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# Environmental Accounting and Reporting Practices in Bangladesh: Evidence from Cement, Ceramic, IT, and the Jute Industries

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## ABSTRACT

***Purpose:*** *Bangladesh is a coastal country that is especially at risk from global warming and climate change. One proactive approach to managing climate risk is for companies to include environmental accounting and reporting procedures in their yearly reports. This research aims to assess the degree and scope of environmental accounting and reporting practices among Dhaka Stock Exchange (DSE)-listed Companies in the Cement, Ceramic, IT, and Jute industries.*

***Materials and Methods:*** *The researchers developed the Environmental Accounting and Reporting Practices Index (EARPI) for four selected industries: the Cement and Ceramic Industry (EARPICCI), the IT Sector (EARPIITS), and the Jute Industry (EARPIJI), based on extant literature, international initiatives, legal frameworks, and global standards. The researcher manually put together the data set from the corporate annual reports of the chosen organizations using content and subject analysis.*

***Findings:*** *In this research, we looked at every company listed on the DSE that was involved in the cement and ceramic, IT, and jute industries. The study's findings demonstrated the very subpar and non-numerical EAR procedures of the chosen businesses. In addition, nine companies' annual reports did not refer to environmental concerns. Additionally, the annual reports of the two companies are not available on their websites. The 15 companies that addressed environmental issues in their annual reports differed significantly from one another. Rather than acknowledging environmental reporting and accounting as an independent chapter, this analysis indicates that the environmental concerns included in the annual report come under several different titles. Since there is no legal need, businesses in Bangladesh choose to use environmental accounting and reporting systems voluntarily.*

***Implications:*** *The findings of the study called for establishing a compulsory regularity framework regarding EAR practices in Bangladesh.*

***Novelty/originality:*** *This research, based on pre-developed indices, is the first effort to examine EAR practices in the annual reports of all corporations within the Cement, Ceramic, IT, and Jute industries.*

***Keywords:*** *Environmental accounting, environmental reporting, environmental legal framework, environmental sustainability.*

## 1. Introduction

### *1.1. Climate Change and Bangladesh*

Bangladesh is probably among the nation's most at risk from climate change worldwide. Bangladesh is constantly experiencing the effects of climate change, including backwater, coastline erosion, storm surges, and tropical cyclones. Furthermore, a study of 119 years' worth of cyclone data shows that climate change is to blame for the increasing cyclone frequency that Bangladesh is now experiencing in the Bay of Bengal, which is located south of the country. It has been noted recently that climate change has grown to be a significant problem impacting the agricultural industry. Climate change's effects on agriculture are a worldwide issue, but for Bangladesh, where agriculture is the foundation of lives and livelihoods, it is becoming a danger to the country's food security. This assumption is based on the fact that crop agriculture is the main driver of the national economy. One of the world's biggest deltas, Bangladesh is particularly susceptible to natural disasters due to its geographic position, low-lying, flat terrain, population density, poverty, illiteracy, lack of institutional structure, and other factors.

To put it another way, Bangladesh's physical, social, and economic circumstances are rather typical of any of the world's most disaster-prone nations. Furthermore, the country's general economic development situation has been further exacerbated by the negative effects of climate change, including high temperatures, sea level rise, cyclones and storm surges, salinity intrusion, heavy monsoon rainfall, etc. With two-thirds of the population working in agriculture or agro-based industries, Bangladesh is primarily an agricultural country. Due to the effects of climate change and global warming, Bangladesh sees a variety of natural disasters almost annually, including floods and flash floods, which may affect about 80% of the country's land. Cyclones and Storm Surges: Tropical Cyclones have impacted the country's south and southeast in recent years; Salinity Intrusion: The entire coastal belt along the Bay of Bengal is plagued by a salinity problem, and Extreme Temperature and Drought: The country's north and northwestern regions are suffering due to the problem of extreme temperatures [1].

