



# How green are the reds? The ESEG reporting trends in high-impact industries

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## Abstract

**Purpose:** The purpose of this paper is to comprehensively analyse the sustainability reporting (SR) practices of Indian companies in terms of ESEG disclosures, where ESEG stands for Environment, Social, Economic, and Governance, and to investigate the differences in sustainability reporting practices by different companies.

**Methodology/Approach:** Data are collected from annual reports/BRR/CSR /sustainability reports, and BRSR reports for the period (2021-22 to 2024-25) of Red category companies listed on the NSE 500 index. The content analysis technique is used with NVivo 15 software.

**Findings:** The analysis of ESEG disclosure among Red category companies in India revealed significant trends using NVivo 15. Most industries are concentrated on governance and economic disclosure indicators, while very little concern is shown towards environmental issues. Different companies under industries have inconsistencies in reporting towards ESEG indicators under sustainability reporting.

**Research Implications:** This study will help to gauge the extent to which manufacturing companies are participating in social and environmental initiatives beyond their legal obligations, contributing to the well-being of communities and the environment.

**Originality/value:** This study is among the foremost in India to evaluate ESEG practices of Red category companies listed on the NSE 500 index in the wake of the mandatory BRSR requirement.

**Keywords:** Sustainability, Red industries, ESEG disclosures, Environment, Social, Governance, Economic

## Introduction

In today's business environment, the company's reporting is not only about disclosing financial information. There is also a noticeable shift by businesses towards sustainability practices. This evolution is due to the complexities of globalisation and SEBI's mandatory disclosures. Due to rising issues such as global warming, environmental degradation, inequalities, and exploitation, these global risks highlight the need for greater transparency and accountability by companies towards stakeholders, thereby increasing the requirement for ESEG disclosure in their reports.

The accounting principles have evolved over many years to universally capture the financial performance of businesses; the methods for measuring ESG impacts are relatively new. Currently, some frameworks for these non-financial disclosures, such as GRI, the SDGs, SASB, UN Global Compact guidelines, and IFC standards on ESG reporting, have gained corporate adoption and global acceptance. Some large companies in India, like TATA Industries, Reliance Industries, Infosys, and Wipro, have been publishing sustainability reports in their annual reports since the 2000s (Gupta & Motwani, 2023) [4]. The MCA issued guidelines regarding sustainability disclosure from time to time. SEBI mandated BRR for the top

100 Indian companies in 2012 and later extended it to 1000 Indian companies. In 2021, SEBI updated the mandatory ESG reporting framework, which is known as BRSR. The CPCB has categorised companies into red, orange, and green categories based on their pollution index. The red industries are the most polluting, followed by orange and green. The red industries include Cement, Chemicals, Mining, Metals, Pharmaceuticals, Power and Textiles, which are key drivers of economic growth and sustainable growth.

The objective of the study is to determine the overall status and extent of environmental, social, economic and governance disclosures among red category companies listed on the NSE Nifty 500 indices.

## Literature review

The term ESG (Environment, Social, and Governance) was coined in 2005, and it has steadily grown since then. There has been growth in ESG searches on the internet since 2019. The companies are allocating more resources towards improving ESG. (McKinsey Sustainability report, 2022). From Voluntary guidelines on ESG responsibilities to BRSR, the ESG reporting in India has gradually evolved. In India, almost every large-scale company publishes an ESG report in some form. In India,

there are various legislations addressing ESG-related matters, such as the Companies Act 2013, which requires disclosure in the board's report on certain environmental and social matters. However, the primary legislation for ESG reporting is SEBI (AZB & Partners, 2024). SEBI made it mandatory for the top 1,000 listed companies to disclose ESG information in their reports to enhance reliability and mitigate greenwashing. Prior research has admitted the growing trend of ESG reporting among companies but also raised concerns about the true potential of ESG disclosures. Because of the non-availability of reporting disclosures, the chances of misrepresentation of facts and figures at the company level become inevitable (Fride, 2019; Khan, Serafeim & Yoon, 2016; PRI 2025) [7]. These challenges provide companies with opportunities to engage in selective and complex disclosures, which can ultimately lead to greenwashing their ESG performance - a significant risk that many studies have highlighted as a key barrier in ESG information (Bowen & Aragon-Correa, 2014) [8]. Ricky Chung, Lyndie Bayne, and Jacqueline Louise Birt (2024) [9] analysed the determinants of ESG disclosure and differences between voluntary and mandatory disclosure and found that larger companies significantly disclose higher levels of ESG information. ESG disclosure by companies increased over the period and is significantly different across companies. The reporting of companies differs during different periods. In times of crisis, companies either increase ESG reporting to maintain their reputation or reduce it to cut costs, depending on their strategy (Fahad P., Nidheesh K.B., 2021). Different standards like IFRS and IAS were introduced to enhance the extent of ESG disclosures among companies, but a study by Dayanandan, A., Donker, H., & Kuntluru, S. (2023) [11] on external regulatory frameworks and firms' characteristics has mixed results. The standards can either regulate and enhance the ESG disclosures, or the firms may strategically limit disclosure due to cost or reputational concerns. A study by Fahad P., Nidheesh K.B., 2021 on Indian firms revealed that the firm size, age and leverage affect the extent of disclosure. The larger and older a company is, the more environmental and social issues disclosed in its reports, but the governance disclosure is not influenced by these factors. As much as a company is larger and older, it will not disclose its governance practices. Some authors analysed that stakeholder engagement and climate sensitivity may affect the disclosure level of firms. Like a study by Santi Gopal Maji and Prachi Lohla (2025), on leading 100 firms listed on BSE from 2019- 22. The findings

