PAHAL HORIZON
An International Research Journal
Homepage: www.pahalhorizon.com

Governance for a Developed India: Creating a Climate-Resilient Sustainability Reporting Index for India's Global Sectoral Transformation

Shankar Dev Jha [1], Dr. Nishtha Sharma [2]
[1] Research Scholar, Dr. B.R. Ambedkar University, Agra,
[2] Assistant Professor, St. John's College, Agra

ABSTRACT

As India traverses the "Amrit Kaal" toward the vision of Viksit Bharat 2047, the manufacturing sector is set to become a $1.45 trillion engine of growth. However, this transformation faces the dual challenge of escalating climate risks ranging from extreme heatwaves to catastrophic flooding and the increasing global demand for transparent, high-fidelity sustainability disclosures. This research addresses the critical gap in existing governance frameworks by proposing the development of a Climate-Resilient Sustainability Reporting Index (CRSRI). Unlike traditional ESG (Economic and social governance) metrics that focus primarily on a firm's environmental footprint, the CRSRI introduces a "double materiality" lens, quantifying both the industrial impact on ecosystems and the vulnerability of sectoral supply chains to climate-induced disruptions.

The study utilises a mixed-methods approach, combining geospatial analysis of industrial clusters with a critical evaluation of India's current Business Responsibility and Sustainability Reporting (BRSR) framework. By integrating indicators such as disaster-risk adaptability, waste-to-wealth circularity ratios, and Digital Public Infrastructure (DPI) utilisation, the research seeks to create a standardised benchmark for "Green Manufacturing." Special emphasis is placed on the inclusive transformation of MSMEs, ensuring that sustainability does not become a barrier to entry but a catalyst for global competitiveness.

The proposed index serves as a strategic governance tool for policymakers to monitor progress toward the 2047 goals, mitigate "greenwashing," and shield Indian exports from international carbon border adjustments. Ultimately, this research provides a roadmap for an

indigenous, data-driven governance model that harmonises rapid industrial expansion with ecological restoration and climate resilience, securing India's position as a sustainable global manufacturing hub.

Keywords: Viksit Bharat 2047, Climate-Resilient, Green Manufacturing, Sustainability Reporting, Governance, Circular Economy, Disaster Risk Reduction, MSME Transformation.

1. INTRODUCTION

India is currently passing through a transformative phase known as "Amrit Kaal", with a national vision of becoming a developed nation under the mission of Viksit Bharat 2047. India's manufacturing sector is expected to emerge as a major engine of economic growth in the coming decades. The country aims to position itself as a global manufacturing hub while ensuring social inclusion, environmental protection, and economic stability.

However, this rapid industrial expansion is taking place in the context of growing environmental and climate challenges. India is experiencing frequent heatwaves, floods, cyclones, water stress, and air pollution, which directly affect industries, supply chains, infrastructure, and communities. At the same time, global markets are increasingly demanding transparent and reliable sustainability reporting from exporting countries. International mechanisms such as carbon border taxes and green trade standards are becoming important determinants of competitiveness.

India already has an important step in place through the Securities and Exchange Board of India (SEBI) mandated Business Responsibility and Sustainability Reporting (BRSR) framework. However, existing reporting systems mainly focus on corporate environmental, social, and governance (ESG) disclosures. They often emphasise how companies impact the environment but do not sufficiently measure how climate risks impact industries themselves. There is therefore a need for a more comprehensive and climate-focused governance tool.

Globally, sustainability reporting has evolved significantly. For example:

- The European Union has introduced the Corporate Sustainability Reporting Directive (CSRD), which emphasises "double materiality."

- The United Nations promotes sustainability through the Sustainable Development Goals (SDGs).
- Countries such as Germany and Japan have integrated climate risk disclosure into industrial policy.

These examples show that sustainability reporting is no longer optional; it is becoming central to economic governance and international trade.

In this context, the concept of a Climate-Resilient Sustainability Reporting Index (CRSRI) becomes highly relevant. Such an index would go beyond traditional ESG frameworks by integrating climate resilience, disaster preparedness, circular economy practices, and digital transparency into one comprehensive reporting mechanism. It would help measure both: environmental and social impact of industries, and vulnerability of industrial sectors to climate-related risks.

A well-designed CRSRI can serve multiple purposes:

- Guide policymakers in tracking India's progress toward the 2047 vision.
- Improve global competitiveness of Indian exports.
- Reduce the risk of "greenwashing" by standardizing disclosures.
- Encourage MSMEs to adopt sustainable practices without increasing compliance burden.

