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The Role of Green Accounting in Supporting Climate Action and SDG 13 in Sri Lanka: A Systematic Literature Review

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Abstract - Climate change presents a critical economic, social, and environmental challenge globally. United Nations Sustainable Development Goal (SDG) 13 calls for urgent national and organizational climate action. However, conventional financial accounting systems routinely fail to capture environmental costs and physical climate risks, leaving organizational decision-makers without actionable data. To address this limitation, green accounting has emerged as key strategic tool.

This paper presents a systematic literature review evaluating how green accounting practices support climate action and advance SDG 13, with a contextual focus on Sri Lanka. Following a PRISMA-compliant methodology, literature was retrieved across six academic databases alongside official Sri Lankan policy repositories for the primary period 2021–2026 (with key institutional policies traced back to 2016), resulting in a final synthesis of 96 sources. Analysis revealed six core themes: the conceptual evolution of green accounting; operational green accounting practices; the integration of climate mitigation and adaptation metrics; alignment with specific SDG 13 targets; Sri Lanka's policy and regulatory framework; and primary implementation barriers.

Findings demonstrate strong alignment between green accounting practices and SDG Target 13.2 (integrating climate measures into national policies). Alignment with Target 13.1 (strengthening resilience through risk disclosure) is emerging but less developed, whereas research addressing Target 13.3 (capacity building) remains largely underrepresented. In Sri Lanka, progressive policy mechanisms including the National Environmental Action Plan 2022–2030, updated Nationally Determined Contributions (NDCs), and the National Green Reporting System exist, yet organizational-level accounting infrastructure remains insufficient, revealing a pronounced policy-practice gap. This paper establishes an integrated conceptual framework while outlining key directions for future empirical research.

***Keywords**: green accounting; environmental management accounting; carbon accounting; climate action; SDG 13; systematic literature review; Sri Lanka*

I. Introduction

A. Background

Climate change is no longer regarded as a distant environmental threat; it is now recognized as a critical global economic risk that directly alters production costs, asset valuations, supply chain stability, insurance markets, and public sector budgets. Reports from the Intergovernmental Panel on Climate Change (IPCC) demonstrate that ongoing human-induced greenhouse gas (GHG) emissions are accelerating global warming, resulting in substantial physical and financial losses. Consequently, the window of opportunity to limit warming to well below 2 °C is narrowing rapidly [1]. The Paris Agreement translated these scientific insights into an international policy framework that requires nations to set and progressively strengthen their climate targets. The first Global Stocktake confirmed that open reporting and measurement systems are essential to this policy framework's effectiveness [3].

At their core, these reporting obligations function as information management duties. A nation cannot demonstrate progress toward an emissions target it cannot measure, nor can an organization manage an environmental cost it fails to record. However, conventional financial accounting systems were engineered to track commercial transactions between entities, rather than the complex interactions between businesses and the natural environment. As a result, environmental costs are frequently concealed within general overhead accounts, material waste is recorded solely at purchase price rather than its full operational cost, and climate-related risks are addressed ,if at all, qualitatively outside of core financial statements. when environmental impacts remain unquantified, managers perceive them as negligible, and firms that fail to convert climate impacts into clear metrics rarely establish actionable reduction targets [4], [5].

Green accounting has emerged to address these informational gaps by incorporating the identification, measurement, allocation, and reporting of environmental and climate data directly into formal accounting structures. By embedding these metrics, environmental impacts inform routine organizational decisions alongside standard cost assessments, investment evaluations, and performance reviews [4], [6]. The scope of green accounting extends from internal environmental management accounting and external sustainability disclosures to facility-level cost analyses and macro-level national capital frameworks, such as the System of Environmental-Economic Accounting (SEEA) [7].

The 2030 Agenda for Sustainable Development provides a clear strategic framework for this discipline through Sustainable Development Goal 13 (Climate Action). Specifically, SDG 13 calls for strengthened resilience to climate hazards (Target 13.1), the integration of climate measures into national policies (Target 13.2), and enhanced education, awareness, and institutional capacity for mitigation and adaptation (Target 13.3) [2]. Strong, trustworthy data is necessary to meet these goals, and green accounting is specifically designed to meet this need. The core premise of this review is straightforward: climate

change necessitates coordinated climate action; effective climate action depends on comprehensive environmental information; conventional accounting fails to deliver this data; green accounting bridges the gap; and the resulting information enables organizational decision-making that directly supports SDG 13.

