

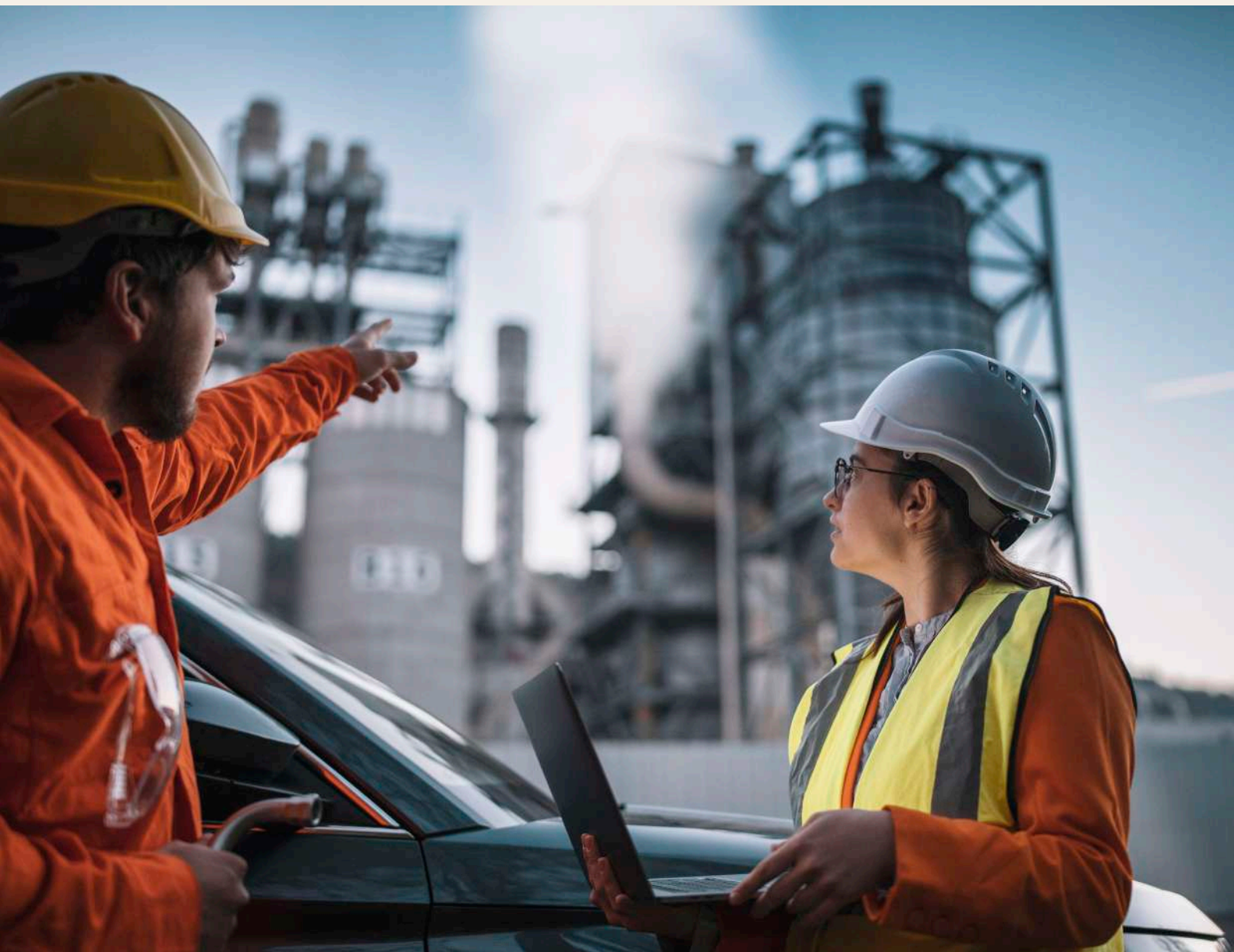
Issue Brief | July 2026

Strengthening Air Emissions Disclosures in ESG Reporting

Authors

Shubhi Verma
Sunita Patra
Prarthana Borah

Review of India's BRSR and Global Sustainability Frameworks





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**Review of India's BRSR and Global
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Prarthana Borah

Acknowledgments

This report is the result of a detailed stakeholder engagement process. To understand how air pollutant disclosures work in practice and where the key challenges lie, we engaged with a wide range of stakeholders who produce, regulate, and use emissions data. We sincerely thank all the experts who shared their time and insights during one-on-one discussions and multi-stakeholder validation consultations.

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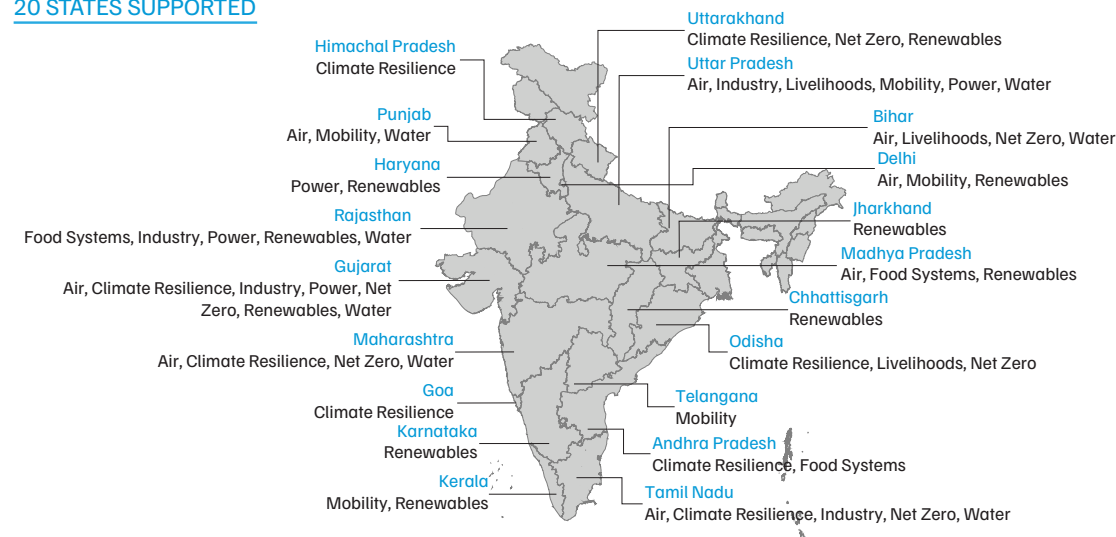
NATIONAL/INTERNATIONAL

2011 | National Water Resources Framework
2014 | 175 GW renewables target
2015 | International Solar Alliance
2016 | PM Ujjwala Yojana
2017 | Saubhagya Schemes
2019 | Climate Vulnerability Index
2021 | Net Zero by 2070
2022 | Mission LIFE
2022 | National Bioenergy Programme
2022 | E-waste (Management) Rules
2023 | G20 Green Development Pact
2023 | National Green Hydrogen Mission
2024 | Green Steel Taxonomy
2024 | PM Surya Ghar Yojana
2025 | National Critical Mineral Mission
2025 | Rajya Sabha guidelines on crop residue burning
2025 | National Adaptation Plan

STATE

2022 | Rajasthan Organic Farming Mission
2022 | Jharkhand Solar Policy
2022 | Uttar Pradesh *Vidyut Sakhi* programme
2023 | Rajasthan Green Hydrogen Policy
2023 | Uttarakhand Solar Policy
2024 | Net-zero roadmaps for Bihar & Tamil Nadu
2025 | Green Odisha Initiative
2025 | Maharashtra Climate Action Plan 2.0
2025 | 50 Heat Action Plans (GJ, OD, MH, TN)
2025 | Delhi Clean Air Action Plan
2025 | Delhi EV Policy 2.0

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Executive summary

Since the adoption of the *Business Responsibility and Sustainability Reporting* (BRSR) framework in 2022–23, environmental reporting has shifted from being a peripheral sustainability exercise to becoming a major component of corporate accountability. Investors, regulatory bodies, lenders, customers, and civil society now evaluate firms based on their environmental management and sustainability disclosures, not just their financial performance. Under the BRSR, India's leading 1,000 listed firms by market capitalisation are required to report emissions of criteria air pollutants – particulate matter (PM), sulphur dioxide (SO₂), and nitrogen oxides (NO_x) – and greenhouse gases (GHGs). The framework recognises that corporate environmental performance extends beyond firms' contribution to global warming and includes local pollutants that affect public health and ecological conditions. The BRSR is one of the very few sustainability disclosure regimes that mention air pollution as part of ESG disclosures. In 2023, SEBI also introduced BRSR Core, a subset of key performance indicators requiring independent third-party assurance, rather than self-disclosure alone.



However, on reviewing the first three years of disclosures under the BRSR framework, we found a significant imbalance between GHG emissions reporting and criteria air pollutant reporting. While GHG emissions reporting has gained traction and become more consistent, standardised, and investor-oriented, criteria air pollutant reporting remains scattered and incomplete. This has significant on-the-ground implications, as air pollution poses one of the most pressing environmental risks for companies, impacting public health, regulation, business continuity, and reputation. It is estimated that air pollution imposes an annual cost burden of almost USD 95 billion (~INR 9 lakh crore) in India – equivalent to 3 per cent of the country's GDP. While some regulatory measures have been introduced to improve air quality, this aspect is not adequately addressed in disclosures or incorporated into valuations or investment decisions.

In this study, we propose recommendations to transform the BRSR framework from a disclosure mechanism into a system that produces decision-useful information to inform regulation, investment, and corporate action. We intend to strengthen corporate air emissions reporting, making it a financially material metric in investment and financing decisions. At present, air pollutant data remains inconsistently disclosed, rarely third-party verified, and seldom incorporated into capital allocation decision-making despite its significant implications for regulatory compliance, operational resilience, and environmental risk. By improving the quality, consistency, and credibility of air pollutant disclosures, we aim to make air emissions reporting a meaningful market signal that can guide regulatory oversight, inform investor decision-making, and mobilise greater corporate and private capital towards air quality management and emissions reduction. More transparent disclosures are therefore not an end in themselves but a means to direct finance towards cleaner industrial practices and measurable improvements in air quality.

To achieve this, we address two questions that are fundamental to making air emissions performance relevant to regulatory and financial decision-making:

- **Can the disclosure gap be closed?** We examine whether the lack of data on air pollutants reflects an inherent limitation in sustainability reporting or a remediable design gap. By benchmarking the BRSR against leading global disclosure frameworks, we identify how international practice has incorporated air pollutant reporting and suggest reforms that India can adopt.
- **Is the current BRSR data decision-useful?** We assess the completeness, consistency, comparability, and reliability of air pollutant data across all BRSR filers to determine whether it is adequate for regulatory oversight and investment analysis. We then identify the specific reporting deficiencies that must be addressed for air performance to become a credible basis for effective sustainability reporting.

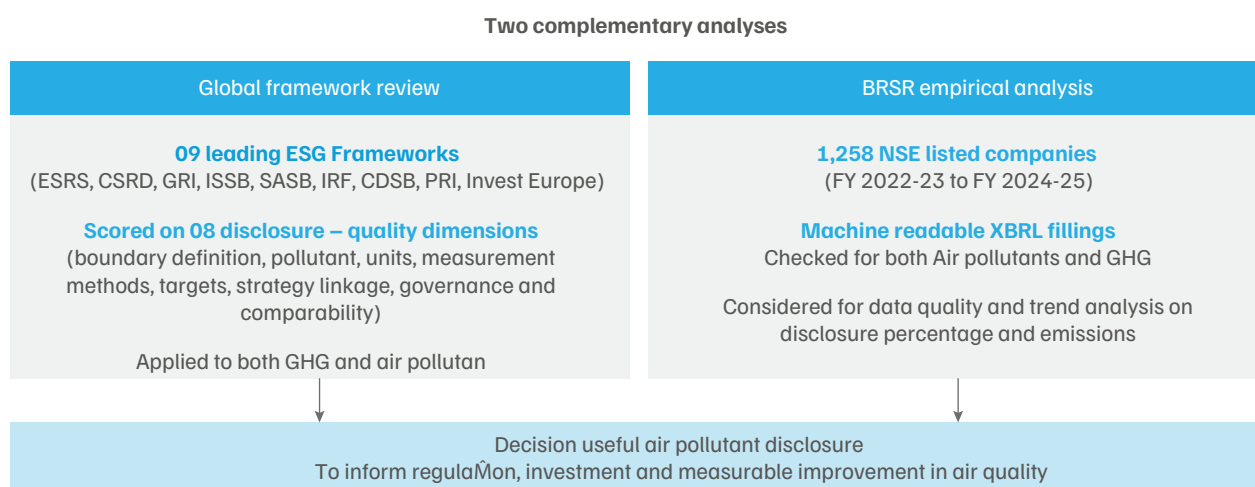
Our research focuses on air emissions disclosures rather than on measuring emissions levels. We chose BRSRs as our primary dataset because they constitute the mandatory corporate reporting framework for listed companies in India. Our objective is to assess the coverage, consistency, comparability, and decision usefulness of the air emissions disclosures in these reports. Although datasets such as those produced by continuous emissions monitoring systems (CEMS) are very useful in assessing emissions and measuring compliance, they do not provide any information about air emissions disclosure practices, reporting quality, or the treatment of air pollutants within ESG reporting.