revealed that higher stakeholder engagement and higher climate sensitivity are associated with a higher ESG disclosure score.

Sector and industry-specific studies in the context of emerging economies have been researched by many researchers, but studies on the most polluted industries, labelled as the red category defined by the Central Pollution Control Board, are very few. This paper fills the gap in the literature by studying an unexplored area related to the extent of ESEG (environment, social, economic, and governance) disclosures these companies are disclosing in their reports. The study is important because SEBI has mandated ESG reporting for the top 1000 listed companies in India. The red category industries we decided to study are among the top 1000 listed companies and have a significant impact on the environment, society, and economy.

### Research methodology

Since red category industries are the most polluting and have a large impact on the environment, society, and economy, the following industries are included in the study because they fall under the red category and are among the top 1000 listed companies.

- Cement Industry
- Chemical Industry
- Metal & Mining Industry
- Pharmaceutical Industry
- Power Industry
- Textile Industry

To understand the extent and quality of ESEG reporting, we conducted a content analysis using NVivo 15 and studied BRSR reports for companies from 2021-22 to 2024-25. The study will focus only on manufacturing industries in the red category because they use more natural resources than any other industry and have a big negative impact on the environment. That's why the government has issued numerous regulations over time. In 2021, SEBI recommended BRSR for the top 1000 listed companies by market capitalisation. So, it becomes important to study how these companies are reporting as they have high profits, high net worth, a large capital base and a very large customer base. The manufacturing companies will be from the top 1000 listed companies. Large companies are expected to provide non-financial information and to comply with the government's non-financial reporting regulations.

**Table 1:** The companies under each industry are in Table 1.

Industry	Company	Industry	Company
Cement	ACC ltd	Metal & Mining	Adani enterprises
Cement	Ambuja cement	Metal & Mining	Gujrat Mineral Development Corp
Cement	Birla corporation	Metal & Mining	Hindalco Industries
Cement	Dalmia cement	Metal & Mining	Hindustan copper lts
Cement	Grasim industries	Metal & Mining	Hindustan zink ltd
Cement	India cements	Metal & Mining	JSW steel
Cement	J.K cement ltd	Metal & Mining	Jindal Steel & power ltd
Cement	J.K luxmi cement	Metal & Mining	Lloyds metals & energy ltd