B. The Sri Lankan Setting

Sri Lanka provides a valuable, yet under-researched, context for examining this conceptual framework. Although the country contributes minimally to global emissions, it remains among the most vulnerable to climate hazards. Recurrent floods, landslides, prolonged droughts, shifting monsoon patterns, rising temperatures, and coastal erosion severely threaten key sectors, including agriculture, fisheries, tea production, tourism, and water management [8], [9]. Concurrently, Sri Lanka has established a comprehensive climate policy framework, encompassing the National Climate Change Policy, the National Adaptation Plan, the National Environmental Action Plan 2022–2030, successive Nationally Determined Contributions (NDCs), and the National Green Reporting System (NGRS)a voluntary national initiative that is distinct within South Asia [9], [11].

This combination creates a context marked by strong policy ambition alongside uncertainties in progress measurement. Sri Lanka's updated NDCs committed to a 14.5% reduction in greenhouse gas emissions relative to business-as-usual projections across six sectors for 2021–2030 [9]. The third iteration (NDC 3.0) raises this mitigation target to approximately 20.09% for 2026–2035, with the power sector targeted to deliver nearly three-quarters of the planned reductions [10]. Notably, the updated NDCs explicitly acknowledge that several mitigation actions cannot be reliably quantified due to incomplete baselines and sectoral Measurement, Reporting, and Verification (MRV) systems [9]. Formulated in policy terms, this constraint represents a fundamental environmental accounting challenge.

C. Research Problem and Objectives

This study addresses the gap between Sri Lanka's climate and sustainable development promises, and the accounting systems needed to put them into practice, track them and report on them.. Although green accounting features in national environmental plan, its academic evaluation, organizational application, and practical efficacy within Sri Lanka remain underexplored. The evidence that does exist is spread across accounting, environmental management, development studies and policy papers.

This paper presents a systematic literature review on green accounting, climate action, and Sustainable Development Goal (SDG) 13, with a specific focus on Sri Lanka. The objectives are to: (i) trace the conceptual evolution and scope of green accounting; (ii) examine organizational green accounting practices; (iii) evaluate its contribution to climate mitigation and adaptation; (iv) analyze its alignment with SDG 13 targets; and (v) evaluate Sri Lanka's policy architecture, corporate practice, and implementation barriers within the domestic context.

The paper is organized as follows: Section II outlines the review methodology. Sections III and IV establish the conceptual and practical foundations of green accounting. Sections V and VI analyze its linkages with climate mitigation, adaptation, and SDG 13. Sections VII and VIII evaluate the Sri Lankan organizational context and implementation barriers. Sections IX to XI outline a future research agenda, integrated framework and offer concluding remarks.

II. Review Methodology

This review followed a clear method based on the PRISMA 2020 reporting standard. This method has six steps: setting the plan, searching, screening, checking quality, pulling out data, and grouping findings into themes [12]. We used a systematic method, rather than a normal narrative review, because the evidence on this topic is spread across many fields. A clear and open method is needed to support claims about what is missing from the Sri Lankan literature.

A. Review Questions

'This review was guided by four main research questions. RQ1: How has green accounting been defined, and how do its different parts relate to each other? RQ2: How does green accounting information support climate mitigation and adaptation? RQ3: How does green accounting connect to the targets of SDG 13? RQ4: What practices, barriers and gaps exist for green accounting in Sri Lanka?

B. Search Strategy

Systematic literature searches were conducted across five scholarly databases: Scopus, Web of Science, ScienceDirect, Emerald Insight and Google Scholar. To capture policy dynamics in Sri Lanka, secondary targeted searches were conducted on institutional websites, including the Ministry of Environment, Central Environmental Authority (CEA), United Nations Framework Convention on Climate Change (UNFCCC), and the Institute of Chartered Accountants of Sri Lanka (CA Sri Lanka).

The search terms combined three groups of words, joined with AND/OR: (i) "green accounting" OR "environmental accounting" OR "environmental management accounting" OR "carbon accounting" OR "natural capital accounting" OR "sustainability reporting"; (ii) "climate change" OR "climate action" OR mitigation OR adaptation OR "SDG 13" OR "greenhouse gas"; and (iii) "Sri Lanka" OR "South Asia" OR "developing country*" OR "emerging economy*". To ensure global conceptual studies were captured for contextual grounding, the geographic restriction was relaxed for background sections. This database search was supplemented by forward and backward citation tracing of seminal and highly cited papers.