Methodology

Our analysis proceeds in two parts:

- A **structured global review** of eight leading global environmental, social, and governance (ESG) frameworks and regulations: the *European Sustainability Reporting Standards* (ESRS) and *Corporate Sustainability Reporting Directive* (CSRD); Global Reporting Initiative (GRI); International Sustainability Standards Board (ISSB); Sustainability Accounting Standards Board (SASB); *Integrated Reporting Framework* (IRF); Climate Disclosure Standards Board (CDSB); *Principles for Responsible Investment* (PRI); and the *Invest Europe ESG Guidelines*. We scored each of these frameworks on eight dimensions of disclosure quality, applied separately to GHGs and air pollutants.
- An **Indian BRSR review** that analysed all BRSR submissions filed in a standardised, machine-readable format known as XBRL, with the National Stock Exchange (NSE). The empirical dataset covers 1,258 companies tracked over three years, starting with the financial year (FY) 2022–23. For each company-year, we flagged whether the firm had disclosed any air pollutants or GHGs, and whether the data was externally assured. We then built a consistent panel dataset of firms reporting PM, SO₂, and NO_x in comparable, mass-based units to test data quality and emissions trends over time.

Figure ES1. The methodology combined a global framework review with a full-population analysis of BRSR filings



Source: Authors' analysis

Key findings

Our findings draw on two strands of analysis: a review of how leading global ESG frameworks treat air pollutant reporting, and an empirical review of BRSR filings by Indian companies.

From the global review

Modern sustainability reporting was introduced as a solution to the dual problem of climate change and industrial energy consumption. With growing scientific evidence linking the increase in GHGs to global warming, stakeholders in finance and regulation realised the need for effective methods for measuring and reporting on the associated risks. In response, innovative frameworks such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP) were developed in 1997 and 2000, respectively, forming the basis for modern sustainability reporting. Today, many frameworks (ISSB, SASB, and many more) continue to build on this foundation.

Consequently, climate change discourse around GHGs dominated sustainability reporting, while the impact of other air pollutants remained largely underexamined. Our review of eight leading global disclosure frameworks reveals that only two frameworks, the ESRS and SASB, require standardised and comparable disclosure of data on specific air pollutants. In most other cases, reporting on PM, SO₂, NO_x, and other harmful pollutants is left to the discretion of firms, making it voluntary, fragmented, or absent altogether. Consequently, there is inadequate information on most companies' air-quality risks and their local environmental impacts.

By mandating the reporting of multiple air pollutants, requiring disclosures be submitted in a machine-readable XBRL format, and generating three consecutive years of company-level data, the BRSR has created a corporate air emissions disclosure system and offers a unique opportunity to improve corporate accountability for clean air.

From the BRSR filings

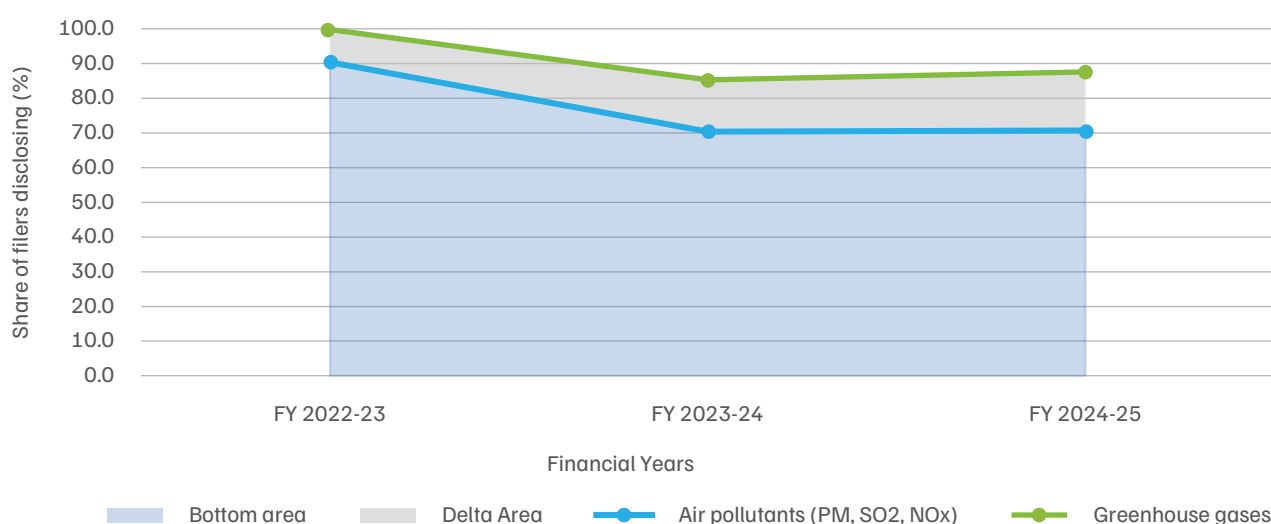
We analysed firms' BRSR filings through the lens of four interrelated questions.

- How many firms disclose air pollutant data, and how has this evolved from FY 2022–23 to FY 2025–26?
- How do disclosure rates and data quality vary across sectors?
- What structural features of the current BRSR framework limit its utility for air quality governance?
- What targeted reforms would transform BRSR disclosures from compliance reports to genuine policy instruments?

Our analysis yields the following five key findings.

- **A widening air–GHG disclosure gap**
The air–GHG disclosure gap is large and gradually widening. In FY 2022–23, about 99.8 per cent of companies (BRSR filers) disclosed GHG data, while only 90.4 per cent reported any air pollutant data – a gap of roughly 9 percentage points. In the study period, this gap widened, from about 9 percentage points in FY 2022–23 to nearly 17 percentage points in FY 2024–25 (Figure ES2). Usually, the same combustion processes generate both carbon and air pollutants, yet companies report the former far more consistently than the latter.

Figure ES2. The air–GHG disclosure gap has widened across three years of BRSR reporting



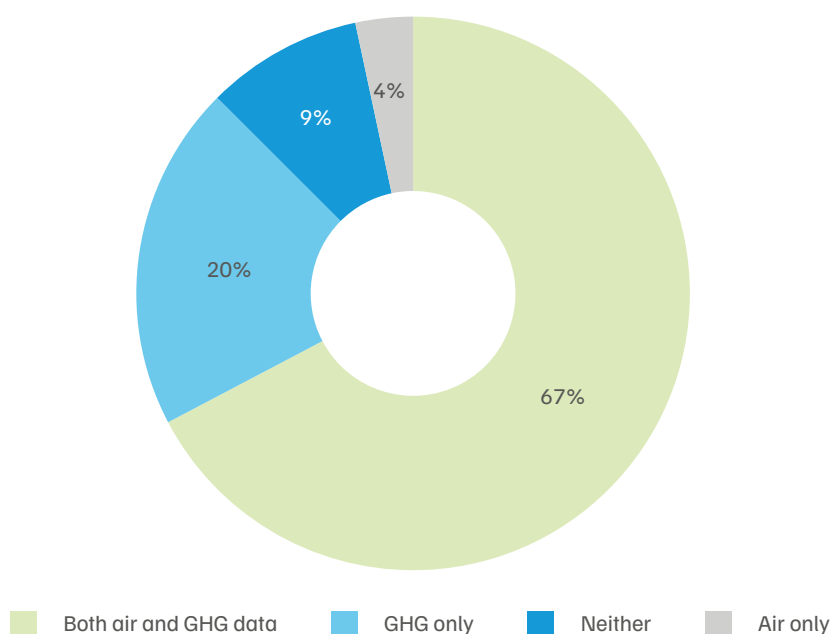
Source: Authors' analysis based on National Stock Exchange of India (NSE). "Business Responsibility and Sustainability Reports." Accessed April 2026.

Note: Data is based on BRSR XBRL filings: 1,076 firms filed in 2022–23, 1,181 in 2023–24, and 1,222 in 2024–25.

Abbreviations: FY: financial year; PM: particulate matter; SO₂: sulphur dioxide; NO_x: nitrous oxides

We found that of the 1,222 companies that filed BRSRs in 2024–25, 823 disclosed both air pollutant and GHG data, 247 disclosed GHG, but no air pollutant data, 111 disclosed neither, and just 41 disclosed air pollutant data without any accompanying GHG figures.

Figure ES3. Share of companies by type of disclosure

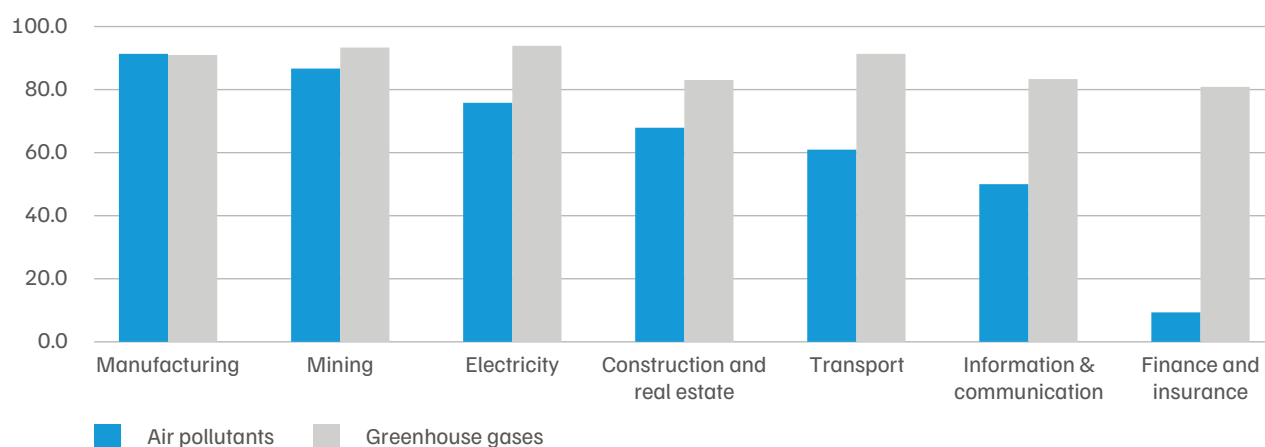


Source: Authors' analysis

- **Reporting gaps vary by sector — and not all are equally concerning**

The sectoral analysis shows that the reporting gap varies with the sector's physical footprint. For instance, about 81 per cent of financial and insurance companies disclose GHGs, but only 10 per cent disclose air pollutants. This is defensible, since their operations produce minimal direct air pollutants. But the same cannot be said of the construction and real estate sectors. Only about 68 per cent of firms in these sectors disclose air pollutant data, compared with 81 per cent that report on GHGs, even though their field sites are among the most visible sources of PM and NO_x. Manufacturing firms — which have the greatest potential for air pollutant emissions — report air pollutants and GHGs at nearly equal levels (around 91 per cent). Beyond manufacturing, however, air pollutant disclosure rates fall well below GHG reporting rates across most sectors. This divergence suggests that air pollutant reporting is yet to become as embedded in corporate disclosure practices as carbon reporting, despite being subject to the same reporting requirements (Figure ES3).

Figure ES4. Air pollutant disclosures lag behind GHG disclosures in almost every sector (FY 2024–25)



Source: Authors' analysis

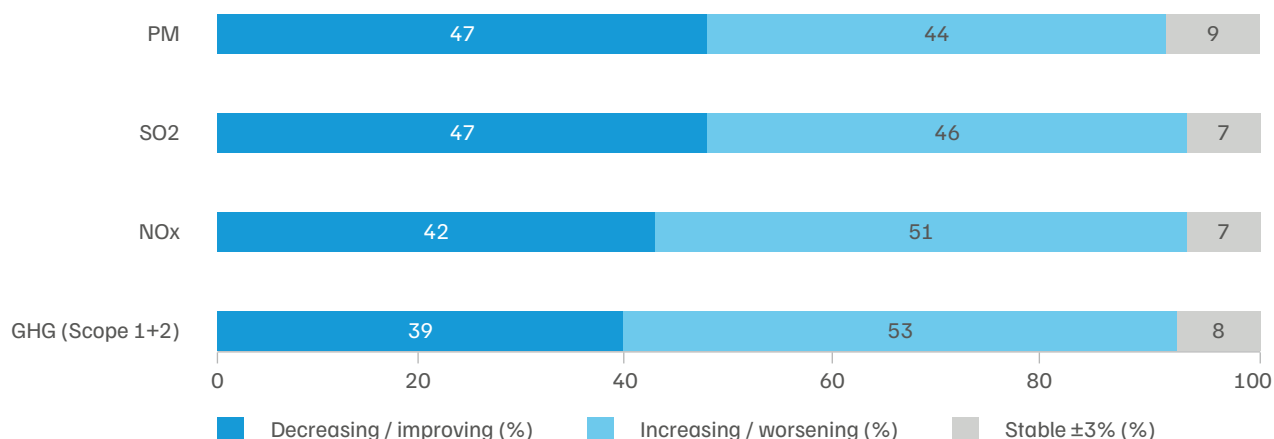
- Inconsistent units and unexplained zeros undermine data usability**

Unit fragmentation and zero values make air pollutant data impossible to aggregate. Even where companies disclose emissions, they use a wide range of incompatible units. PM alone is reported in more than a dozen different units, including tonnes (t), kilograms (kg), milligrams per normal cubic metre (mg/Nm³), micrograms per normal cubic metre (µg/Nm³), and parts per million (ppm). These metrics measure fundamentally different quantities – total pollutant load and stack concentration – and cannot be meaningfully added together. About 4 per cent of companies reported a value of zero for PM, SO₂, or NO_x, a figure that is difficult to interpret, since the BRSR does not require firms to specify whether a zero reflects genuinely negligible emissions or simply the absence of measurement. Without this distinction, it is impossible to tell whether these companies have no meaningful air pollutant footprint or have not measured it at all, which undermines confidence in the reported data. Of the 681 manufacturing firms that filed BRSR disclosures in FY 2024–25, around 620 reported air emissions. However, only about 240 disclosed PM, SO₂, and NO_x levels consistently in tonnes. Unlike GHG emissions, which are reported in a common unit (tCO₂e) and can therefore be consolidated into sectoral estimates, air pollutant data lacks the standardisation needed for comparable analysis. As a result, while manufacturing firms reported a credible cumulative GHG footprint of roughly 776 million tonnes of carbon dioxide equivalent in FY 2024–25, no similarly robust estimate could be derived for PM, SO₂, or NO_x emissions.