Therefore, the development of a Climate-Resilient Sustainability Reporting Index is not merely a technical reform; it is a strategic necessity. It represents a shift from reactive environmental management to proactive climate-resilient governance. By aligning industrial growth with ecological sustainability, India can ensure that economic development does not come at the cost of environmental degradation.

2. RESEARCH GAP

Although sustainability reporting has gained importance in India and globally, there are significant gaps in the existing frameworks that justify the need for this study and the proposed Climate-Resilient Sustainability Reporting Index (CRSRI).

2.1. Gap between Economic Growth and Climate Resilience

India is rapidly expanding its manufacturing and infrastructure sectors under the Viksit Bharat 2047 vision. However, current reporting systems

primarily focus on financial performance and basic environmental disclosures. There is limited integration of climate resilience indicators, such as heat stress vulnerability, flood exposure of industrial clusters, or disaster preparedness capacity.

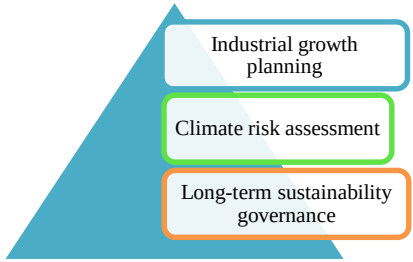

Figure 1: Climate Resilience Indicators
Source: Author Compiled

There is no unified index that systematically measures the vulnerability of industrial sectors to climate-related disruptions.

2.2. Limitations of Existing ESG and BRSR Frameworks

India's Business Responsibility and Sustainability Reporting (BRSR), introduced by the Securities and Exchange Board of India, has improved corporate transparency. However, existing frameworks have certain limitations:

- Focus more on compliance than resilience.
- Emphasise environmental impact (carbon emissions, waste, and water use) but not climate risk exposure.
- Lack sector-specific climate vulnerability assessment.
- Do not sufficiently integrate disaster risk reduction metrics.

Globally, frameworks promoted by the United Nations and adopted within the European Union have begun incorporating "double materiality," but India does not yet have a customised, climate-resilient sectoral index aligned with its development goals.

Thus, a major gap exists in translating global sustainability principles into an India-specific governance tool.

2.3. Absence of Geospatial and Cluster-Level Assessment

Industrial activity in India is geographically concentrated in clusters of coastal zones, river basins, urban peripheries, and heat-prone regions. Yet:

- Sustainability reporting remains company-based, not cluster-based.
- There is minimal integration of geospatial risk mapping into reporting systems.
- Industrial vulnerability to floods, cyclones, droughts, and urban heat islands is rarely quantified in disclosures.

This creates a knowledge gap between spatial climate risk data and industrial governance frameworks.

2.4. Limited Inclusion of MSMEs

Micro, Small and Medium Enterprises (MSMEs) form the backbone of India's economy. However:

- Most sustainability frameworks are designed for large corporations.
- Reporting requirements may be complex and resource-intensive.
- MSMEs lack structured guidance for climate-resilient transformation.

There is a gap in creating a simplified, scalable, and inclusive sustainability index that supports MSMEs rather than burdening them.

2.5. Risk of Greenwashing and Lack of Standardised Metrics

Another critical gap is the absence of a standardised national benchmark to measure "green manufacturing." Without uniform indicators:

- Companies may selectively disclose favourable data.
- Comparability across sectors remains weak.
- Policymakers lack reliable tools for monitoring progress toward 2047 goals.

This increases the risk of greenwashing and reduces the credibility of sustainability claims in global markets.

2.6. Insufficient Alignment with India's Developed Nation Vision

While India has ambitious commitments related to climate action and sustainable development, no integrated reporting index directly connects:

- Climate resilience
- Circular economy practices
- Digital public infrastructure
- Industrial competitiveness
- Export readiness

The absence of such an integrated governance instrument represents a strategic policy gap.

3. OBJECTIVE

3.1. To Examine the Current Status of Sustainability Reporting in India

- To understand the structure and scope of Business Responsibility and Sustainability Reporting (BRSR) issued by the Securities and Exchange Board of India.
- To assess how far current reporting practices address environmental and climate-related concerns.

3.2. To Analyse the Climate Challenges Facing India's Industrial Sector

- To identify major climate risks such as heatwaves, floods, water scarcity, and extreme weather events.
- To understand how these risks affect manufacturing, supply chains, and exports.

3.3. To Study Global Best Practices in Sustainability Governance

- To review international approaches promoted by the United Nations.
- To examine sustainability reporting developments in the European Union.
- To draw lessons relevant to India's development pathway.