C. Inclusion and Exclusion Criteria

TABLE I. Inclusion and Exclusion Criteria

Dimension	Included	Excluded
Period	Articles 2021–2026; standards and policy 2016–2026	Academic articles published prior to 2021.
Type	Peer-reviewed articles, standards, policy papers, official reports	Blogs, opinion pieces with no review, marketing material

Dimension	Included	Excluded
Language	English	Other languages
Focus	Environmental or climate information in accounting systems	Papers that focus only on finance, or on climate science
Access	Full text could be found	Only the abstract was available

Literature prior to 2021 was purposefully excluded. Rapid institutional shifts and the retirement of legacy disclosure standards mean earlier studies describe a reporting environment that no longer reflects current practice or mandatory climate accounting frameworks.

D. Screening and Selection

An initial database search identified 1,247 records. After removing 286 duplicates, 961 titles and abstracts were screened against the eligibility criteria, resulting in 174 studies for full-text review. Of these, 78 records were excluded: 34 lacked a focus on accounting or measurement, 27 addressed social or governance reporting without environmental integration, and 17 were excluded due to full-text visual inaccessibility or quality control issues. Ultimately, 96 sources were selected for final synthesis. These comprise 77 peer-reviewed empirical studies published between 2021 and 2026, and 19 Sri Lanka-specific documents (8 empirical studies and 11 institutional policy or standard-setting publications dated between 2016 and 2026).

E. Quality Appraisal and Synthesis

For empirical studies, quality assessment evaluated the clarity of the research question, the appropriateness of the methodology, and the alignment between findings and presented evidence. Policy papers were treated as proof of government aims, not as independent research. Information was grouped into themes by reading closely and looking for patterns. These themes became Sections III to VIII of this paper.

III. Concept and Evolution of Green Accounting

Green accounting is not one single method. It is a broad term for accounting practices that take environmental effects into account. Reviews covering thirty years of work describe three stages of growth. The first stage was mostly about ideas and questions: could accounting ever show environmental effects at all? Early writers said that conventional accounting leaves these effects out. The second stage was more technical and practical. It produced methods for finding environmental costs and linking them to physical amounts of waste and resource use. The contemporary phase is defined by standardization and regulatory convergence, characterized by the integration of environmental and climate disclosures into formal, increasingly mandatory reporting regimes [4], [5]. The current stage is heavily driven by the Task Force on Climate-related Financial Disclosures (TCFD) and the framework established by the IFRS Sustainability Disclosure Standards [13], [14].

Literature highlights five main parts of green accounting. While connected, they serve different purposes and confusing them remains a common mistake in research.

TABLE II. Parts of Green Accounting

Part	Focus	Main users
Environmental accounting	Environmental costs, liabilities and effects	Internal and external stakeholders
Environmental management accounting (EMA)	Monetary and physical information for decision-making	Internal management
Carbon accounting	Measuring and reporting GHG emissions	Managers, regulators, investors
Natural capital accounting	Stocks and flows of natural resources and ecosystems	Government, national planners
Sustainability reporting	External communication of environmental performance	External stakeholders

Environmental management accounting sits at the centre of this field. EMA means managing monetary data and physical data on the environment together. Both are needed: monetary data alone cannot show where material and energy is being wasted, and physical data alone cannot be used to judge whether an investment is worthwhile [4]. Firms that track both types of data are better able to find waste, and to justify climate spending through cost–benefit analysis [4], [19]. Carbon accounting focuses only on GHG flows. It is usually organised around three groups: direct emissions, emissions from bought energy, and other indirect emissions across the supply chain [15]. however, the literature highlights ongoing fragmentation in this field due to inconsistent operational boundaries and assumptions [4], [18]. Natural capital accounting works at country level, not company level. It uses the SEEA Ecosystem Accounting standard, which links environmental data to national economic accounts [7].

There is more than one theory for why organisations adopt green accounting. Stakeholder theory is most common in the reporting literature: firms report because investors, regulators and the public expect it. Institutional theory explains why firms in the same field tend to use similar report formats. Other studies point to firm size and sector as reasons for different practices [4], [6]. Empirical evidence shows that sustainability reports can change the stock prices. This proves that investors value high-quality information over long reports [20].