- Where data is comparable, air pollutant levels are not improving**

Where emissions are reported in a comparable unit, they are not substantially improving. Using a consistent panel dataset of companies with at least two years of comparable data, we find that, for PM, 47 per cent of BRSR filers show a falling trend, indicating improvement, while 44 per cent show a rising trend, indicating worsening in the PM levels. For SO₂, 47 per cent show an improving trend and 46 per cent show a worsening trend. For NO_x, more companies are worsening (51 per cent) than improving (42 per cent); similarly, for GHGs, 53 per cent show a worsening trend against 39 per cent showing an improving trend (Figure ES4).

Figure ES5. Across the consistent panel, firms are worsening and improving at almost equal rates



Source: Authors' analysis

- Disclosures remain disconnected from independent regulatory monitoring**
 The data is disconnected from regulatory monitoring that could validate it. CEMS already transmit real-time, verified emissions data from the most polluting industrial facilities to pollution-control authorities, such as the CPCB. However, this independent baseline is rarely linked to BRSR disclosures. The two regulatory systems operate in parallel rather than in concert. For instance, during our stakeholder consultation, we found that the problem is not in the collection of data but its interpretation and in the coordination of SEBI and CPCB.

Recommendations

To fully leverage the BRSR's potential as a tool to improve air quality, action is needed from three sets of actors: regulators who set the rules, companies that generate and manage emissions, and investors who can create demand for better performance through capital allocation. To move the BRSR from a framework that merely collects air pollutant data to one that generates credible, comparable, and decision-useful information, we recommend the following actor-specific interventions.

Regulators (SEBI, along with the Ministry of Environment, Forest and Climate Change [MoEF&CC] and CPCB) should:

- Issue a technical guidance document for BRSR disclosures that standardises pollutants, units, and measurement methods. It should specify, for each relevant sector, the mandatory pollutants to be reported, mass-based reporting units (tonnes per year), reporting boundaries, and permitted measurement and estimation methods, including for volatile organic compounds and hazardous air pollutants, which are mandatory to report yet are almost entirely unreported. Crucially, in addition to mandating a unit, a free, sector-specific conversion methodology must be provided, since standardising a unit without supplying the method simply perpetuates the existing inconsistency.

- Require zero values to be explained. Any company reporting nil PM, SO₂, or NO_x emissions should be required to explain whether its activities genuinely generate no emissions or whether the value reflects the absence of measurement, thereby separating credible zeros from placeholders.
- Bring PM, SO₂, and NO_x into the BRSR Core, with mandatory third-party assurance. Air pollutant data should be subject to the same level of assurance as carbon, energy, and water, beginning with the largest listed companies and the most polluting industries. The assurance process should check methodological consistency, the completeness of pollutant coverage and boundaries, and the transparency of assumptions.
- Cross-validate BRSR data against CEMS data. A formal data-sharing mechanism among SEBI, MoEF&CC, and CPCB would enable BRSR filings to be compared with an independent baseline, exposing implausible entries and making the BRSR an integral part of national air quality governance.
- Move to a sector-specific disclosure framework. SEBI should define sector-wise frameworks for air pollutant disclosures rather than relying on company size alone, so that firms whose operations generate significant emissions must report them regardless of an umbrella framework that does not require all sectors to report air pollutants.

Corporations should treat air emissions as a core element of responsible business operations rather than a compliance obligation. Air pollution should be recognised as a material operational, regulatory, reputational, and financial risk, with oversight embedded at the board level alongside climate-related risks. Companies should also actively pursue air–climate co-benefits, recognising that investments in cleaner fuels, process efficiency, and emission-control technologies often deliver simultaneous reductions in both GHG and criteria air pollutant emissions.

Investors should integrate air pollutant performance into ESG assessments and capital allocation decisions. Poor air pollutant performance can increase regulatory exposure, disrupt operations, affect workforce productivity, and weaken a company's social licence to operate. Incorporating air pollutant metrics into financing decisions would create stronger incentives for companies to measure, disclose, and reduce their emissions.

India's sustainability disclosure regime is at a turning point. Three years of mandatory BRSR filing have already produced a longitudinal dataset. The extension of the BRSR Core to the top 1,000 companies by FY 2026–27, the phasing-in of value-chain disclosures, and closer cooperation between SEBI and environmental regulators can together create an opportunity for greater institutional alignment to improve air quality. SEBI has already shown, through its GHG guidance note and the BRSR Core, that it can convert a difficult environmental requirement into a workable one. Applying the same principles to air pollutants by framing guidelines on units and measurement as well as adding PM, SO₂, and NO_x to the BRSR Core can transform the BRSR from a world-leading disclosure mandate to a powerful instrument for cleaner air.

This study is limited to the listed companies within the BRSR mandate and to PM, SO₂, and NO_x, volatile organic compounds, and hazardous air pollutants. Future research can deepen the findings on standardised, sector-specific reporting protocols and unit-conversion methodologies, and eventually integrate industrial CEMS data with BRSR disclosures.



Image : iStock

1. Introduction

As India balances rapid economic expansion with urgent climate and environmental imperatives, the twin pressures of climate change and deteriorating local air quality have emerged as defining systemic risks. The transition to a low-carbon economy now dominates the global policy agenda, and corporate sustainability reporting has developed almost entirely around greenhouse gas (GHG) accounting as a result. Yet, the immediate and severe effects of air pollution, driven by the emission of particulate matter (PM), sulphur oxides (SO₂), and nitrogen oxides (NO_x), among other criteria pollutants, do not receive equal corporate attention. Closing this gap requires moving beyond high-level climate commitments by establishing rigorous, quantifiable, and transparent corporate-level air pollutant disclosure mechanisms.

Box 1. GHGs vs. criteria air pollutants

Industrial activity releases two broad classes of pollutants. The pollutants are classified into these two groups based on the environmental and health concerns they cause.

Feature	GHGs	Non-GHG air pollutants
Definition	GHGs are gases that trap heat in the Earth's atmosphere. They act like a blanket around the planet, leading to global warming and climate change.	These are a specific set of pollutants that degrade air. In India, 12 such criteria air pollutants are considered under the National Ambient Air Quality Standards (NAAQS), 2009.
Common gases considered	Carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), and fluorinated gases	The 12 criteria pollutants: 1. PM₁₀ (particulate matter up to 10 micrometres in size) 2. PM_{2.5} (particulate matter up to 2.5 micrometres in size) 3. Sulphur dioxide (SO₂) 4. Nitrogen dioxide (NO₂) 5. Carbon monoxide (CO) 6. Ozone (O₃) 7. Ammonia (NH₃) 8. Lead (Pb) 9. Benzene (C₆H₆) 10. Benzo(a)pyrene (particulate phase only) 11. Arsenic (As) 12. Nickel (Ni)
Unit of reporting	Tonnes of CO ₂ equivalent (tCO ₂ e)	Can be in • Concentrations: milligram per cubic metre (mg/m³), microgram per cubic metre (µg/m³), parts per million (ppm), or parts per billion (ppb) • Mass: kilogram (kg), tonnes (t)
Primary impact	Global and cumulative: Climate change, rising sea levels, and planetary warming	Local/regional and immediate: Direct human health issues (e.g., respiratory illnesses) and local ecosystem damage (e.g., smog and acid rain)
Effect on health	Indirect: Through climate change-related heat stress, extreme weather events, and shifting weather patterns	Impact is regional as the concentration of pollutants is higher near the source.

Source: Authors' compilation

Environmental monitoring and transparent reporting are important tools for holding firms accountable for their environmental impacts. Over the past three decades (1997–present), sustainability reporting has evolved from a voluntary corporate practice to a key component of investment and regulatory decision-making. The launch of the Global Reporting Initiative (GRI 2016) in 1997 and the Carbon Disclosure Project (CDP 2025) in 2000 – currently the two most widely used and investor-referenced sustainability reporting frameworks – highlighted the need for corporations not only to manage their environmental impacts but also to publicly disclose them. This shift has been driven by growing recognition among investors and regulators that environmental performance can directly influence financial risk, access to capital, and long-term business resilience. Public disclosures make data visible, thereby improving regulatory efficiency, enabling benchmarking across firms, and allowing stakeholders to assess environmental performance beyond minimum legal requirements. Consequently, disclosures have become an important tool for informing capital allocation through environmental, social, and governance (ESG) assessments, and helping firms manage climate-related risks. However, despite this progress, ESG reporting remains heavily focused on greenhouse gas emissions, while disclosures on other air pollutants are fragmented, inconsistent, and often under-prioritised.

History of sustainability reporting

The global and domestic landscape of ESG reporting has undergone a profound transformation, evolving from self-initiated, narrative-heavy frameworks to rigorous, legally binding mandates. The first voluntary framework, the GRI, took an impact-materiality approach. It defined reporting boundaries clearly for GHG emissions, requiring firms to disclose direct emissions from their own operations (Scope 1), indirect emissions from purchased energy (Scope 2), and indirect emissions across their value chain (Scope 3) in line with the GHG Protocol (WRI and WBCSD 2004), while leaving methodologies for non-GHG pollutants suggested rather than mandated, and its governance and risk-integration requirements comparatively light (GRI 2016). Newer frameworks have sought to close these gaps: the Sustainability Accounting Standards Board (SASB) and the International Sustainability Standards Board (ISSB), among others, emphasise materiality and standardisation, highlighting the connection between environmental risks and financial performance by pointing out how factors such as regulatory exposure, physical climate risk, and transition risk can affect a company's cash flows, cost of capital, and access to capital. In India, this evolution is reflected in a series of regulatory initiatives led by the Ministry of Corporate Affairs (MCA) and the Securities and Exchange Board of India (SEBI).

India's regulatory architecture for air pollutant emissions has transitioned from conventional command-and-control environmental laws to sophisticated, market-facing disclosure frameworks. While the Air Act, 1981, and the Environment Protection Act, 1986, established the foundation for statutory stack monitoring, SEBI, working alongside the Ministry of Corporate Affairs (MCA), has since integrated air quality into the corporate balance sheet. A detailed timeline of the evolution of different regulatory frameworks is provided in Annexure 1.

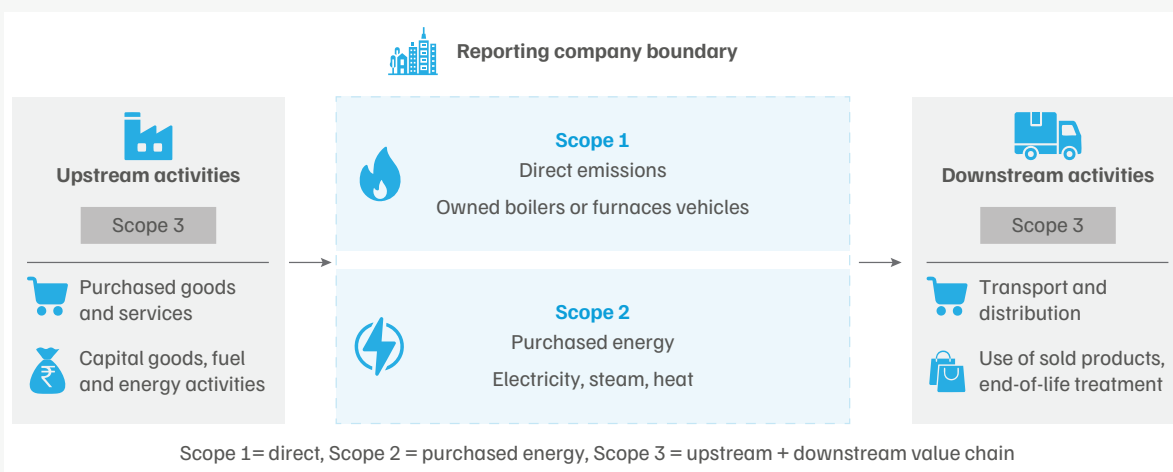
The process of integrating environmental disclosures with financial reporting began with the *National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business*, 2011 (MCA 2011), whose nine principles were designed for voluntary adoption by businesses of all sizes. In 2012, the Business Responsibility Report (BRR) framework was introduced, mandating non-financial reporting for the top 100 listed firms. However, the BRR was fundamentally a “principles-based” framework. It asked qualitative questions, such as whether a company had an emission reduction policy, allowing businesses to adopt a compliance-driven “tick-box” approach without disclosing any comparable data. Recognising

the need for transparent, decision-useful metrics, SEBI introduced the Business Responsibility and Sustainability Reporting (BRSR) framework in 2021 and made it mandatory for the top 1,000 listed entities from FY 2022–23. The BRSR enforces quantitative accountability by mandating granular disclosures of Scope 1, 2, and 3 GHG emissions, as well as six air pollutant categories under Principle 6 – PM, SO₂, NO_x, persistent organic pollutants (POPs), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs), thereby laying the groundwork for a more transparent corporate emissions reporting ecosystem. Since 2023, SEBI has layered a BRSR Core on top of this framework, requiring independent third-party assurance for a targeted set of indicators – currently GHGs, water, energy, and waste – for the largest filers, with coverage expanding to the full 1,000-company universe by FY 2026–27.

Box 2. What are Scope 1, 2, and 3 emissions?

Scope 1, 2, and 3 are the three emission boundaries set out in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard, developed jointly by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

The terminology was introduced in the Standard's original 2001 edition (revised 2004); the Scope 2 Guidance (2015) and the Corporate Value Chain (Scope 3) Standard (2011) later added detail on purchased-energy and value-chain emissions, respectively. GRI, SASB, ISSB, and BRSR have all since adopted this same three-part boundary for their own GHG disclosure requirements.



Source: WRI and WBCSD (2004); WRI and WBCSD (2015); WRI and WBCSD (2011).

