2023). An analytical paradigm of environmental sustainability in CSR of oil sector PSUs. *Journal of Commerce and Accounting Research*, 12(1), 1-7.
- Mandal, S., & Mitra, S. (2023). Evaluation of corporate sustainability in terms of financial performance: An empirical study. *Journal of Commerce and Accounting Research*, 12(3), 28-40.
- Moynihan, B., & Schwab, K. (2020). Measuring stakeholder capitalism. toward common metrics and consistent reporting of sustainable value creation. In *World Economic Forum* (Issue January).
- Naeem, N., & Cankaya, S. (2022). The impact of ESG performance over financial performance: A study on global energy and power generation companies. *International Journal of Commerce and Finance*, 8(1), 1-25.
- Narolia, V., & Sapra, R. (2023). Are polluting firms disclosing enough on the environment? A case of an emerging economy. *Journal of Commerce and Accounting Research*, 12(2), 38-50.
- Pareek, S., & Pasumarti Subbarao, S. (2021). ESG reporting practices in India, UK, and USA: An international comparison. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(6), 2984-3006.
- Rahman, R. A., Alsayegh, M. F., Rahman, A., Rashidah, M., & Faisal, A. (2021). Determinants of corporate environment, social and governance (ESG) reporting among Asian firms. *Journal of Risk and Financial Management*, 14(167), 1-13.
- Rezaee, Z., & Tuo, L. (2017). Voluntary disclosure of non-financial information and its association with sustainability performance. *Advances in Accounting*, 39, 47-59.
- Rissman, J., Bataille, C., Masanet, E., Aden, E., Morrow, W. R., Zhou, N.,...Helseth, J. (2020). Technologies and policies to decarbonize global industry: Review and assessment of mitigation drivers through 2070. *Applied Energy*, 266(114848), 1-34.
- Sampat, S., & Malaki A. (2022). *Financial performance, moral action & ESG: An integrated approach to sustainability: Through comparative case studies in Indian power generation companies* (Master's Thesis in International Relations, pp. 1-59).
- Sensharma, S., Sinha, M., & Sharma, D. (2022). Do Indian firms engage in greenwashing? Evidence from Indian Firms. *AABFJ*, 16(5), 67-88.
- Wanday, J., & El Zein, S. (2022). Higher expected returns for investors in the energy sector in Europe using an ESG strategy. *Frontiers in Environmental Science*, 10(3389), 1-20.
- Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, K. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. *Sustainability*, 10(2607), 2-18.
- Ziolo, M., Bak, I., & Spoz, A. (2023). Incorporating ESG risk in companies' business models: State of research and energy sector case studies. *Energies*, 16(1809), 2-27.