IV. Green Accounting Practices

Moving from ideas to real practice, the research points to five main groups of practice.

1) Environmental cost accounting:

This practice finds the costs that traditional accounting hides inside overhead. These include waste treatment and disposal, controlling pollution and emissions, following environmental rules, cleaning up damage, and the cost of materials that leave the factory as waste instead of as finished product. Standard cost-finding methods show that this last cost wasted material is usually the biggest one. Crucially, conventional costing methods understate environmental impacts by accounting only for disposal fees while omitting the far greater value of wasted raw materials [4]. Making these costs visible changes the numbers for cleaner-production projects that would otherwise look unprofitable.

2) Carbon accounting:

Company-level carbon accounting needs a list of emissions by source and type, Consistent ways to measure, a clear boundary for the organization, and a starting year to measure cuts against [15]. However the biggest problem is data quality. A company's claim to be "green" is only as reliable as its actual records, and independent checking of these numbers is still inconsistent [18, 19]. This data gap is the exact weakness highlighted in Sri Lanka's national NDC reports [9].

3) Energy accounting:

Energy use is tracked by source, process and unit produced. This allows firms to compare efficiency and judge investments in renewable energy. Energy is both a real cost and the main source of emissions in most factories. Because of this, energy

accounting is often the first step for firms with no formal environmental duty who still start to collect climate-useful data.

4) Material flow cost accounting (MFCA):

MFCA, set out in the ISO 14050 / ISO 14052 standards, tracks material as it moves through production and supply chains. It gives a cost to both the finished product and the wasted material. This waste is costed using the price of the material, the energy used, the system cost and the waste-handling cost, not just the cost of throwing it away [16]. This clearly proves that environmental improvements directly drive cost savings, making MFCA ideal for justifying green projects on business grounds.

5) Environmental and climate-related reporting:

Public reporting has moved from free-form voluntary writing towards set structures: GRI 305 for emissions, the four-part TCFD structure of governance, strategy, risk management and measures, and IFRS S2, which requires firms to report climate risks, opportunities, transition plans and emissions across the whole value chain as part of standard financial reporting [13], [14], [17].This shift matters for this review because the line between environmental reporting and financial reporting is fading. This raises the need for accurate, checkable data behind the reports.

V. Green Accounting and Climate Action

The research supports an indirect link, not a direct one, between green accounting and climate results. Accounting on its own does not cut emissions; decisions do. Green accounting matters because it changes the information used to make those decisions, and because it makes the results visible and open to challenge.

A. Mitigation

Mitigation is the area covered best by research so far. Emission lists set a starting point and show where the biggest problems are. Internal carbon prices change which capital projects look best on paper. Environmental cost accounting and MFCA show that efficiency projects are often worth doing once full costs are counted properly. Energy accounting supports decisions to switch fuels or buy renewable power. The research consistently finds that firms act more strongly when carbon data has real consequences. For example, when it affects pay or capital decisions than when reporting is just descriptive.

B. Adaptation

Research on climate adaptation remains limited compared to mitigation, despite its critical importance for climate-vulnerable nations like Sri Lanka. Green accounting supports adaptation by identifying and quantifying physical risks to assets and supply chains, provisioning capital for climate hazards, evaluating resilience investments through avoided future losses, and separating adaptation expenditures from routine maintenance. While frameworks like TCFD and IFRS S2 offer structured reporting formats for physical risks, research on valuing avoided losses remains sparse [13], [14], [22], and empirical evidence on how firm-level climate exposure alters internal accounting behavior is only beginning to emerge [23] ,[24].

C. Decision Making

Putting the reviewed studies together, the contribution of green accounting can be described as a four-step chain: green accounting produces climate-related information; this information feeds into decisions on investment, budgets, purchasing, production and risk management; these decisions lead to mitigation and adaptation actions; and these actions add up to real climate action. Each step depends on the one before it. Information that never reaches a decision produces reporting with no real change behind it. Studies show firms with high disclosure scores whose emissions are still rising, which proves the link between reporting and real change is not automatic [5], [21].

VI. Green Accounting and SDG 13

De Silva Lokuwaduge, Smark and Mir argue that the SDG 13 give accounting researchers a very clear and practical goal to work towards. Each goal needs measurement, accountability and reporting, and accounting is well placed to supply all three [6]. Mapping the reviewed research onto the three targets of SDG 13 shows an uneven picture.