Cement	Nuvoco Vistas corp, ltd	Metal & Mining	NMDC ltd
Cement	Prism johnson	Metal & Mining	NMDC steel ltd
Cement	Shree cement	Metal & Mining	National Aluminium co. ltd
Cement	Star cement ltd	Metal & Mining	SAIL
Cement	Ramco cements	Metal & Mining	TATA steel
Cement	Ultratech cement	Metal & Mining	Vedanta ltd
Cement		Metal & Mining	Jai Balaji Industries
Cement		Metal & Mining	Jindal Stainless
Chemical	Aarti industries	Pharmaceutical	Abbott India Ltd
Chemical	Alkyl Amines chemicals	Pharmaceutical	Ajanta pharma.
Chemical	Anupam Rasayan india ltd	Pharmaceutical	Alembic Pharma
Chemical	Archean chem.	Pharmaceutical	Astra zenka Pharma
Chemical	Atul ltd	Pharmaceutical	Aurobindo Pharma
Chemical	Balaji Amines ltd	Pharmaceutical	Biocon Ltd
Chemical	Bayer cropsience	Pharmaceutical	Cipla
Chemical	Chambal Fertilizers & chem.	Pharmaceutical	Concord Biotech
Chemical	Chemplast Sanmar Ltd	Pharmaceutical	Dummy Sanofi India ltd
Chemical	Clean Science & tech.	Pharmaceutical	Eric lifesciences
Chemical	Coromandel International	Pharmaceutical	Fdc ltd
Chemical	Deepak fertilizers	Pharmaceutical	Gland
Chemical	Deepak niterate	Pharmaceutical	Glexosmith Klein
Chemical	E I D parry	Pharmaceutical	Glenmark Lifesciences
Chemical	Fertilizers & chemicals travancore	Pharmaceutical	Glenmark pharma
Chemical	Fine organic ind	Pharmaceutical	Global health ltd
Chemical	Gujrat flourochem	Pharmaceutical	Granuels India Ltd
Chemical	Gujrat narmada valley fertil.	Pharmaceutical	J B chemi & pharma
Chemical	Himadri speciality chem	Pharmaceutical	Jubilant Pharmova
Chemical	Laxmi organic ind	Pharmaceutical	Lupin ltd
Chemical	Linde Indis	Pharmaceutical	Mankind
Chemical	Navin flourine international	Pharmaceutical	Natco pharma
Chemical	PCBL ltd	Pharmaceutical	Piramal Pharma
Chemical	PI indus	Pharmaceutical	Polymedicure ltd
Chemical	Pidilite ind	Pharmaceutical	Sanofi india ltd
Chemical	Rashtriya chem	Pharmaceutical	Sun pharmaceuticals
Chemical	SRF ltd	Pharmaceutical	Suven pharma
Chemical	Solar indus	Pharmaceutical	Torrent pharma
Chemical	Sumitomo chem.	Pharmaceutical	Zydus lifesciences
Chemical	Tata chem.	Pharmaceutical	
Chemical	UPL ltd	Pharmaceutical	
Textiles	Alok Industries Ltd.	Power	Adani energy solutions
Textiles	Dummy Raymond Ltd.	Power	Adani green energy ltd
Textiles	K.P.R. Mill Ltd	Power	CESC ltd
Textiles	Page Industries Ltd	Power	JSW energy ltd
Textiles	Trident Ltd	Power	NHPC ltd
Textiles	Vardhman Textiles Ltd.	Power	NLC INDIA ltd
Textiles	Welspun Living Ltd	Power	NTPC LTD
Textiles		Power	Power grid corporation of india ltd
Textiles		Power	SJVN ltd
Textiles		Power	TATA power
Textiles		Power	Torrent power ltd

In NVivo 15, codes were created based on SEBI's BRSR reporting principles, such as under environment disclosure, GHG emissions received code 1, and water management received code 2. The same coding pattern has been followed for social, governance, and economic disclosures. Based on these codes, a frequency table was created, and word clouds were generated.

## Results and Discussion

It has been observed that disclosures on environment, social, economic, governance and sustainability reporting are very low. In recent times, ESG reporting has emerged due to stakeholders' concerns and SEBI's mandatory disclosure requirements. The findings on companies about the extent of ESEG reporting using NVivo 15 are as follows:



profit organisations (Sreeja Nair, 2016). The growing stakeholders concerns about transparency, environment, social, economic and governance dimensions make it important to study the extent of ESEG disclosure in the pharmaceutical industry. We studied 29 companies in the pharmaceutical sector. The word cloud has been generated using NVivo 15 software. A word cloud analysis of the Indian pharmaceutical sector reveals key priorities and challenges in the industry. The most frequent words like “company, directors, financials, policies, R&D” show that the company has strong governance practices. “Tax, Financials, Revenue” these words emphasise the company’s economic disclosure. The pharma industry makes a major contribution to Health and Safety. Words like “health, safety, and healthcare” emphasise the industry’s fundamental role in ensuring public health and maintaining safety standards in production and delivery. “energy, recycle, waste, and water” words highlight the growing concern of companies towards environmental sustainability. The overall word cloud shows the holistic approach towards industrial growth and responsibility.



Fig 3

**Metal & Mining industry**

The Indian metal and mining industry accounts for 2-2.5% of GDP. Sustainability has been gaining priority at the global level, which pushes India to embrace the principles of sustainability to ensure long-term viability, as India is a major exporter of minerals. The minerals are valuable natural resources and vital raw materials for many industries. This makes the mining sector an important segment of the Indian economy. The mining sector in India is rich in minerals, but it has many challenges, like strict environmental regulations and slow technological adoption. The major minerals include iron ore, coal, and aluminium. The mining industry is considered one of the most polluting industries, with a negative impact on society and the environment, so it should disclose information on ESEG indicators. We examined 14 companies in the mineral and mining industry. We generated a word cloud from the companies' annual reports. The word cloud shows the extent of ESEG indicators in the companies' reports. Words such as “Company, financials, directors, steel, metal and minerals, governance, independent, remuneration” are the most prominent in reports that depict governance indicators. Like governance indicators, companies have a strong influence on economic indicators like “tax, financials, compliance”. This shows companies continued engagement with India’s

regulatory landscape. Words like “material, waste, recycle, reuse, solar” show a growing commitment towards environmental protection. The company has less focus on social initiatives, the words like health and safety. This shows a shift in focus towards ESEG practices.