Despite the objectives of the BRSR, significant implementation gaps remain in air pollutant emissions reporting. This gap carries growing weight as GHG data, now assured under the BRSR Core, becomes increasingly enmeshed with compliance mechanisms such as the Carbon Credit Trading Scheme (CCTS); air pollutants, by contrast, remain outside any comparable assurance or market mechanism, widening the distance between carbon accountability and clean-air action. Further, empirical observations indicate a systemic lack of standardisation in how Indian firms report air quality metrics. To close these gaps, we critically analyse Indian air pollutant emissions reporting by examining the intersection of global sustainability standards and India's BRSR framework. We also provide recommendations for standardising air quality disclosures to hold the private sector accountable for air quality management.

Objectives of the study-

- Evaluate both GHG and criteria air pollutant emissions reporting requirements across major global frameworks (such as GRI, SASB, and ESRS) and benchmark them against India's BRSR guidelines.
- Evaluate the quality and robustness of the air pollutant emissions disclosures of India's top listed firms, with a focus on evaluating their unit consistency, comparability, integration of data from continuous emissions monitoring systems (CEMS), as well as their disclosure of key criteria air pollutant data.
- Provide actionable, policy-oriented recommendations for regulators and corporate leaders to strengthen reporting attributes, harmonise data collection, and ensure that air pollutant emissions disclosures become a reliable, standardised, and decision-useful tool for investors and policymakers.

Ultimately, this report contributes to the broader objective of aligning India's industrial growth with stringent environmental accountability, ensuring that the air we breathe is protected through transparent, data-driven corporate accountability.



image : Shutterstock

2. Global framework review

The current global environmental reporting architecture comprises a mix of voluntary guidelines, market-based initiatives, and mandatory disclosure frameworks. They have also evolved to become highly standardised, with clearly defined reporting scopes and targets. This is especially evident in the case of climate change–related data, where GHG emissions are reported using defined scopes, standardised measurement units (tCO₂e), and accounting approaches.

However, in the case of non-GHG air pollutants – PM, SO₂, and NO_x – reporting frameworks remain fragmented. Although various frameworks recognise air pollution as an important aspect of corporate sustainability, coverage and guidelines vary widely. Some frameworks exclude air pollution from disclosures; where included, reporting is mostly voluntary.

2.1 What makes a “good” emissions disclosure?

In academic research on sustainability reporting and ESG disclosures, there are no universal standards for emissions disclosures. Instead, certain qualitative features determine the quality of disclosures. Hahn and Kühnen (2013) find that disclosure quality depends on moving from narrative, unverifiable claims to specific, quantifiable data — and on genuine stakeholder

engagement, not one-way reporting. Baalouch et al. (2019) identify the essential attributes of emissions disclosures as relevance, neutrality, clarity, comparability, and verifiability, underscoring the need for standardised metrics and comparability across firms and over time.

Building on these decision-usefulness and quality criteria, we operationalise them into eight measurable dimensions — boundary and scope, pollutant definition, unit standardisation, measurement methodology, target and performance, strategy linkage, governance and risk, and comparability — which we use to score each framework's treatment of GHG and air pollutant disclosures (Figure 1).

Figure 1. Eight dimensions for assessing the quality of emissions disclosures

	Boundary and scope	Defines the coverage of emissions, including the classification of direct, indirect, and value-chain sources, and the organisational and operational boundaries within which emissions are accounted for
	Pollutant definition	Specifies which pollutants are to be reported and whether a consistent, standardised list is to be used across firms
	Unit standardisation	Defines measurement units (e.g., tonne, mg/Nm ³) to report emissions
	Measurement methodology	Describes how emissions are measured or estimated, including protocols, emission factors, and monitoring approaches
	Target and performance	Captures whether firms should disclose emissions reduction targets, baselines, and progress over time
	Strategy linkage	Assesses whether emissions are linked to operational drivers such as technology choices or investment decisions (e.g., fuel switch)
	Governance and risk	Examines how emissions are integrated into corporate governance structures and risk management
	Comparability	Evaluates whether the reported data can be consistently compared across firms, sectors, and time periods

Source: Authors' analysis

We systematically evaluated how each standard approached the disclosure of GHG and air pollutant emissions across these eight dimensions. Our analysis demonstrates that there are significant differences in the reporting details required by each of these frameworks. Figure 2 illustrates the BRSR framework's performance in governing GHG and air pollutant emissions disclosures across the eight dimensions. Green represents more robust reporting requirements for GHG reporting, and blue represents more robust requirements for non-GHG reporting. Grey tiles represent weak performance for both GHG and non-GHG reporting.

2.1 Comparison of GHG and air pollutant emissions reporting across key disclosure dimensions in major frameworks

Before comparing these frameworks against each other, it is useful to locate India's own framework within this landscape. Unlike most of the frameworks reviewed below, the BRSR is a binding regulatory mandate rather than a voluntary or market-driven standard, and, as later sections show, it already requires more information on air pollutants than most of its global counterparts.

We conducted a structured review of eight prominent ESG frameworks and regulations: the European Sustainability Reporting Standards (ESRS) (European Commission, 2023) or Corporate Sustainability Reporting Directive (CSRD); Global Reporting Initiative (GRI) (GRI, 2016); International Sustainability Standards Board (ISSB) (IFRS 2023a; 2023b); Sustainability Accounting Standards Board (SASB) (IFRS n.d.); Integrated Reporting Framework (IRF) (IFRS 2021); Climate Disclosure Standards Board (CDSB 2022); Principles for Responsible Investment (PRI) (PRI 2019); and Invest Europe ESG Guidelines (Invest Europe 2023), to evaluate the extent and quality of their treatment of air pollutant emissions.

The frameworks can be divided into two groups.

Quantitative frameworks

The **ESRS/CSRD** offers the most detailed and prescriptive treatment, requiring companies to disclose pollutant-level data (e.g., NO_x, SO₂, and VOCs) under the double-materiality principle, which captures both environmental and financial implications. While most market-driven frameworks do not define reporting boundaries and scope, the ESRS requires companies to set clear organisational and operational boundaries and even specifies a uniform list of pollutants. It goes beyond mandating disclosure of emissions, requiring firms to report on their targets and performance, linking emissions to corporate strategy and integrating them into governance and risk management. It is important to note that the ESRS forms the technical foundation for the CSRD. The CSRD defines firms' legal obligation to disclose, while the ESRS specifies what must be reported and how. The two are, in effect, two sides of the same coin, with the CSRD giving the ESRS its legal force.

The **GRI**, particularly through GRI 305: Emissions, offers a well-defined approach distinct from the ESRS and SASB, focusing on impact rather than financial materiality (GRI 2016). It clearly defines reporting boundaries and scope for GHGs, requiring explicit Scope 1, 2, and 3 disclosures in line with the GHG Protocol (WRI and WBCSD 2004). For air pollutants, organisational boundaries are clearly defined, but reporting requirements remain flexible. The GRI's definition of pollutants is inclusive, covering NO_x, SO₂, and other pollutants alongside GHGs (GRI 2016, Disclosure 305-7). GHG data is to be reported in tCO₂e, while air pollutant reporting is generally mass-based. Methodologies are suggested but not mandated, including for non-GHG emissions, and governance and risk integration are less developed than in the ESRS or SASB. Overall, the GRI enables fairly complete and comparable reporting and handles air pollutants better than most while retaining some flexibility.

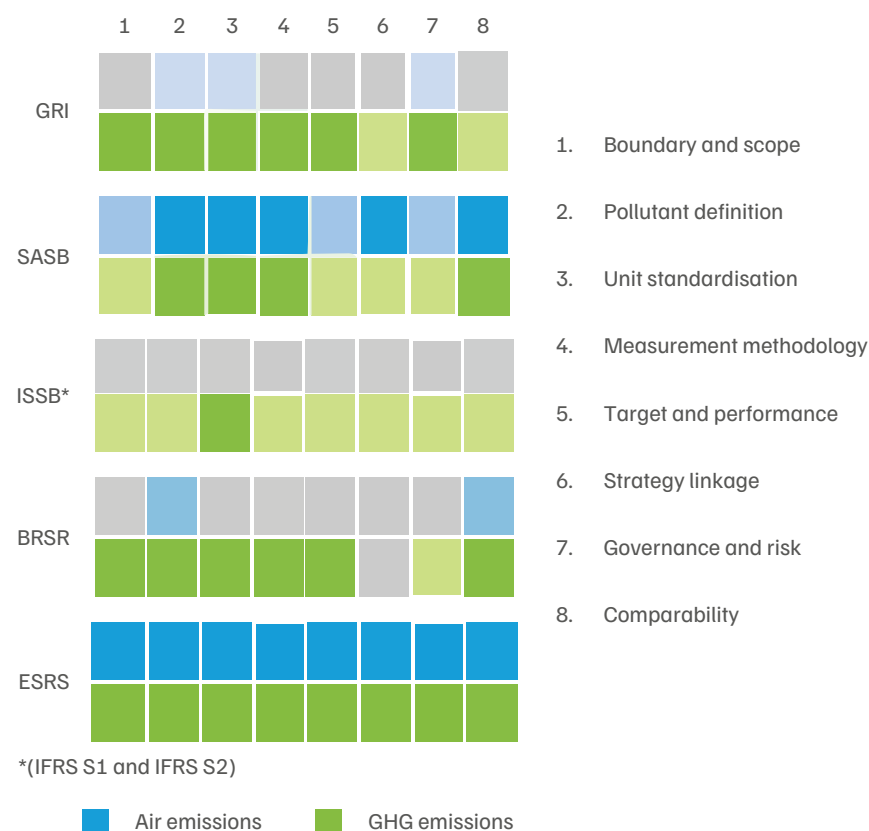
The **SASB** takes an industry-specific, materiality-driven approach, setting boundaries and scope by industry rather than through universal rules. Its definition of pollutants includes GHGs and sector-specific air pollutants, and it uses industry-level metrics. Its principal strength is the linkage of emissions to financial performance; its governance treatment is less elaborate. The result is a more selective, investor-focused regime in which air pollutant disclosures are required only when financially material.

Qualitative and climate-only frameworks

- The Integrated Reporting Framework (IRF), the PRI, and the Invest Europe ESG Guidelines are largely qualitative and offer little structured guidance on air pollutant emissions. Their purposes lie elsewhere: the IRF provides a narrative framework for communicating value creation across forms of capital, while the PRI and Invest Europe frameworks are designed to help investors demonstrate how ESG considerations are integrated into portfolio and fund management. None of these frameworks requires disclosure of air quality information in a standardised way. There are no prescribed pollutant lists, units, methodologies, or assurance requirements for air emissions. Where air pollutants appear at all, they are listed as sub-categories within broader environmental risk, expressed qualitatively.
- Climate-disclosure instruments show the same asymmetry. The Carbon Disclosure Project (CDP) is primarily a GHG-disclosure instrument; its annual questionnaire asks firms to report Scope 1, 2, and 3 emissions under the GHG Protocol and to evaluate progress against scientific targets, but it does not require disclosure of SO₂, NO_x, PM, VOCs, or any other conventional air pollutant. It does not provide a pollutant list, measurement method, or scoring for air performance (CDP 2025). The ISSB (quantitative and qualitative) standards (IFRS S1 and S2) (IFRS, 2021) are climate-focused; they provide detailed guidelines for GHG reporting, but they do not establish a structure for air pollutants. The CDSB, a mixed framework, likewise performs relatively well on GHGs, requires Scope 1 and 2 reporting and goal-setting, and prescribes a methodology, but it does not meaningfully address air pollutants.

To understand how these frameworks have been performing, we analysed the disclosure requirements and guidelines of only the quantitative frameworks, across the identified eight dimensions.

Figure 2. Climate-related disclosures are standardised across frameworks, whereas air pollutant disclosures are not mature enough



Source: Authors' compilation

Assessing each framework on these eight dimensions, separately for GHGs and air pollutants, reveals a consistent pattern (Figure 2). Climate-related disclosures are comprehensively addressed across most frameworks; air pollutant disclosures are not. For GHGs, most frameworks define the scope, prescribe a common unit, specify methodologies, and require targets and comparability. Only a handful of frameworks offer comparable rigour for air pollutants, and most do not address them at all.