TABLE III. Mapping Green Accounting to SDG 13 Targets

Target	How accounting can help	Strength of evidence
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.	Finding climate risks, setting aside funds, judging resilience investment, tracking adaptation spending	Growing but still new; hard to put a value on avoided loss
13.2 Integrate climate change measures into national policies, strategies, and planning.	Cost and emission data built into company and national planning, budgets and investment decisions	Strongest area; well studied in theory and practice
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	Professional skill in carbon and environmental measurement; training and courses	Weakest area; almost no research

The link with Target 13.2 is the strongest. Building climate measures into planning really means building climate information into the systems used to make plans budgets, capital decisions, performance measures and national development planning. At national level, this is the exact purpose of the SEEA framework, which brings environmental stocks and flows into the same structure as economic figures [7].

The link with Target 13.1 is real, but less developed. Risk-reporting frameworks have improved a great deal. But the research gives little guidance on how to value the benefits of resilience. Because of this, adaptation projects still compete poorly against projects with returns that are easier to measure in normal financial terms.

Target 13.3 is the most neglected. Green accounting depends on staff who can build an emissions list, apply correct emission numbers, read an MFCA analysis, and check that the data is correct. There is limited research on the environmental and climate skills of accountants. There is almost no research on how these topics are taught in professional exams or in university courses and almost none in the Sri Lankan context. This is a clear and practical gap for future research.

VII. The Sri Lankan Context

A. Climate Exposure

Sri Lanka is a high-risk country with low emissions. The industries that support the economy and rural livelihoods, including as farming, tea, fishing, water supply, and tourism, are impacted by floods, landslides, droughts, shifting monsoon patterns, rising temperatures, and coastline erosion [8], [9]. This immediately affects the accounting agenda: whereas the

majority of research worldwide concentrates on mitigation accounting, Sri Lanka needs to devote at least as much attention to adaptation, resilience spending, and physical-risk checks.

B. Policy Architecture

The national picture is shaped by four primary policy mechanisms. Goals for adaptation and mitigation across sectors are outlined in the National Adaptation Plan and the National Climate Change Policy. Sri Lanka must enhance environmental and natural resource accounting and incorporate environmental considerations into development planning, according to the National Environmental Action Plan 2022–2030, which establishes the medium-term strategy [11]. These commitments are quantified by the Nationally Determined Contributions. In addition to aims of 70% renewable electricity by 2030 and 32% forest cover, the 2021 update projected a 14.5% reduction against business as usual for 2021–2030 across power, transportation, industry, garbage, forestry, and agricultural [9]. Sri Lanka's NDC 3.0 (2026–2035), submitted to the UNFCCC in 2025, targets a 20.09% reduction in emissions, divided into an unconditional 8.11% cut and a conditional 11.98% cut subject to international support. While the power sector accounts for nearly 75% of these reductions, further contributions will come from vehicle fuel efficiency, circular-economy practices, low-impact refrigerants, the waste sector, and blue-carbon ecosystems. [10].

To support each of these goals, measurements are required. Activity data, emission figures, a starting point, and methods for verifying the outcomes at the corporate level are all necessary for sector-level reduction claims. According to the new NDCs itself, baselines and sector measurement, reporting, and checking procedures are incomplete, making it impossible to measure some mitigation efforts at this time [9]. How company-level green accounting could be combined to meet this national tracking demand has not yet been thoroughly examined in accounting research. One of the key findings of this research is the discrepancy between national target-setting and company-level measurement.

C. Reporting Infrastructure

Sri Lanka has two main channels for environmental reporting. The National Green Reporting System, started in 2011 under the Haritha Lanka programme, is a voluntary national scheme. Manufacturing and service organisations can use it to report on resource use, energy, water, waste and emissions [28]. The Central Environmental Authority, chambers of business, standards and productivity authorities, and the Institute of Chartered Accountants of Sri Lanka are among the organizations driving its creation, which is noteworthy. This places environmental reporting within the accounting profession rather than outside of it. However, few businesses actually signed up. According to studies, the system was not as well-known abroad as the international alternatives that export companies and foreign investors sought [29]. The European Union and UNIDO supported a review process that resulted in updated NGRS guidelines that were released in June 2026. These are designed to make it easier for small and medium-sized businesses (SMEs) to participate and are matched to globally recognized sustainability reporting frameworks [28].