3.4. To Identify Gaps in the Existing Governance Framework

- To evaluate whether current reporting systems adequately address climate resilience.
- To examine issues such as greenwashing, lack of comparability, and limited MSME participation.

3.5. To Suggest Broad Policy Recommendations

- To propose guiding principles for integrating climate resilience into sustainability reporting.
- To suggest ways to make reporting inclusive, transparent, and aligned with India's long-term development goals.
- To highlight how improved sustainability governance can enhance India's global competitiveness.

4. RESEARCH METHODOLOGY

This study adopts a qualitative and policy-oriented research approach to examine the need for a Climate-Resilient Sustainability Reporting framework for India. The research is conceptual in nature and focuses on governance analysis rather than technical index construction.

4.1 Research Design

The study follows as:

- Descriptive approach – to understand the current sustainability reporting system in India.
- Analytical approach – to identify gaps in climate resilience and reporting practices.
- Exploratory approach – to examine how India can strengthen sustainability governance to achieve the vision of Viksit Bharat 2047.

The research does not involve mathematical modelling or technical index formulation. Instead, it focuses on policy review and conceptual framework development.

4.2 Sources of Data

The research is primarily based on secondary data, including:

- Government policy documents related to Viksit Bharat 2047

- Business Responsibility and Sustainability Reporting (BRSR) guidelines issued by the Securities and Exchange Board of India
- Climate and environmental reports
- Reports on industrial growth and MSMEs
- International sustainability frameworks promoted by the United Nations
- Sustainability regulatory developments in the European Union
- Research articles, academic journals, and policy papers

4.3 Method of Analysis

The study uses the following methods:

1. Policy Review and Document Analysis

Existing sustainability reporting frameworks in India are critically examined to understand:

- Their scope
- Their strengths
- Their limitations regarding climate resilience

2. Comparative Global Review

International best practices are reviewed to understand how other regions integrate climate resilience into sustainability governance. This helps in identifying lessons relevant for India.

3. Gap Identification

By comparing India's current reporting structure with global developments and climate risk realities, governance gaps are identified in areas such as:

- Climate risk disclosure
- Disaster preparedness
- MSME inclusion
- Circular economy practices

4. Conceptual Framework Proposal

Based on the analysis, the study proposes broad guiding principles for a climate-resilient sustainability reporting approach suitable for India. The focus is on:

- Governance strengthening
- Policy alignment
- Export competitiveness
- Long-term development planning

4.4 Scope of the Study

The study focuses on:

- India's manufacturing and industrial sectors
- Sustainability reporting frameworks
- Climate resilience in governance
- Policy alignment with developed nation goals

It does not involve technical modelling, financial forecasting, or company-level performance measurement.

4.5 Limitations

- The study relies on secondary data.
- It is conceptual and policy-oriented.
- Sector-specific numerical analysis is beyond its scope.

5. RESULTS AND DISCUSSION

5.1 Current status of sustainability reporting in India

- Institutional footing: India has mainstreamed corporate sustainability disclosure through the Business Responsibility and Sustainability Reporting (BRSR) mandate under the Securities and Exchange Board of India, which has improved basic ESG transparency among large listed firms.
- Scope and limitations: Most disclosures emphasise resource use (energy, water), emissions, worker welfare and governance. Climate-resilience topics—industry exposure to hazards, adaptive capacity of operations and supply chains, and cluster-level vulnerability—are inconsistently reported or absent.

- MSME participation: Micro, Small and Medium Enterprises remain under-represented due to capacity, cost and complexity barriers.
- Competitive pressures: Indian exporters and investors are increasingly operating in markets where buyers and regulators expect climate-aware disclosures.

Interpretation: India has a functioning disclosure mechanism but it is primarily compliance and footprint-oriented rather than resilience-oriented. The system needs strategic augmentation to reflect the country's high exposure to physical climate risks and its economic ambition.

5.2 Why a CRSR is needed:

- Rising physical climate risks: Heatwaves, floods, cyclones and water stress are no longer exceptional events but recurring disruptors to production, logistics and labour availability—impacting economic continuity.
- Trade and finance drivers: Global moves toward stricter sustainability verification and border adjustments mean that a lack of credible resilience disclosure can translate into trade friction and a higher cost of capital.
- Preventing symbolic compliance: Current heterogeneous disclosures create scope for selective reporting (greenwashing). A resilience-centred governance approach would improve accountability and comparability.
- Inclusive growth imperative: Without a policy instrument that is practicable for MSMEs, sustainability obligations will unevenly affect firms and could widen capability gaps.