3. Indian context: BRSR in the disclosure ecosystem

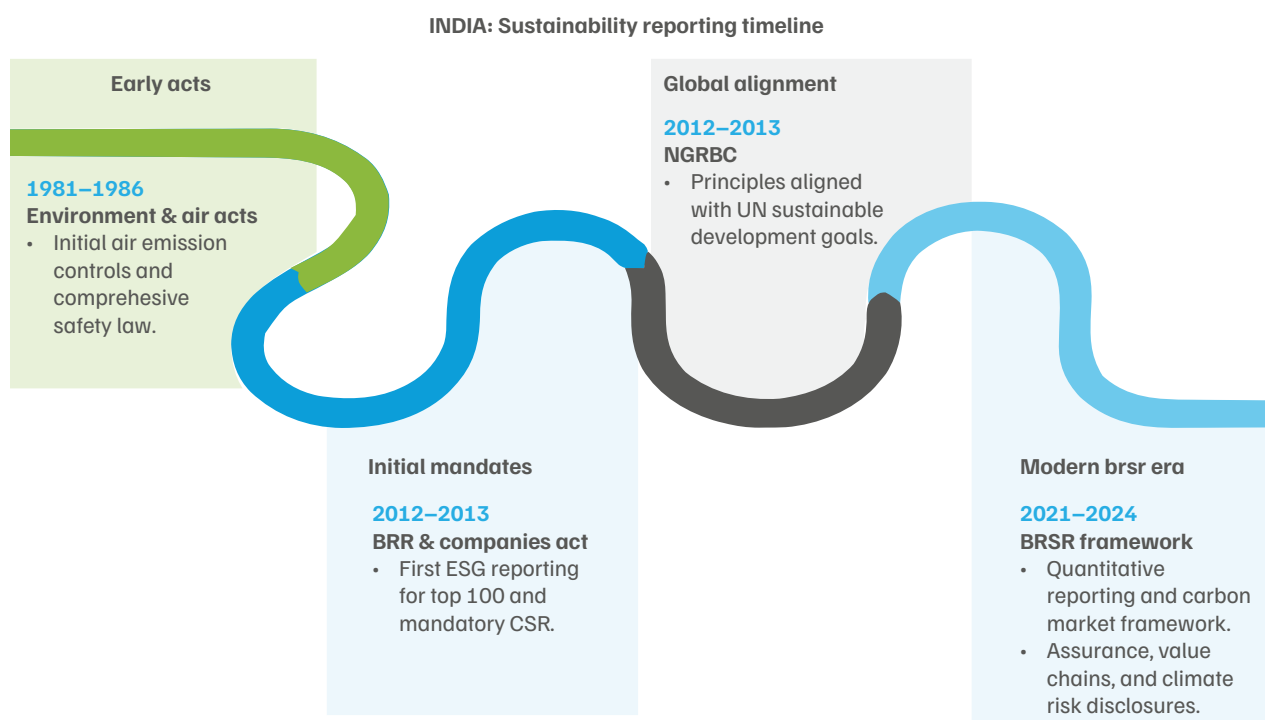
The trajectory of corporate environmental reporting in India is evolving from voluntary, principles-based guidelines into a detailed, quantitative accountability framework. It is crucial to examine the structural mechanics of the BRSR framework, focusing on the transition from qualitative narratives to metrics-driven mandates. The BRSR requires firms to report their ESG performance against the nine principles of the National Guidelines on Responsible Business Conduct (NGRBC). A full principle-by-principle breakdown is provided in Annexure 2. Principle 6 (environmental protection) anchors the pollutant-level disclosures, which are discussed below (MCA 2019).

Objectives of the BRSR

The primary objective of the BRSR framework is to elevate Indian corporate reporting to meet the demands of global investors and align with internationally accepted ESG frameworks. For instance, as its metrics are highly compatible with the GRI Standards, the GRI has published a dedicated linkage document (GRI, 2022) that maps SEBI's BRSR requirements to corresponding GRI disclosures. To avoid dual reporting, SEBI permits listed entities that already prepare sustainability reports based on global standards – such as those prescribed by the GRI, SASB, Task Force on Climate-related Financial Disclosures (TCFD), and the International Integrated Reporting Council (IIRC) – to cross-reference those disclosures in their BRSR filings.

A comparative analysis by Mani and Tyagi (2026) for the Observer Research Foundation finds that the BRSR is approximately 40 per cent interoperable with IFRS S2, reflecting its alignment with the TCFD and GRI frameworks.

Figure 3. Corporate environmental reporting moved from early controls and safety to an era of quantitative reporting



Source: Authors' compilation

To ensure comprehensive data collection, the BRSR framework is divided into three sections:

- **Section A (general disclosures, 24 questions):** Captures fundamental company information, including products, services, operations, employee details, and holding or subsidiary structures
- **Section B (management and process disclosures, 12 questions):** Requires firms to disclose the policies, governance structures, and management processes through which the NGRBC principles are embedded in their operations
- **Section C (principle-wise performance disclosures, 104 questions):** The analytical core of the report, where firms must provide outcome-oriented data.

To drive continuous improvement, Section C segregates metrics into two categories:

- **Essential indicators:** mandatory metrics for all reporting entities, which include 62 questions
- **Leadership indicators:** voluntary metrics for firms aspiring to demonstrate advanced sustainability commitments, which include the remaining 42 questions

Environmental accountability is governed by Principle 6 of BRSR, which states, “Businesses should respect and make efforts to protect and restore the environment.” It mandates granular disclosure on energy consumption, water use, waste management, Scope 1 and 2 GHG emissions, and six specific non-GHG air pollutant categories: particulate matter (PM), sulphur dioxide (SO₂), nitrogen oxides (NO_x), persistent organic pollutants (POPs), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs). GHG emissions (Scope 1, 2, and 3) are reported separately under the same principle. The requirement to disclose data across multiple pollutant categories places the BRSR ahead of most global voluntary systems on classification — unlike the GRI, whose non-GHG methodologies remain suggested rather than mandated, or SASB, which requires pollutant disclosure only where an industry-specific materiality test is met, Principle 6 mandates PM, SO₂, and NO_x disclosure for every filer regardless of materiality. Among the frameworks reviewed in Section 2, only the ESRS — itself a mandatory regime rather than a voluntary one — matches this level of prescriptiveness, while climate-only frameworks such as the CDP, ISSB, and CDSB do not prescribe an air-pollutant list at all, even as the quality.

BRSR and BRSR Core - Under the lens of air emission disclosure

As sustainability has become a core financial-market priority, the BRSR has come to function as the foundational data layer for a broader ecosystem of environmental and economic regulation. Recognising the systemic risk of greenwashing and the need for data integrity, SEBI introduced the BRSR Core in 2023. Greenwashing generally refers to the practice of companies presenting misleading or false information about their environmental impact to appear more sustainable or eco-friendly (Fatemi, Fooladi, and Hebb 2026). Until the launch of the BRSR Core in 2023, all BRSR disclosures, including GHG data, were entirely self-reported, with no independent check on their accuracy (SEBI 2021); this is the specific gap the assurance mandate is designed to close. BRSR Core mandates independent, third-party “reasonable assurance” over a targeted set of key performance indicators (KPIs), including disclosures related to GHGs, water, energy, and waste management. The BRSR Core covers the top 150 listed firms in FY 2023–24 and is slated to expand to the top 1,000 by FY 2026–27.

Critically, however, there is a blind spot within this elevated framework: non-GHG air pollutants (which, in the case of the BRSR, are NO_x, SO₂, and PM) are conspicuously absent from the BRSR Core list. While carbon emissions, energy, and water usage are subject to rigorous, audited scrutiny, local air quality metrics are excluded. This regulatory omission inadvertently signals to the financial market that industrial air pollution is a lower-priority concern compared to global climate metrics, thereby creating a gap between carbon accountability and clean air action.

Simultaneously, assured GHG data from BRSR disclosures are becoming increasingly intertwined with India's evolving carbon compliance market. For instance, the Carbon Credit Trading Scheme (CCTS), administered by the Bureau of Energy Efficiency (BEE), mandates stringent emissions intensity reductions for obligated entities across high-emitting sectors. Because several industrial units regulated under the CCTS belong to the same parent firms mandated to file BRSRs, harmonising emissions measurement and reporting between the SEBI and the CCTS is imperative.



4. Empirical analysis: Current state of air pollutant emissions disclosures in India

India's BRSR framework is more ambitious with regard to air pollution than most global standards. As Section 2's cross-framework comparison shows, India's BRSR is more prescriptive on air pollutants than most global voluntary standards, treating criteria air pollutants as a mandatory Essential Indicator under Principle 6 for the top 1,000 listed firms by market capitalisation since FY 2022–23 (SEBI 2021).

We conducted a systematic empirical analysis of air pollutant emissions disclosures filed by 1,258 listed Indian firms in compliance with Principle 6 of the BRSR framework across three filing cycles. We particularly focus on FY 2024–25, which covers 1,222 filers. The full dataset, including all 1,258 company-level records with sector classifications, National Industrial Classification (NIC) codes, pollutant values, and disclosure flags, is presented in Annexure 4.

We organise the analysis around four interrelated questions:

- How many firms disclose, and how has this evolved from FY 2022–23 to FY 2025–26?
- How do disclosure rates and data quality vary across sectors?
- What structural features of current BRSR practice limit its utility for air quality governance?
- What targeted reforms would transform BRSR disclosures from compliance reports to genuine policy instruments?

4.1 Dataset and approach

Our primary dataset is the complete set of BRSR submissions filed in a machine-readable, extensible business reporting language (XBRL) format with the National Stock Exchange of India (NSE) by the top 1,000 listed companies by market capitalisation. We treat each company-year as one observation. Across the three company-year cycles, 1,258 distinct companies filed at least once – 1,076 in FY 2022–23, 1,181 in FY 2023–24, and 1,222 in FY 2024–25 – as the disclosure mandate widened and newly listed firms were covered.

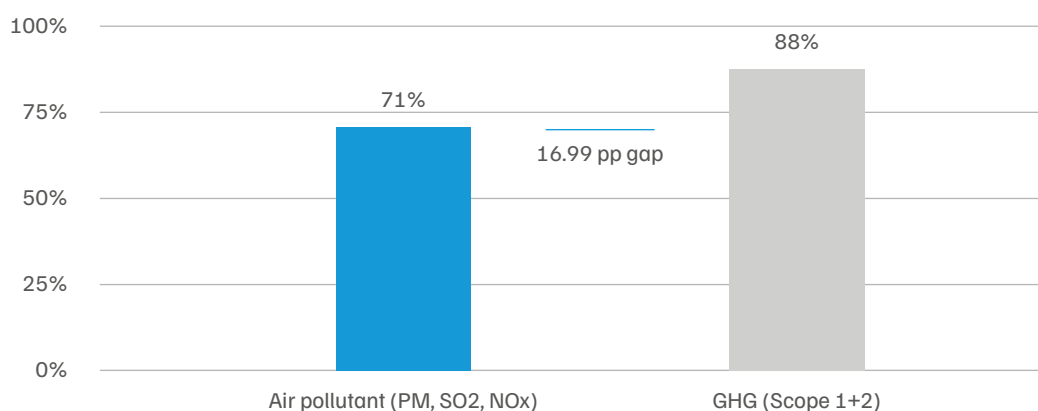
We used a parallel cross-sectional sample of 1,222 companies for FY 2024–25 for unit-level and data-quality analyses. For each company-year, we coded three flags. A company is treated as:

- An air pollutant reporter if it filed any non-null numeric value for PM, SO₂ or NO_x. We have not considered VOCs, HAPs, and POPs, given the complicated nature of their measurement.
- A GHG reporter if it filed Scope 1 or Scope 2 emissions; and
- Independently verified, if there is an affirmative response in the BRSR field for external assurance of air emissions data.

4.2 Overall disclosure rates

In the most recent cycle, FY 2024–25, 864 of 1,222 filing companies – approximately 71 per cent – reported at least one air pollutant value, whereas 1,070 companies (88 per cent) reported GHG emissions (Figure 4).

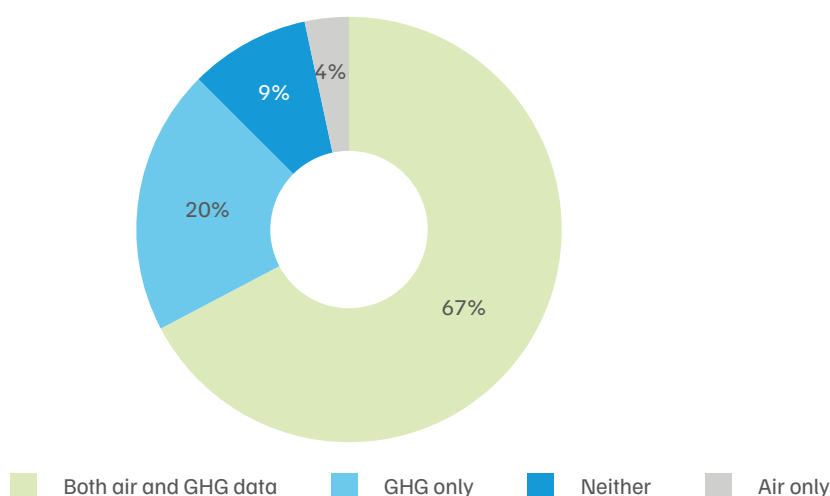
Figure 4. Of 10 companies, 7 reported air pollutant data, whereas 9 companies reported GHG data



Source: Authors' compilation

Of the 1,222 companies, 823 disclosed both air and GHG data, 247 disclosed GHG but no air data, 111 disclosed neither, and just 41 disclosed air data without any accompanying GHG figures (Figure 5).

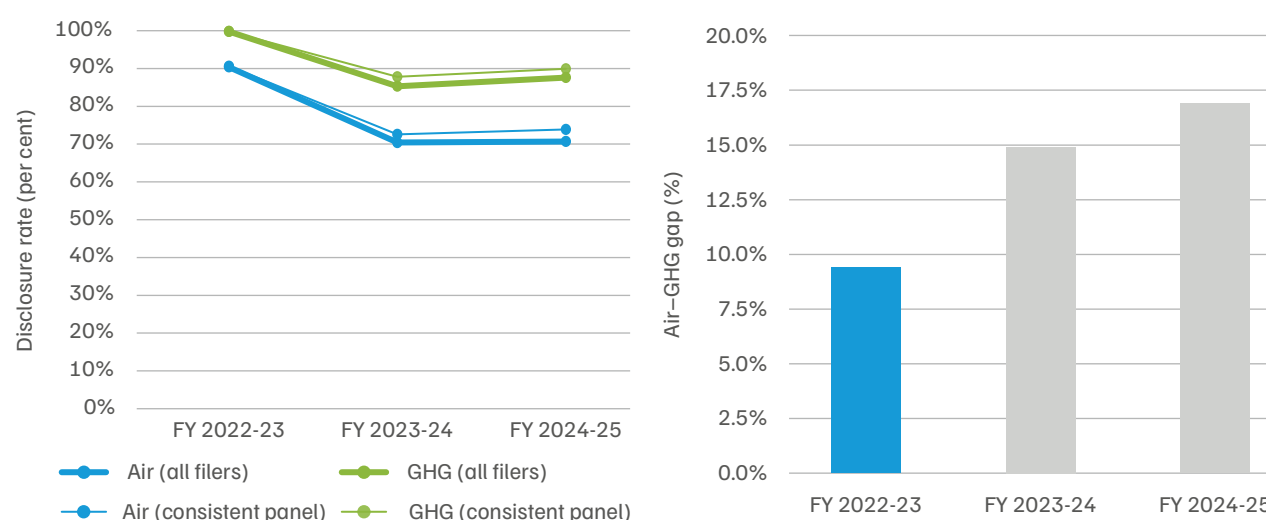
Figure 5. 29% of BRSR filers do not disclose air pollutant data, FY 2024–25



Source: Authors' compilation

Tracking the same metrics across all three filing years, we noticed a falling trend in reporting. The air emissions disclosure rate fell from 90.4 per cent in FY 2022–23 to 70.4 per cent in FY 2023–24, and then to 70.7 per cent in FY 2024–25, whereas the GHG disclosure rate fell from 99.8 per cent to 87.6 per cent (Figure 6). However, the air–GHG disclosure gap nearly doubled.