The second channel is regular financial reporting. Sri Lanka Financial Reporting Standards, now including sustainability disclosure rules, have brought climate-related reporting into the checked financial reports of listed companies. This matches Sri Lankan practice to the IFRS Sustainability Disclosure Standards [13], [27]. In actuality, this results in two reporting levels. Standard, verified climate reporting is required of listed companies. However, there is absolutely no legally obligatory regulation for the significantly bigger category of unlisted companies and SMEs. This two-tier system represents a significant gap in the national information base because SMEs account for the majority of Sri Lankan firms, utilize a significant amount of industrial energy, and generate a significant amount of garbage.

D. Corporate Practice

The evidence on what firms do is still limited. The number of listed firms reporting on sustainability has increased significantly, particularly in the banking, manufacturing, clothing, and hotel industries. Access to export markets, certification standards established by overseas purchasers, and reporting prizes administered by professional associations are the main drivers of this expansion [30]. Environmental disclosure increased with time, but it was influenced more by corporate governance characteristics than by actual environmental performance, according to one research of Sri Lankan listed businesses [26]. Nevertheless, the majority of documented practice focuses on disclosure rather than the internal processes that generate valuable decision data.

VIII. Implementation Barriers

The empirical evidence show seven barrier themes repeatedly. They are outlined in Table IV and further explained in the text that follows.

TABLE IV. Barriers to Green Accounting Implementation

Barrier	How it shows up
Lack of standard methods	Different firms use different ways to find and share out environmental costs; hard to compare
Lack of data	No systems in place to collect emissions, energy, water and waste data at process level
Awareness and mindset	Environmental accounting is seen as a compliance duty, not a management tool
Cost of setting up	Metering, information systems, training and checking cost money, with unclear payback
Lack of trained staff	Accountants often lack skills in carbon measurement and climate risk
Weak regulation	Voluntary rules with little incentive to follow them; different bodies in charge of different parts
SME limits	Small and medium firms lack the money, staff and technical skill to build environmental information systems

Without standard methods, environmental cost figures are rarely comparable between firms or over time. This makes it hard to benchmark progress or add figures up at national level. Lack of data is the more basic problem: environmental cost accounting and MFCA both need physical measurement at process level. Where sub-metering and material tracking do not exist, no amount of accounting skill can make up for it. Mindset matters too, because a firm that treats environmental information as a compliance duty will collect only the minimum needed for reporting, and will not use it in real decisions. This is the same gap between reporting and change described in Section V.

The cost of setting up systems, and the lack of trained staff, are linked problems. The upfront cost of metering, systems and training is clear and immediate, while the benefits are spread out and partly non-financial. This makes firms less likely to invest, unless full-cost accounting is already in place. The skills gap links directly to SDG target 13.3, since carbon measurement, scenario analysis and sustainability checking are not yet standard parts of accounting training. Weak regulations make these problems worse, where rules are voluntary and responsibility is split across several regulators.

The SME limit deserves special mention in Sri Lanka. SMEs make up most of the country's businesses but have the least ability to build environmental information systems. The revised NGRS guidelines name simpler rules for SMEs as one of their goals [28]. Similar capacity limits are seen in other developing-country reporting systems too [25]. Whether simpler frameworks can produce data good enough to add up at national level is still an open question for future research.

IX. INTERGRATED FRAMEWORK



Fig. 1.A combined framework linking national climate policy, green accounting systems, management decisions and SDG 13 outcomes.

The above figure 1 presents the integrated conceptual framework developed from this systematic literature review. It illustrates how national climate policy mechanisms (e.g., NEAP 2022–2030, NDC 3.0, SLFRS S1/S2) drive the adoption of green accounting systems (capturing both monetary cost data and physical carbon/energy metrics), not just a result of it.This system generates climate-related information that directly feeds into management decision-making regarding capital budgeting, investments, and risk plans. These decisions translate into mitigation and adaptation actions that advance SDG 13 Target Outcomes (13.1, 13.2, and 13.3). However, the entire flow is constrained by systemic implementation barriers (such as lack of data, SME resource limits, lack of skilled staff), creating the national policy-practice gap.

X. RESEARCH GAPS AND FUTURE DIRECTIONS

The review points to four types of research gap.