Interpretation: CRSR is a governance response that aligns disclosure with the realities of physical risk, market expectations, and social inclusion helping to safeguard economic growth from foreseeable climate shocks.

5.3 World examples (policy learning)

- European Union — Corporate Sustainability Reporting Directive (CSRD): Emphasises broad disclosure and is accelerating corporate transparency in Europe; it illustrates how regulation can shift market expectations.

- United Nations — SDG guidance & platforms: Shows how global norms create policy convergence and frame multi-stakeholder reporting expectations.
- National practice (illustrative): Countries such as Germany and Japan have integrated climate risk considerations into industrial policy and corporate guidance, demonstrating how resilience reporting can be paired with incentives and industrial modernisation.

Interpretation: International developments demonstrate that (a) regulation can catalyse transparency, (b) global norms shape trade and finance behaviour, and (c) pairing disclosure with industrial policy and incentives increases effectiveness.

5.4 What CRSR should have:

To remain policy-oriented (not an index), CRSR should comprise clear, practical building blocks:

- Double-materiality framing (policy principle): Require disclosures that address both (a) how businesses affect the environment and (b) how climate and environmental change affect business continuity and supply chains.
- Physical risk narrative and preparedness: Standardised, plain-language reporting on exposure to heat, flood, cyclone, drought risks and documented preparedness actions (contingency plans, alternative supply routes, workforce protections).
- Sectoral and spatial lens: Encourage cluster-level or sectoral statements that reflect local hazards (coastal, river basin, urban heat islands) rather than only firm-level metrics.
- Circular economy and resource efficiency commitments: Describe ongoing or planned actions on waste reduction, resource reuse, and material circularity (policy targets and practical measures).
- MSME appropriate pathways: Tiered disclosure templates (basic → intermediate → advanced) with low-cost digital reporting routes and capacity-building support so small firms can participate without undue burden.
- Digital Public Infrastructure (DPI) linkage: Use existing public digital platforms for streamlined reporting, data sharing and ease of verification.
- Transparency and third-party assurance: Promote scalable assurance models (e.g., desk reviews for smaller firms, phased

third-party verification for larger firms) to reduce greenwashing while maintaining feasibility.

- Policy alignment and incentives: Link reporting to industrial policy levers—preferential procurement, concessional finance, tax incentives for verified resilience investments.
- Stakeholder and labour dimensions: Include workforce health & safety under climate stress, community resilience measures, and plans for just transition of affected workers.
- International compatibility: Ensure narrative and disclosure structure map to global norms so that India's reporting speaks to export markets and investors.

Interpretation: These components are governance level features, descriptive, implementable and non-mathematical that together create a credible CRSR without requiring technical indexation.

5.5 How CRSR will help India become a developed nation

- Economic resilience and continuity: Firms that disclose and act on physical risks will be better prepared for disruptions, reducing production downtime and loss of output.
- Export competitiveness and market access: Credible resilience disclosures reduce trade frictions and help Indian goods meet buyer and regulatory expectations in important markets.
- Investment attraction: Transparent resilience planning lowers perceived sovereign and corporate risk, improving access to green capital and lowering borrowing costs.
- Innovation and green jobs: Emphasis on circularity and resource efficiency stimulates technological adoption and creates employment in green manufacturing and services.
- Inclusive industrialisation: MSME-friendly reporting pathways and incentives ensure small enterprises are part of the green transition, preserving livelihoods and broad-based growth.
- Policy coherence and delivery: CRSR provides policymakers with actionable information to target investments in infrastructure, disaster mitigation and sectoral support, making national development planning more evidence-based.

Interpretation: CRSR is a governance enabler: by making resilience visible and actionable, it aligns economic growth with climate security and social inclusion core attributes of a developed nation.

5.6 Synthesis and critical reflection

- The current BRSR framework gives India a solid foundation, but its emphasis on footprint over resilience leaves a practical governance gap.
- International developments (the CSRD and UN frameworks) show both the direction of travel and the commercial necessity of stronger, resilience-aware reporting.
- A non-technical, policy-oriented CRSR that emphasises narrative disclosure, MSME inclusion, DPI integration and linkages to industrial policy can close gaps without imposing onerous technical burdens.
- Implementation success will depend on phased rollout, stakeholder capacity building, clear incentives, and modular assurance mechanisms

6. RECOMMENDATION

Drawing from the revised results and discussion, the following policy-oriented recommendations are proposed to strengthen India's sustainability governance through a Climate-Resilient Sustainability Reporting (CRSR) approach.