Figure 6. With the expanding disclosure regime (including 1,076–1,222 corporations across three years), the air–GHG disclosure gap nearly doubled



Source: Authors' analysis

This gap is partly due to new entrants, which were generally service-sector firms- such as financial services, information technology, retail and administrative services- for which air emissions are far less salient. For example, 116 companies that first filed in FY 2023–24 and 60 that first appeared in FY 2024–25 belong to these sectors.

Of the 1,258 companies analysed, 1,042 companies formed a consistent panel, having filed disclosures in all three years. Within this panel, 783 companies (75.1 per cent) reported air pollutants using valid and consistent units across the entire period, while 26 companies used different units across years, limiting comparability. In contrast, GHG emissions reporting showed a high degree of consistency, with companies uniformly reporting emissions in tonnes of CO₂ equivalent (tCO₂e). The number of companies disclosing GHG emissions in the consistent panel also increased steadily, from 825 in FY 2022–23 to 918 in FY 2024–25.

For the consistent panel, the GHG emissions reporting rate grew much faster than that of the air pollutant disclosure rate. To understand the factors driving this divergence, we conducted stakeholder consultations with chief sustainability officers and sustainability leaders from a diverse set of companies. Participants consistently highlighted that GHG reporting is supported by a well-established ecosystem of external drivers, including investor and lender expectations, corporate net-zero commitments, carbon markets, science-based targets, and climate-linked financing mechanisms. Together, these factors create a strong business case for companies to measure, monitor, and disclose their GHG emissions. In contrast, criteria air pollutants are largely perceived as a local environmental and public health issue rather than a financially material climate risk. The participants also agreed that companies face fewer external motivations to monitor and disclose air pollutant emissions systematically.

4.3 Sectoral composition

Overall, the manufacturing sector has accounted for the largest share of companies filing BRSR over the study period. Of 1,258 companies studied, about 700 (approximately 56 per cent) belong to the manufacturing sector. This is followed by the financial and insurance sector (158 firms, 13 per cent); information and communication (99 companies, 8 per cent); wholesale and retail trade (64 companies, 5.1 per cent); and construction (54 companies, 4.3 per cent). The electricity, gas, and steam sector – which includes India's most significant stationary combustion sources, i.e. thermal power plants – accounts for 35 companies.

Of the 681 manufacturers that filed in FY 2024–25, about 620 (approximately 91.3 per cent) disclosed air emissions. Two other sectors reported air pollutant data widely: mining and quarrying (86.7 per cent) and electricity, gas, and steam (75.8 per cent) (Table 1).

Table 1. Administrative services and financial and insurance firms show the widest air–GHG disclosure gaps of any sector, despite near-universal GHG reporting, FY 2024–25

Sector (based on NIC classification)	Companies	Air disc. (%)	GHG disc. (%)	Air–GHG gap (%)
C – Manufacturing	681	91.3	90.9	–0.4
B – Mining and quarrying	15	86.7	93.3	6.7
D – Electricity, gas, and steam	33	75.8	93.9	18.2
I – Accommodation and food	19	68.4	94.7	26.3
F – Construction	53	67.9	83.0	15.1
H – Transportation and storage	23	60.9	91.3	30.4
Q – Human health and social work	20	60.0	75.0	15.0
M – Professional and technical	18	55.6	83.3	27.8
J – Information and communication	96	50.0	83.3	33.3
G – Wholesale and retail trade	62	48.4	79.0	30.6
N – Administrative and support	15	13.3	93.3	80.0
K – Financial and insurance	151	9.3	80.8	71.5
Others	36	69.4	77.8	8.3
All sectors	1,222	70.7	87.6	16.9

Source: Authors' analysis

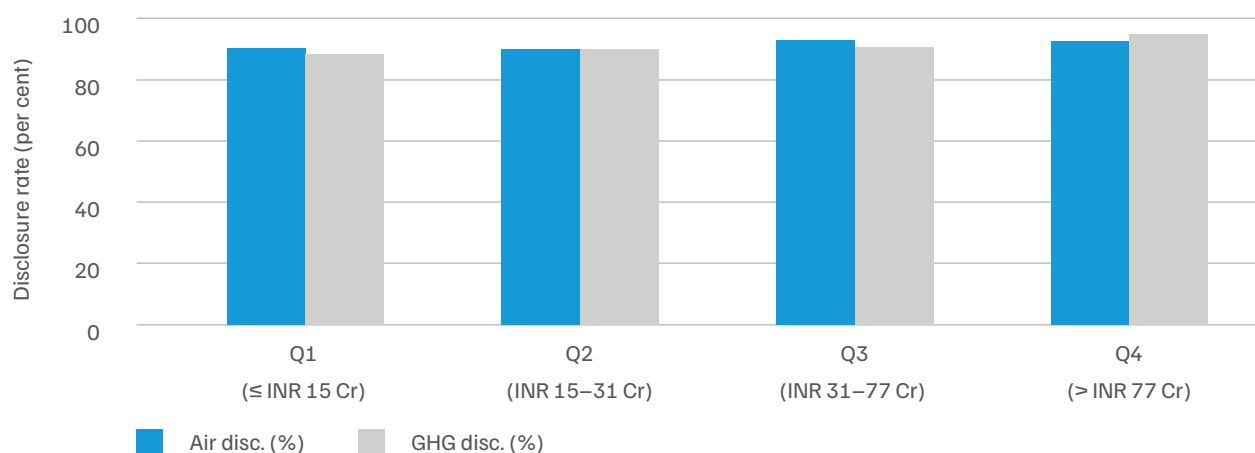
In the manufacturing sector, two sub-sectors achieved 100 per cent filing rates in FY 2024–25: non-metallic minerals (cement and ceramics) and motor vehicle parts. Basic chemicals (96.8 per cent) and pharmaceuticals (97.2 per cent) follow closely (Table 2). Filing of air emissions is largely uniform across all four paid-up capital quartiles in the manufacturing sector. Approximately 90–95 per cent of firms disclosed both air emissions and GHGs, regardless of whether a company has paid-up capital below INR 15 crore or above INR 78 crore (Figure 7). The manufacturing sector is also subject to the Central Pollution Control Board's (CPCB) industry-specific emissions standards. In addition, the pollution control board's consent-to-operate system, a mandatory environmental clearance required under the Water Act (1974) and Air Act (1981), creates a broadly uniform monitoring regime, regardless of company size. Hence, in this sector, the primary barrier to better air data reporting is not the lack of investment in new monitoring infrastructure, but the conversion of existing compliance data into standardised, mass-unit, comparable BRSR disclosures.

Table 2. Non-metallic minerals, motor vehicle parts, and casting metals all reached 100% air disclosure filing in FY 2024–25

Sub-industry	Companies	Air disc. (%)	GHG disc. (%)
Non-metallic minerals	38	100	94.7
Motor vehicle parts	21	100	90.5
Casting metals	16	93.8	93.8
Fabricated metals	21	90.5	90.5
Basic chemicals	62	95.2	96.8
Other chemicals	42	97.6	90.5
Iron and steel	35	97.1	91.4
Pharmaceuticals	71	97.2	95.8
General machinery	25	84	84
Other manufacturing	168	85.1	86.3

Source: Authors' analysis

Figure 7. Within manufacturing, disclosure is uniformly high and rises only modestly with firm size

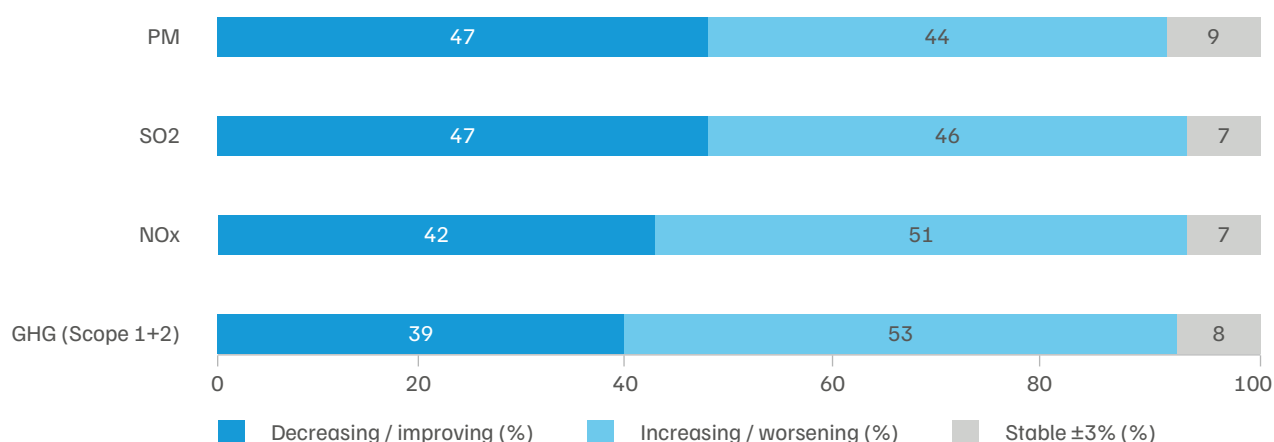


Source: Authors' analysis

4.4 Emissions comparison

A disclosure framework should reveal whether emissions are rising or falling. To assess whether the BRSR achieves this, we use the consistent panel of 1,042 firms that filed in all three years. Within the panel, we consider, for each pollutant, firms with at least two years of comparable data reported in consistent units, comparing each firm against its own earlier values (Figure 8). A rising trend means increasing absolute emissions from that firm — worsening local air quality impact regardless of the underlying driver, whether output growth, weaker controls, or better detection — while a declining trend indicates improving performance in absolute terms. For PM (657 firms), 47 per cent show a declining trend and 44 per cent a rising one; for SO₂ (645 firms), 47 per cent show a decline and 46 per cent a rise; for NO_x (661 firms), 51 per cent show a rising trend and 42 per cent a decline in emissions; and for GHGs (889 firms), 53 per cent show rising emissions against 39 per cent falling. The GHG subset is larger than the air pollutant subsets because GHGs are reported in a single consistent unit (tCO₂e), so more firms meet the comparability test.

Figure 8. Across the panel, less than half of the reported companies reduced their air pollutant emissions in the study period



Source: Authors' analysis

In the manufacturing sector, cumulative Scope 1 and Scope 2 emissions reached approximately 776 million tonnes of carbon dioxide equivalent (MtCO₂e) in FY 2024–25. Over the analysed period, the median reported value for these emissions in the manufacturing sector rose by 36 per cent, from about 43,300 tCO₂e to 52,400 tCO₂e.

However, the greater challenge in quantifying air pollutants is firms' use of inconsistent and incompatible reporting units. While roughly 620 out of 681 manufacturing companies disclosed air emissions in FY 2024–25, only about 240 reported PM, SO₂ and NO_x in tonnes. The remaining firms utilised concentration-based units, such as milligrams or micrograms per normal cubic metre, which reflect stack intensity rather than total load, making them impossible to aggregate.

We considered this subset of 240 companies to understand and compare GHG and air pollutant emissions. Our findings show that the median emissions from this subset are about 93 per cent higher than those of the manufacturing sector in total. The median firm emits about 101,000 tCO₂e, roughly twice the median of the whole manufacturing sector (52,400 tCO₂e, cited above), because these firms include large, process-intensive emitters from the cement, steel, base chemicals, and smelting industries. In this subset of 240 firms – all of which provided consistent data – PM, SO₂ and NO_x emissions rose by 12 per cent, 9 per cent, and 30 per cent, respectively (Table 3).