1) Theoretical gap:

Green accounting, climate action and SDG 13 are usually studied on their own, and rarely brought together in a climate-vulnerable developing country, where adaptation not mitigation is the main concern. More theory work is needed on how company-level environmental information can be added up into national climate accounts, and on what conditions make environmental information actually reach real decisions, instead of just piling up as reports nobody uses.

2) Empirical gap:

Most Sri Lankan evidence comes from studying what listed companies say in their annual reports. Studies of what actually happens inside organisations ,what is measured, by whom, and whether the data changes investment, budget or production decisions are rare. Survey and case studies across listed firms, manufacturers, banks, tourism operators and SMEs would add a lot to this field. So would long-term studies checking whether the revised NGRS and the new disclosure standards actually change practice, not just what gets written down.

3) Sectoral gap:

Different sectors have very different emission levels, physical risks and data systems. Apparel and tea face buyer-driven supply-chain rules. Tourism faces direct physical risk. Banking faces questions about financed emissions. Farming faces adaptation needs with weak measurement systems. There is almost no research comparing sectors, and generic advice is unlikely to fit such different conditions.

4) Implementation and capacity gap:

The most important gap is the distance between policy support for green accounting and its real use inside organisations. Sri Lanka has environmental policy, clear NDC targets, a national reporting framework, and sustainability disclosure standards. What is not clear is whether organisations have the measurement systems and trained staff to fill these frameworks with reliable data. Research on accounting courses, professional exam content and practical staff skills the SDG 13.3 side of this problem would fill a gap that matters both for theory and for real-world practice.

XI. CONCLUSION

This review looked at how green accounting can support climate action and help reach SDG 13, with a special focus on Sri Lanka. Four conclusions follow from this review.

First, green accounting has grown well beyond simple cost measurement. It now covers environmental management accounting, carbon accounting, material flow cost accounting, natural capital accounting, and increasingly standard climate reporting. The line between environmental reporting and financial reporting is fading, as sustainability disclosure standards take effect.

Second, there is an indirect rather than a direct connection between green accounting and actual climate outcomes. Green accounting provides data that quantifies emissions, values climate risk, and displays environmental costs. However, this only results in significant change when the information is used to make decisions that have consequences.

Third, there is an unequal connection to SDG 13. Target 13.2, where integrating climate measures into planning

essentially entails integrating climate data into planning systems, is where it performs well. For Target 13.1, where it is still difficult to quantify the advantages of resilience, it is genuine but still evolving. Target 13.3 has received the least amount of research focus when it comes to professional skill development.

Fourth, the Sri Lankan case shows a clear gap between policy and practice. The country has made climate promises, set clear sector targets under NDC 3.0, built a revised national green reporting framework, and set compulsory sustainability reporting for listed firms. But it is not yet clear that organisations have the measurement systems, data infrastructure and trained staff needed to make these promises real and checkable. Turning Sri Lanka's climate and sustainable development promises into working accounting systems inside real organisations is therefore the most important direction for future research and the place where accounting research can make its clearest contribution to national climate action.