Fig 4

**Power industry**

The power industry, being one of the most diverse sectors in the world, is major contributors to greenhouse gas emissions. This sector constitutes a cornerstone of India’s movement towards sustainable development and ESG compliance. The transition from conventional sources such as coal, lignite, natural gas, oil, hydro, and nuclear power to non-conventional sources such as wind, solar and biomass directly impacts national sustainability goals and global climate commitments. As India’s most energy-intensive and emissions-intensive industry, the power sector falls into the red category. Because of this, ESG reporting becomes both a challenge and a necessity for the sector. We generated a word cloud from the company’s annual reports. The word cloud shows the extent of ESEG indicators in the companies' reports. The most prominent terms, such as Company, Financials, Tax, Energy and directors, indicate that corporate disclosure is highly oriented towards economic and governance aspects. This shows the commitment towards compliance towards policies, accounting transparency, and broad oversight in their ESEG reporting. Environmental terms such as carbon, fuels, coal, solar, wind, water and plant appear significantly but with relatively low frequency, reflecting a growing yet still secondary focus on environmental performance and renewable energy transformation. The words highlighting the social disclosure are employees, safety, health and training, focusing on workforce welfare and occupational safety as emerging disclosure priorities. Overall, the word cloud demonstrates that while the power industry acknowledges the importance of sustainability, particularly through references to clean energy and carbon management, the ESEG reporting remains largely focused towards economic and governance dimensions. This creates a need for more focused and balanced disclosures that integrate environmental and social disclosure alongside economic and governance disclosures.



Fig 5

**Textile industry**

The textile industry holds a major position in India’s economic and social framework. The textile industry includes segments like cotton textiles, man-made fibres, silk, wool, jute, and handlooms. Cotton textile has a major share in production and export among other segments of the industry. Even as one of the world’s largest manufacturing hubs, the Indian textile industry faces challenges in sustaining its global presence due to geopolitical tensions, fragmented supply chains and product diversity. The study of ESEG disclosure is important because the textile industry is one of the red category industries. India generates 8.5% of the world’s annual textile waste and contributes about 10% of the global textile industry’s carbon footprint. Given the high risk to the environment and society, it is important to align companies' commitments with their actual disclosures in the report. We generated a word cloud from the annual reports of the companies. The word cloud shows the extent of ESEG indicators in the reports of the companies. The words like financial, tax, accounting, market and provisions imply the focus on economic dimensions, and company, policies, textile, meetings, and directors highlight the governance disclosure. Words like reuse, waste, recycle, water, solar, air, carbon, and green emphasise environmental responsibility. This shows the growing attention towards eco-friendly manufacturing and pollution control. The words like health, safety, employees, training and material related to social disclosure. We can conclude that the textile industry, as one of the major red industries, has many commitments towards environmental protection and social benefits, but the reports have a large focus towards governance and economic disclosure. There is a lack of consistency among companies in the same industry in publishing reports. This creates a need for more balanced, focused disclosures.



Fig 6

**Conclusion**

The study highlights environmental, social, economic, and governance reporting among red category industries. The red category industries have the highest environmental and social risks. Despite this, the reports remain inconsistent and largely driven by regulatory compliance rather than voluntary commitment to sustainability. This overall extent and depth of reporting indicate a gap between policies.

The findings suggest that stronger frameworks, standardised disclosure guidelines, and shareholder pressure are essential to improving transparency and accountability within the high-impact sectors. The company should integrate ESEG performance into corporate strategy, rather than treating it as a compliance exercise. This will significantly enhance environmental and social disclosures. This, in turn, results in business longevity.

**The key takeaways from the study**

ESEG and Net Zero strategies are industry-specific. Industries like chemical and construction are early adopters of net-zero emissions, and textiles are the last adopters of ESEG dimensions. The company shows inconsistency in publishing the reports. One of the major hindrances in the implementation of ESEG disclosures in reports is the greenwashing risk.

**Future implications**

The results show a high level of inconsistency in the reports. This suggests that targeted approaches for sectors, green finance, and improved regulation and policies of corporate sustainability are a need of the hour and critical for progress in sustainability. There should be an effective action plan to improve the ESEG compliance.

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