6.1 Strengthen Climate Resilience within Existing Reporting Frameworks: Rather than creating an entirely new system, climate resilience elements should be systematically integrated into the existing BRSR framework under the Securities and Exchange Board of India.

- Mandatory disclosure of climate risk exposure (heat, flood, cyclone, water stress).
- Reporting on disaster preparedness and business continuity planning.
- Sector-specific guidance notes for vulnerable industries.

6.2 Adopt a Double-Materiality Perspective: India should formally adopt a "double-materiality" approach similar to evolving standards in the European Union, ensuring that companies disclose:

- Their environmental and social impact.
- The financial and operational risks posed by climate change.

This approach will enhance transparency and align Indian reporting practices with global trade expectations.

6.3 Develop MSME-Friendly Reporting Pathways: To avoid excluding smaller enterprises

- Introduce simplified, tier-based reporting templates.
- Provide digital reporting tools through public platforms.
- Offer training and awareness programs for MSMEs.
- Link compliance with financial incentives such as concessional green credit.

6.4 Align Reporting with Industrial and Export Policy

Climate-resilient sustainability reporting should be integrated with:

- Green manufacturing initiatives.
- Export promotion strategies.
- Circular economy missions.
- Infrastructure and disaster management planning.

This alignment will convert reporting from a compliance exercise into a strategic development instrument.

6.5 Encourage Transparency and Verification

To minimise greenwashing:

- Promote standardised disclosure formats.
- Encourage phased third-party verification.
- Improve public access to sustainability reports.

Transparent governance builds investor confidence and enhances India's credibility in global markets.

6.6 Institutional Coordination and Capacity Building

Effective implementation requires coordination among:

- Regulatory authorities
- Industrial ministries
- Environmental agencies
- Disaster management institutions

Cross-sectoral collaboration will ensure that sustainability reporting reflects actual climate risk preparedness rather than symbolic commitments.

7. CONCLUSION

India's aspiration to become a developed nation by 2047 under the vision of Viksit Bharat demands a development pathway that is economically strong, environmentally sustainable, and socially inclusive. The findings of this study indicate that while India has taken important steps through structured sustainability reporting under the Securities and Exchange Board of India, the current system remains primarily compliance-driven and insufficiently focused on climate resilience.

At the same time, global regulatory trends, particularly within the European Union, demonstrate that sustainability disclosure is rapidly becoming a determinant of trade competitiveness and investor trust. As climate risks intensify, industries cannot rely solely on footprint reduction; they must demonstrate preparedness, adaptability, and long-term resilience.

The study argues that a strengthened Climate-Resilient Sustainability Reporting (CRSR) framework, conceptual, inclusive, and policy-aligned, can serve as a transformative governance tool. By integrating climate risk disclosure, sectoral vulnerability assessment, MSME inclusion, and alignment with industrial strategy, India can:

- Enhance export competitiveness.
- Attract sustainable investment.
- Reduce production disruptions from climate events.
- Promote circular economy and green innovation.
- Ensure inclusive industrial growth.

Ultimately, sustainability governance should not be viewed as a regulatory obligation but as a strategic pillar of national development. Embedding climate resilience within sustainability reporting will enable India to transition from rapid growth to resilient growth, thereby securing its position as a globally competitive, climate-ready, and developed nation by 2047

8. REFERENCE

- European Commission. (2022). *Corporate sustainability reporting directive (CSRD)*. European Commission.
- Government of India. (2023). *Economic survey 2022–23*. Ministry of Finance. India Budget Portal
- Government of India. (2023). *Viksit Bharat @2047: Vision document*. NITI Aayog. NITI Aayog
- Intergovernmental Panel on Climate Change (IPCC). (2023). *Climate change 2023: Synthesis report*. IPCC
- Organisation for Economic Co-operation and Development (OECD). (2022). *Climate-resilient infrastructure: Policy perspectives*. OECD Publishing. OECD
- Securities and Exchange Board of India (SEBI). (2021). *Business responsibility and sustainability reporting by listed entities (BRSR)* (Circular No. SEBI/HO/CFD/CMD-2/P/CIR/2021/562). SEBI Official Website
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations. UN Sustainable Development Goals
- United Nations Environment Programme (UNEP). (2022). *Emissions gap report 2022*. UNEP. UNEP
- World Bank. (2022). *World development report 2022: Finance for an equitable recovery*. World Bank. World Bank
- World Economic Forum. (2023). *Global risks report 2023*. World Economic Forum. World Economic Forum