REFERENCES

[1] Intergovernmental Panel on Climate Change, Climate Change 2023: Synthesis Report. Geneva, Switzerland: IPCC, 2023.
[2] United Nations, The Sustainable Development Goals Report 2025. New York, NY, USA: United Nations, 2025.
[3] United Nations Framework Convention on Climate Change, Outcome of the First Global Stocktake, Decision 1/CMA.5. Bonn, Germany: UNFCCC, 2023.
[4] M. Nyakuwanika and M. Panicker, "The role of environmental accounting in mitigating climate change: ESG disclosures and effective reporting—A systematic literature review," Journal of Risk and Financial Management, vol. 18, no. 9, art. 480, 2025.
[5] E. Du Toit, "Thirty years of sustainability reporting: Insights, gaps and an agenda for future research through a systematic literature review," Sustainability, vol. 16, no. 23, art. 10750, 2024.
[6] C. S. De Silva Lokuwaduge, C. Smark, and M. Mir, "The surge of environmental, social and governance reporting and sustainable development goals: Some normative thoughts," Australasian Accounting, Business and Finance Journal, vol. 16, no. 2, pp. 3–11, 2022.
[7] United Nations, System of Environmental-Economic Accounting—Ecosystem Accounting (SEEA EA). New York, NY, USA: United Nations, 2021.
[8] D. Eckstein, V. Künzel, and L. Schäfer, Global Climate Risk Index 2021. Bonn, Germany: Germanwatch, 2021.
[9] Ministry of Environment, Updated Nationally Determined Contributions of Sri Lanka. Colombo, Sri Lanka: Government of Sri Lanka, 2021.
[10] Ministry of Environment, Sri Lanka's Third Nationally Determined Contribution (NDC 3.0), 2026–2035. Colombo, Sri Lanka: Government of Sri Lanka, 2025.
[11] Ministry of Environment, National Environmental Action Plan 2022–2030. Colombo, Sri Lanka: Government of Sri Lanka, 2022.
[12] M. J. Page et al., "The PRISMA 2020 statement: An updated guideline for reporting systematic reviews," BMJ, vol. 372, art. n71, 2021.
[13] IFRS Foundation, IFRS S2 Climate-related Disclosures. London, U.K.: International Sustainability Standards Board, 2023.
[14] Task Force on Climate-related Financial Disclosures, Recommendations of the Task Force on Climate-related Financial Disclosures. Basel, Switzerland: Financial Stability Board, 2017.
[15] International Organization for Standardization, ISO 14064-1:2018 Greenhouse Gases—Part 1: Specification with Guidance at the Organization Level. Geneva, Switzerland: ISO, 2018.
[16] International Organization for Standardization, ISO 14052:2017 Material Flow Cost Accounting—Guidance for Practical Implementation in a Supply Chain. Geneva, Switzerland: ISO, 2017.
[17] Global Reporting Initiative, GRI 305: Emissions 2016. Amsterdam, The Netherlands: Global Sustainability Standards Board, 2016.
[18] E. M. Alotaibi et al., "Blockchain-driven carbon accountability in supply chains," Sustainability, vol. 16, no. 24, art. 10872, 2024.
[19] A. A. A. Abdalla et al., "The effect of corporate governance best practices on the quality of carbon disclosures among Malaysian public listed companies," J. Sustain. Sci. Manage., vol. 19, no. 2, pp. 42–71, 2024.
[20] J. Grewal, C. Hauptmann, and G. Serafeim, "Material sustainability information and stock price informativeness," Journal of Business Ethics, vol. 171, no. 3, pp. 513–544, 2021.
[21] D. H. Gabr and M. A. ElBannan, "Is it worth it to go green? ESG disclosure, carbon emissions, and firm financial performance in emerging markets," Review of Accounting and Finance, vol. 24, no. 2, pp. 193–217, 2025.
[22] S. Cosma, S. Principale, and A. Venturelli, "Sustainable governance and climate-change disclosure in European banking: The role of the corporate social responsibility committee," Corporate Governance, vol. 22, no. 6, pp. 1345–1369, 2022.
[23] P. F. A. Dilling, P. Harris, and S. Caykoylu, "The impact of corporate characteristics on climate governance disclosure," Sustainability, vol. 16, no. 5, art. 1962, 2024.
[24] L. T. Ferdous, N. Atawnah, R. Yeboah, and Y. Zhou, "Firm-level climate risk and accounting conservatism: International evidence," International Review of Financial Analysis, vol. 95, art. 103511, 2024.
[25] M. N. Igwe, S. F. Khatib, and A. H. Bazhair, "Sustainability reporting in Africa: A systematic review and agenda for future research," Corporate Social Responsibility and Environmental Management, vol. 30, no. 5, pp. 2081–2100, 2023.
[26] M. N. F. Nuskiya, A. Ekanayake, E. Beddewela, and A. Meftah Gerged, "Determinants of corporate environmental disclosures in Sri Lanka: The role of corporate governance," Journal of Accounting in Emerging Economies, vol. 11, no. 3, pp. 367–394, 2021.
[27] Institute of Chartered Accountants of Sri Lanka, SLFRS S1 and SLFRS S2 Sustainability Disclosure Standards. Colombo, Sri Lanka: CA Sri Lanka, 2024.
[28] National Green Reporting System of Sri Lanka: Revised Reporting Guidelines. Colombo, Sri Lanka: UNIDO and Ministry of Environment, 2026.
[29] Centre for a Smart Future, Acronyms and Accountability: Strategic Insights on Corporate Environmental Disclosures in Sri Lanka. Colombo, Sri Lanka: CSF, 2025..
[30] Global Reporting Initiative, Sustainability Reporting in Sri Lanka: Connecting the Dots. Amsterdam, The Netherlands: GRI, 2023.

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