Table 3. Median and cumulative reported data for the subset of 240 manufacturing companies show an increase in emissions over the study period

Parameter (unit)	FY 2022–23	FY 2023–24	FY 2024–25	Change
GHG – cumulative (Mt CO ₂ e)	316	366	377	+19%
GHG – median (tCO ₂ e)	84,300	103,800	101,000	+20%
PM – cumulative (kilotonnes)	246	252	277	+12%
PM – median (t)	52	62	57	+ 9%
SO ₂ – cumulative (kt)	767	759	841	+9%
SO ₂ – median (t)	40	53	46	+15%
NO _x – cumulative (kt)	575	722	753	+30%
NO _x – median (t)	52	65	59	+13%

Source: Authors' analysis

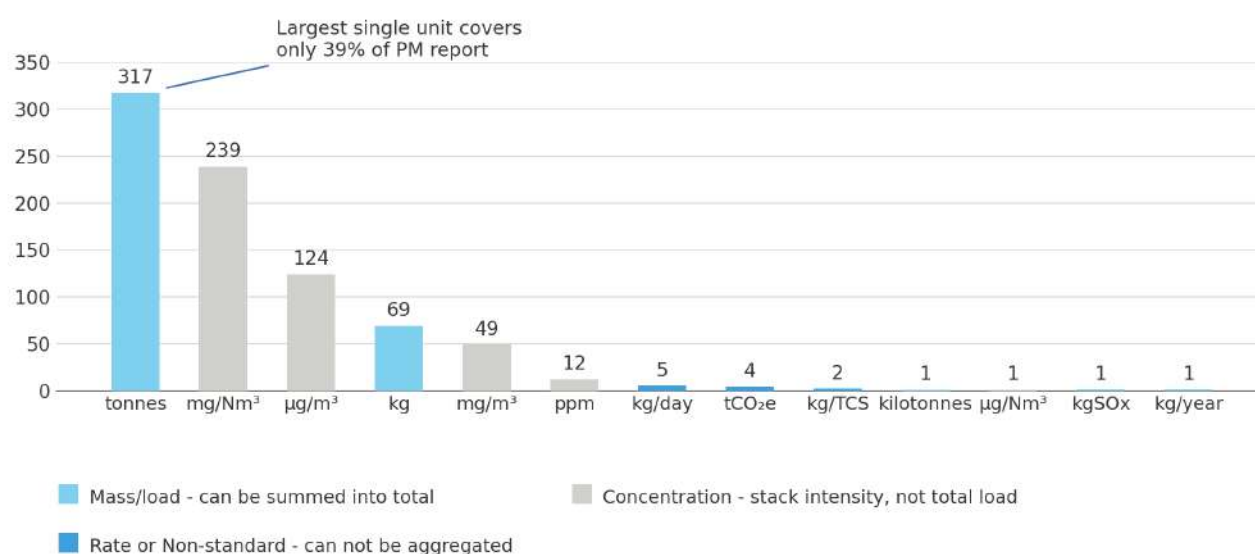
Abbreviations: GHG: greenhouse gas; NO_x: nitrous oxides; PM: particulate matter; pp: percentage point; SO₂: sulphur dioxide

4.5 Other major data quality and reporting gaps

We identified four structural data quality gaps: fragmented units of measurement, zero-value reporting, company-level rather than unit-level reporting, and a disconnect between CPCB and SEBI data streams.:

Fragmented units: Among the 864 FY 2024–25 air reporters, PM alone is reported in 13 distinct units (Figure 9).

Figure 9. One pollutant, over a dozen different units: the most common unit for PM (tonnes) is used in barely a third of reports



Source: Authors' analysis

Crucially, mass and concentration are not interconvertible without volumetric flow rate and operating-hours data, which the BRSR does not collect. A company reporting 50 milligrams per normal cubic metre, and another reporting 50 tonnes per year, cannot be placed on the same axis, ranked, summed, or benchmarked.

Zero data: Of the 864 air reporters, 38 companies (4.4 per cent) reported zero for all: PM, SO₂, and NO_x.

Company-level reporting rather than project-based, unit-level reporting: BRSR requires reporting at the level of the listed entity, not the unit level. In FY 2024–25, of the 681 manufacturing companies covered, 41 per cent operate in more than 5 locations and 12 per cent in more than 15 locations. These corporations operate across 15 states but disclose a single, company-wide PM data point. Such figures are an output-weighted aggregate, where modern and well-controlled units dilute the overall emissions intensity because they emit less per unit of output. However, India's air quality management operates at the city level under the National Clean Air Programme, and at the regional level under state pollution control boards. A national entity-level figure, however complete, cannot answer the question of how much individual units are contributing to regional air quality.

The CPCB–SEBI data disconnect: For most companies that impact air quality, air emissions data is already collected for environmental regulation through two channels. However, neither flows into BRSR. The first is CEMS, which is mandated for the 17 categories of highly polluting industries identified by the CPCB, as well as certain other highly polluting manufacturing units. It transmits real-time concentration data, in milligrams per normal cubic metre (mg/Nm³), to central and state pollution control board servers. The second is Form V, the annual environmental statement under the Environment (Protection) Rules, 1986, which covers far more sectors and records air emissions against prescribed standards. CEMS data offers more reliability, as it is a real-time measurement mechanism, compared to the Form V self-reported format. However, BRSR disclosures also require firms to report mass quantities in tonnes per year; converting CEMS concentration readings to this unit requires flow-rate data, operating hours, and a standard formula. During our stakeholder consultation, the participants agreed that while the foundational measurement infrastructure exists, there is a need for a framework to connect CEMS data and BRSR.

4.6 Lessons from the stakeholder consultation

To test these empirical findings against operational reality, CEEW convened an expert consultation on 20 May 2026 with chief sustainability officers, heads of ESG, and independent directors from manufacturing, energy, and real estate corporations. The discussion validated the analysis and added clarity on a few gaps.

The air–GHG gap

Participants discussed how to mainstream air emissions reporting and action. They traced the air–GHG gap to the absence of a demand-side pull for air data. The effects of GHGs are well understood globally and have generated net-zero frameworks, carbon markets, and lending covenants; local air pollutants have no equivalent investor-facing movement. One participant from the cement sector noted that even after 15 years of GHG reporting started by BRR in FY 2012-13, it still needs to be made more robust, underscoring how far behind air pollutant reporting is. The most incisive reframing was that net zero is itself unattainable without reducing air pollutants, because the same industrial processes generate both GHGs and PM, SO₂, and NO_x. Linking air quality explicitly to net-zero commitments, several participants argued, is the missing link that could pull air data into mainstream ESG scoring faster than regulation alone.

“You cannot achieve net zero without reducing air emissions first. Linking net zero to air quality is the missing frame.”

– Pankaj Kumar Verma, Chief Sustainability Officer, Adani Green Energy

Major reporting challenges for corporations

Participants from across sectors agreed that the foundational data already exists through CEMS, but challenges around interpretation and conversion persist. One participant mentioned that environmental teams sometimes require up to a week of dedicated effort to convert CEMS readings into a BRSR-ready figure. This process requires training, which raises monetary costs, especially for smaller firms. The participants suggested that the BRSR must provide conversion protocol guidance or a manual, such as the GHG protocol, to simplify the conversion.

On whether the BRSR framework should require reporting that is mass-based (tonnes per year) or concentration-based, the participants suggested that mass units are necessary for national comparability and aggregation, but the mandate must be accompanied by a clear, free, sector-specific conversion protocol.

“Environmental teams need up to a week of dedicated effort just to correlate CEMS readings into a BRSR-ready figure — a real cost, especially for smaller firms.”

– Mitika Bajpai, Reliance Industries

Sectoral applicability and boundary definition

During the discussion, a renewable-energy operator noted that purely non-polluting (“white-category”) businesses are required to file BRSRs despite having no air pollutant emissions to report, raising the question of applicability. Practitioners from diversified and service-heavy industries highlighted the challenges of accounting for air emissions from decentralised, shared assets such as offices, logistics, and retail. They proposed that standardised air reporting obligations should first be mandated for critically polluting industries, where CEMS data and sectoral standards already exist, before extending them to office-based service sectors that are macro-level rather than point-source contributors.

“We should be cautious about placing a heavy reporting burden on banks and financial service companies at this stage. Focus first on critically polluting industries where the data already exists.”

– Alka Upadhyay, Independent Director, Lloyds Engineering Works

Coordination mechanism between SEBI and the CPCB

A formal mechanism is necessary to ensure technical credibility. Participants also proposed a state-level emissions reporting rule linked directly to the BRSR framework, creating a single compliance process rather than parallel reporting requirements. Finally, one manufacturer emphasised that transparent air emissions reporting is an opportunity for community engagement, building trust with neighbours, employees, and investors simultaneously.

“SEBI and CPCB need to coordinate. The data is there. The problem lies in its interpretation and the linkage between the two regulatory systems.”

– Nishtha Gupta, Suzlon Energy

“This is not a challenge – it is an opportunity. Transparent air emissions reporting builds trust with the community, employees, and investors simultaneously.”

– Mitika Bajpai, Reliance Industries



Image : iStock

5. Air pollution and business impact

Our analysis of BRSR filings shows that air pollution reporting remains a blind spot in the corporate disclosure ecosystem. While GHG reporting dominates sustainability reporting, backed by net-zero targets, carbon markets, and investor scrutiny, air pollutants receive far less attention even though they pose environmental risks more directly tied to local health and firms' business operations. For instance, the construction and real estate sector – in which air pollutant reporting trails significantly behind GHG reporting – is among the top sectors directly impacting air quality, while its own operations are also hindered by poor air quality. On the one hand, construction activity is a major source of urban air pollution, contributing close to 30 per cent of Delhi's dust load. On the other hand, under the Graded Response Action Plan (GRAP), work is suspended whenever air quality turns severe, i.e., an Air Quality Index (AQI) of 401 or above (Stage III "Severe": AQI 401–450; Stage IV "Severe+": above 450). Across 2023–2024 alone, construction in Delhi-NCR was halted for a total of 78 days under GRAP, leaving thousands of migrant workers without income and causing project delays and substantial financial losses for developers and investors (Patra and Sahbaz 2025). CEEW's field monitoring at a large Gurugram construction site revealed that particulate emission levels from pollutant-intensive activities surged by roughly 84 per cent from no-work levels, confirming that the sector is both a significant source of air pollution and a direct bearer of its regulatory consequences (CEEW 2025). Tightening the Commission for Air Quality Management (CAQM)'s directions and closures to the construction sites, and mandating the registration of larger sites on state dust-monitoring portals, are signs of steadily turning air performance into a determinant of whether a firm can keep operating. Recent measures that are steadily turning air performance into a determinant of a firm's continued operability include newer, tighter directions for closures issued by the CAQM to construction sites as well as mandatory registration of larger sites on state dust-monitoring portals.

This is not a Delhi-specific concern. Emissions inventory studies, which estimate each sector's contribution to a city's total pollutant load, confirm that construction and demolition are recurring and often leading contributors to particulate emissions across Indian cities. For instance, four cities' emissions inventories published on the Portal for Regulation of Air Pollution in Non-Attainment Cities (PRANA) portal examined different states and city sizes and showed that the pattern is not particular to any one region. Across the four CPCB emissions inventories published on the PRANA portal, construction's share of the total city PM₁₀ load was in the range 5–25 per cent: Rajkot (24 per cent), Bengaluru (11 per cent), Bhopal (10.1 per cent), and Surat (4.7 per cent) (PRANA n.d.).

The regulatory consequences of poor environmental performance reach well beyond construction and the seasonal enforcement of GRAP. The CPCB issues directions to industry under the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986, ranging from show-cause notices and environmental compensation orders to outright closure. Between January 2021 and June 2026, the CPCB issued 852 such directions, including 218 show-cause notices and 49 closure directions ordering units to halt operations; of these, 121 concerned air or industrial pollution, and 16 were closures (CPCB n.d.). These directions were issued to the manufacturing and process industries that dominate BRSR air reporting, such as food processing, iron and steel, cement, pharmaceutical, and tannery units and clusters in the industrial belts of Gujarat, Uttar Pradesh, Maharashtra, and Haryana. For an affected firm, a closure direction carries consequences beyond reputation damage, bringing production, revenue, and customer supply to a halt. This means that air and environmental performance has already become a determinant of whether a plant can keep operating; what India's disclosure ecosystem is yet to do is make air quality performance visible to the markets that finance these firms.

The economic costs of air pollution to business are equally large. A study by Dalberg Advisors, the Confederation of Indian Industry, and the Clean Air Fund estimates that air pollution costs India's economy about USD 95 billion (~INR 9 lakh crore) a year, close to 3 per cent of its GDP (Dalberg Advisors, CII, and Clean Air Fund 2021). The largest share, around USD 30 billion (~INR 2.8 lakh crore), comes from lost labour productivity: roughly USD 6 billion (~INR 57,000 crore) from absenteeism, with 1.3 billion working days lost in 2019, and a further USD 24 billion (~INR 2.28 lakh crore) from "presenteeism" – the reduced cognitive and physical performance of employees who come to work on high-pollution days. The penalty is most acute in cognition-intensive occupations, such as IT and finance, where the productivity loss is several times that in lower-skilled roles. Reduced consumer footfall costs a further USD 22 billion (~INR 2.09 lakh crore), and air pollution directly degrades physical assets, lowering solar panel output, shortening the lifespan of electronic equipment, and reducing agricultural yields.

The human cost is more severe. Premature deaths attributed to air pollution – around 1.7 million deaths were recorded in India in 2019 – represent a loss of output valued at roughly USD 44 billion (~INR 4.18 lakh crore). Beyond mortality, short-term exposure can aggravate asthma and impair lung function, while sustained exposure is associated with chronic obstructive pulmonary disease, diabetes, and several cancers (EEA 2025). In addition to these long-term impacts on public health, for employers, these conditions translate into a less healthy, less productive workforce.

These patterns are not unique to India. In a working paper for the Organisation for Economic Co-operation and Development (OECD), drawing on more than 2.5 million firms across Europe during 2000–2022, Dechezleprêtre and Vienne (2025) provide the largest firm-level causal estimates to date: a one-unit rise in PM_{2.5} reduces labour productivity by 0.55 per cent in the same year, with the sharpest effects seen in outdoor-intensive industries, such as construction, and in sectors employing highly skilled workers. This is consistent with medical evidence on how pollutants impair cognition.

Financially, firms with stronger ESG ratings already enjoy lower costs for both equity and debt, while weaker performers face higher capital costs (Ernst and Woithe 2024). Yet this signal barely extends to air pollutants. As one investor initiative observed, because air pollution is still not considered a disclosure requirement the way climate is, companies have little incentive to address issues they contribute to, and investors risk underwriting practices that harm public health and long-term business stability (CCLA Investment Management and Guy and St Thomas, 2025). This is the key demand-side pull missing from air pollutant disclosures: the operational, regulatory, and financial risks are real and already evident, as indicated by the closures mentioned previously, but unlike carbon, they are not yet priced by capital markets.

Taken together, the Indian and European evidence points to a single conclusion: air pollution imposes a quantifiable, recurring cost on business through lost productivity, regulatory disruption, and impaired assets, and acting on it can yield returns that extend well beyond health. Disclosure is the first link in turning that recognition into reduction; a firm that measures its air pollutant load can more efficiently target abatement, optimise processes, and direct capital to where the operational and competitive returns are greatest. It is on this basis that our recommendations address not only the regulator, but also the corporations that generate these emissions and the investors whose capital can reward their reporting.



6. Strengthening air emissions reporting: Recommendations

Our analysis indicates that while air emissions reporting under the BRSR framework has improved over the three-year study period, it continues to lag behind GHG reporting in quality, consistency, comparability, and decision-usefulness. Companies often report emissions using non-standard or incompatible units, report unexplained zero values, and provide little to no information on VOCs and HAPs. As a result, the reported data offers limited insight into actual environmental performance and cannot be meaningfully linked to improvements in ambient air quality at the regional level.

Closing this gap is not the regulator's task alone. To make emissions disclosures a lever for achieving better air quality, there is a need for coordination among three sets of actors: regulators that set the standards, corporations that generate emissions, and investors who can create a demand-side pull on companies to act on their emissions. Our recommendations aim to strengthen the credibility, comparability, and policy relevance of air emissions disclosures. Together, these can help transform the BRSR framework from a compliance-oriented reporting exercise to a robust framework for tracking progress, informing investment decisions, and supporting measurable air quality outcomes.

6.1 Strengthen the regulatory framework

Issue a technical guidance document that standardises pollutants, units, and measurement methods. Unit heterogeneity is the single largest data-quality barrier; within the same sector, firms report PM in tonnes, kilograms, and milligrams per normal cubic metre, which makes aggregation and cross-firm comparison impossible. Simultaneously, VOCs and HAPs go almost entirely unreported because no measurement method is prescribed. We recommend that SEBI, with the MoEFCC and CPCB, issue a single technical guidance document that specifies, for each relevant sector

- the mandatory pollutants;
- the reporting units;
- the reporting boundaries; and
- the permitted measurement and estimation methods.

Mass-based units (tonnes per year) should be the reporting standard, and the mandate must be paired with a freely available, sector-specific conversion methodology. The document must prescribe acceptable measurement and estimation approaches. During the transition to reporting using the prescribed units, companies could report both concentration-based metrics for regulatory compliance - CPCB and mass-based metrics for BRSR.

Reporting requirements should be based on sector and not just company size. While the low air pollutant disclosure rate among financial firms broadly aligns with their limited direct emissions footprint, the construction and real estate sector presents a different picture: 81 per cent of companies in this sector report GHG emissions, whereas only 68 per cent of companies report air pollutants, despite the sector being a significant source of PM emissions. SEBI should establish sector-specific frameworks so that all major emitters, regardless of company size, are required to disclose air pollutants.

Treat zero values as conditional disclosures that require an explanation. A reported zero for PM, SO₂, or NO_x should be treated as a distinct data-quality issue because it may reflect non-disclosure rather than true zero emissions. In practice, a zero most often substitutes for a lack of measurement, particularly in manufacturing and construction. We recommend that SEBI mandate any firm reporting a zero to classify it as one of three cases:

- a true zero: the activity genuinely generates no such emission;
- a value below the detection limit of the monitoring method; or
- a non-measurement.

This single requirement would separate credible zeros from placeholders at the point of filing and materially improve data reliability.

Cross-validate BRSRs against regulatory monitoring data. CEMS already transmit real-time concentration data to the CPCB and state servers for the most polluting sectors (Mehta et al. 2025). Yet these datasets remain largely isolated from corporate sustainability disclosures. Acknowledging this issue, the recently released Corporate Air Emissions Reporting Guidelines by the Confederation of Indian Industry (CII) and the Environmental Management Centre (EMC) (CII and EMC 2024) outline methodologies for converting CEMS data into the BRSR reporting format. To validate this, a structured pilot can be conducted at a firm with a partnership with CII and EMC in a highly polluting sector. Thus, the CPCB needs to establish a formal data-sharing protocol with a well-constructed application programming interface (API) that connects CEMS and BRSR data and ensures interoperability with BRSR's XBRL format. Such integration would move BRSR beyond a standalone corporate reporting exercise and position it as an integral component of India's broader air quality governance architecture.

Bring PM, SO₂, and NO_x into BRSR Core, with mandatory third-party assurance. Our trend analysis finds that reported emissions have been rising rather than falling for a significant share of companies: PM emissions increased for 44 per cent of reporting companies, NO_x for 52 per cent, and SO₂ for 46 per cent, which shows a gap in the compliance regime and can have direct consequences on public health. We recommend that PM, SO₂, and NO_x be added to the BRSR Core list of key performance indicators and brought within its mandatory "reasonable assurance" regime, beginning with the largest listed manufacturing firms and other sectors with a significant air pollution footprint. The assurance process should go beyond verifying reported figures to assess the consistency of quantification methodologies, completeness of pollutant coverage and reporting boundaries, and transparency of assumptions and estimation approaches.

6.2 Embed air quality into corporate strategy

As Section 5 shows, air pollution is already an operational and financial risk for firms. It has not only societal and health costs but also capital costs through lost productivity, plant closures, and GRAP-driven construction halts, tightening CPCB enforcement. Treating air emissions as a compliance afterthought leaves these risks unmanaged. We recommend that corporations:

- Build the in-house capability to convert existing CEMS and consent-to-operate monitoring data into standardised, mass-based BRSR disclosures ahead of any assurance mandate, so that the data is decision-useful internally before it is required externally.
- Act on the air–climate co-benefit. As the same combustion processes generate both carbon dioxide and air pollutants such as PM, SO₂, and NO_x, decarbonisation investments – such as fuel-switching, electrification, and process optimisation – can reduce both and should be appraised and reported accordingly.

Transparent air reporting is not a burden but an opportunity to manage operational and regulatory risk; build trust with communities, employees, and investors; and realise the co-benefits of investments that firms are already making.

6.3 Create investor demand for better air quality performance

As an influential stakeholder group, investors can catalyse the emissions reporting process by recognising the need to include air pollutants in sustainability reporting frameworks. Air pollutant performance can be financially material to investors, carrying risks of increased regulatory liability, operational disruptions, lower labour productivity, and a decrease in the social licence to operate. However, such risk considerations are currently overlooked in mainstream investment analysis processes.

The inclusion of air pollutant measurements in sustainability analyses, and ranking corporations to identify pioneers and investment best practices, can incentivise firms to improve their air pollution performance. As emissions-related risks grow in financial significance, investors who consider such criteria will be better equipped to navigate potential risks and opportunities.

Emerging initiatives, such as the corporate air pollution benchmark being developed by Investment Management and the Guy and St Thomas' Foundation (Hayward and Hayward 2025), illustrate that when capital markets signal the relevance of air pollutant disclosures, a demand-side pull similar to carbon reporting is likely to emerge. This can generate action towards air emissions reduction.



Image - iStock

7. Conclusion

In this study, we aimed to assess how information on air pollutant emissions is incorporated into existing disclosure frameworks, globally and in India specifically, alongside GHG emissions. The findings from both global and the Indian BRSR frameworks are consistent: GHG disclosure practices have progressed considerably, while air pollutant reporting remains fragmented and sparse.

This study is limited to the listed companies that fall within the BRSR mandate and to PM, SO₂, and NO_x. Future research can consider developing standardised, sector-specific reporting protocols and unit-conversion methodologies, integrating industrial CEMS data with BRSR disclosures.

Globally, carbon emissions disclosures have advanced significantly, but the reporting of criteria air pollutants, such as PM, SO₂, and NO_x, remains limited. Most widely used sustainability frameworks – including voluntary standards such as GRI and investor-focused initiatives such as Sustainable Financial Disclosure Regulation (SFDR) and PRI – were developed when climate change mitigation was the primary concern, making carbon accounting their central focus. As a result, GHG reporting has become increasingly standardised, verified, and institutionalised. However, this emphasis on carbon has often overshadowed the criteria air pollutants that pose immediate and local public health risks. Among the global frameworks we assessed, only ESRS and SASB explicitly require standardised disclosure of specific air pollutants.

Considering this broader perspective, India's BRSR framework is a substantive contribution to sustainability disclosure practices. For air pollutants, the requirement to disclose six pollutant categories – PM, SO₂, NO_x, POPs, VOCs, and HAPs – under Principle 6 of the BRSR makes it more comprehensive than most global voluntary systems in terms of pollutant coverage. Our empirical evaluation of the 1,258 listed companies is based on the BRSR's XBRL-enabled digital reporting system. As longitudinal data for companies that filed their emissions from FY 2022–23 to FY 2024–25 was already available, we were able to conduct a trend analysis.

However, we identified gaps in the BRSR air pollutant reporting framework. GHG accounting and reporting have succeeded because climate impact is a global priority; the financial stakes for GHG reporting are understood through capital costs, reputational risks, and transition strategies. None of these pressures is understood in relation to air pollutants. For instance, there is a dearth of documentation on health consequences and corporate financial risks. Until comparable drivers are integrated into the framework, the gap between GHG and air pollutant reporting will remain, and its implications will not be adequately measurable.

India's disclosure regime is at a turning point: three years of mandatory BRSR have produced a structured, improving dataset; the extension of the BRSR Core and value-chain reporting will further tighten the emissions reporting process. Closer cooperation between SEBI and environmental regulators could create an opportunity for further institutional alignment and the extension of assurance requirements to air pollutant disclosures. SEBI has proven, through its guidelines on GHG emissions and BRSR Core, that it can convert challenging environmental requirements into feasible disclosure regulations. Extending this process to air pollutants – developing a guidance note on unit standardisation and a measurement methodology and adding PM, SO₂, and NO_x to the BRSR Core list – will bring to completion the work begun by the BRSR. When corporations begin treating air pollutant reporting as a core business practice rather than a compliance obligation, and investors begin pricing air pollutant performance as they already do carbon, India's disclosure mandate will become a powerful instrument – globally – for cleaner air.

Acronyms

API	application programming interface	ISSB	International Sustainability Standards Board
BEE	Bureau of Energy Efficiency	MCA	Ministry of Corporate Affairs
BRR	Business Responsibility Report	MOEFCC	Ministry of Environment, Forest and Climate Change
BRSR	Business Responsibility and Sustainability Reporting	NAAQS:	National Ambient Air Quality Standards
CCTS	Carbon Credit Trading Scheme	NGRBC	National Guidelines on Responsible Business Conduct
CDP	Carbon Disclosure Project	NIC	national industrial classification
CDSB	Climate Disclosure Standards Board	NSE	National Stock Exchange
CEEW	Council on Energy, Environment and Water	OECD	Organisation for Economic Co-operation and Development
CEMS	continuous emissions monitoring system	PM	particulate matter
CII	Confederation of Indian Industry	PM ₁₀	particulate matter up to 10 micrometres in size
CPCB	Central Pollution Control Board	PM2.5	particulate matter up to 2.5 micrometres in size
CSRD	Corporate Sustainability Reporting Directive	POP	persistent organic pollutants
EMC	Environmental Management Centre	PRANA	Portal for Regulation of Air Pollution in Non-Attainment Cities
ESG	environmental, social, and governance	PRI	Principles for Responsible Investment
ESRS	European Sustainability Reporting Standards	SASB	Sustainability Accounting Standards Board
GHG	greenhouse gases	SEBI	Securities and Exchange Board of India
GRAP	Graded Response Action Plan	SFDR	Sustainable Finance Disclosure Regulation
GRI	Global Reporting Initiative	TCFD	Task Force on Climate-Related Financial Disclosures
HAP	hazardous air pollutant	VOCs	volatile organic compounds
IIRC	International Integrated Reporting Council	XBRL	extensible business reporting language
ICC	Intergovernmental Panel on Climate Change		
IRF	Integrated Reporting Framework		

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The authors



Shubhi Verma

shubhi.verma@ceew.in

Shubhi Verma

Shubhi Verma is a Research Analyst with the Clean Air team at The Council. Her work comprises quantitative and econometric analyses in the air quality domain.

Shubhi holds an undergraduate degree in Business Economics from Delhi University. She completed her postgraduate degree in Computational Social Science, with a specialisation in Mathematical and Computational Economics from IIT Jodhpur.



Sunita Patra

sunita.patra@ceew.in

Sunita Patra

Sunita Patra is a Programme Associate in the Clean Air team at CEEW, where she works on industrial emissions monitoring, clean energy transitions and clean air policy.

Previously, she served as a Research Fellow at CPCB, Delhi, for six years, focusing on CEMS data analysis, industrial emissions, and stakeholder coordination. She holds a B.Tech. in Electronics and Telecommunication Engineering from BPUT, Odisha.



Prarthana Borah

prarthana.borah@ceew.in

Prarthana Borah

Prarthana Borah is a Fellow at CEEW, where she leads the Clean Air team. With over three decades of experience in sustainability, she has worked extensively on clean air, climate action, ESG, and environmental policy across India, South Asia, and Southeast Asia.

Before joining CEEW, she led the India programmes of CDP and Clean Air Asia, driving corporate sustainability, urban air quality, policy development, and multi-stakeholder partnerships with governments, industry, and international organisations.



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COUNCIL ON ENERGY, ENVIRONMENT AND WATER (CEEW)

ISID Campus, 4 Vasant Kunj Institutional Area

New Delhi - 110070, India

T: +91 (0) 11 4073 3300

info@ceew.in | ceew.in |  @CEEWIndia |  ceewindia

INDIAN INSTITUTE OF CORPORATE AFFAIRS (IICA)

Plot No.6, 7, 8, Sector-5 IMT Manesar,

Gurugram i - 122052, India

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