### *1.2. Accounting for the Environment*

Environmental accounting refers to providing information about environmental performance to stakeholders both within

and outside of a business. An essential tool for comprehending how the natural environment affects the economy is environmental accounting. Data from environmental accounting shows the expenses associated with pollution and resource degradation, as well as the value of natural resources for economic well-being [2]. Businesses, governments, public politicians, investors, unions, environmentalists, and others have shown a noticeable renewed interest in the fields of corporate social responsibility and social and environmental accounting recently. Humans and the natural environment have long had a complicated connection. The natural world is both a part of and apart from humans. Although the majority of scientists believe that humans originated from animals via natural selection, we are progressively modifying and creating the natural world through the use of manipulative technology [3]. In this way, we are both participants and spectators, within and beyond the conventional natural world. As a result, we can observe and document the environment as well as our influence on it, in addition to forming and shaping it [4]. These days, the majorities of businesses is dealing with environmental problems and are looking for a suitable method to report and share the information with the public. One of the most significant issues facing modern human civilization is environmental degradation. As a result, using environmental accounting is crucial to save the environment. Teams comprising system designers, chemists, engineers, production managers, operators, and workers, are buying circle members, and accountants—some of whom may have never collaborated before—must collaborate for environmental accounting [5].

### *1.3. Environmental Impact of Cement, Ceramic, IT, and Jute Industries*

From the raw materials to the final product, the production methods of ceramic tiles create a number of environmental risks for both the planet and people. It has been determined from the literature that the production of ceramic tiles releases a certain quantity of dangerous and damaging gases into the atmosphere. An individual ceramic factory has been shown to create 15.89 kg $CO_2$-eq per square meter of ceramic tiles, resulting in the depletion of the ozone layer ($1.14 \times 10^{-5}$kg CFC 11-eq). In addition, industrial facilities produce airborne particles that are ultrafine and Nano sized, which have an impact on humans. As a result, it has been determined that the ceramic industries pose serious environmental risks [6]. Additionally, one of the world's biggest environmental challenges is thought to be climate change. Companies that make cement can now create larger quantities than they could in the past because of technological advancements. But the increased output levels have also been widely cited as the primary source of pollution. Due to resource depletion, energy consumption, and trash production, the building sector is one of the main causes of environmental degradation. One of the main causes of climate change and global warming is emissions from the cement industry. However, the cement industry uses a lot of energy and produces a lot of noise, smells, and pollutants. It is a significant source of pollutants, including particulate matter, VOCs, NOX, SOX, and CO2 [7]. Furthermore, the amount of non-renewable resources like limestone is decreasing as a result of the increased gathering of raw materials for growing cement manufacture. The green landscape, which serves as a home for flora and wildlife, is harmed by activities related to resource extraction from natural settings, putting the ecosystem in danger of ecological imbalance. The ongoing extraction of these valuable resources puts them in danger of future depletion. In addition, the factory's raw material processing stages emit noise, dust, and greenhouse gases—particularly carbon dioxide—that pollute the environment and worsen climate change. These unwelcome environmental problems negatively impact human lifestyles [8]. The 21st century is rightly called the "Century of Gadgets and Gizmos" because of the rapid growth of information technologies and the daily creation of new devices. On the one hand, this era is seriously degrading environmental resources and parameters, while on the other, it is still feasible. Therefore, adopting a more comprehensive and cautious strategy to make our IT sector greener undoubtedly ranks among our duties in establishing a more hygienic, safe, and healthy environment [9]. Hence, Bangladesh's jute manufacturing sector contributes significantly to the country's economy by creating jobs and bringing in large amounts of export money, but it also poses serious health and environmental risks, primarily because of high particulate emissions that frequently exceed the Ambient Air Quality Standards (AAQS) set by the Bangladeshi government. The jute industry also considers the larger environmental effects of its emissions, with a particular emphasis on how they affect local ecosystems and air quality, in addition to the health effects [10].

Industrialization and technological development have a wide range of effects on the environment. Meanwhile, it was discovered that the cement, ceramic, IT, and jute sectors had a major detrimental influence on environmental deterioration. Therefore, genuine reporting is necessary to guarantee these sectors' accountability and openness.

### *1.4. Environmental Accounting and Reporting in Bangladesh*

Banks revealed the least amount of environmental information for waste management and environmental recognition categories, while they revealed the most for green banking and renewable energy categories. Additionally, an annual comparison shows that the percentage of environmental information disclosed rose significantly from 16% in 2010 to 83% in 2014. The results of the 12 categories also have management implications for government and corporate policymakers, and a study of Bangladesh Bank's recent successful environmental disclosure measures was conducted [11]. Uddin et al. (2023) look at the environmental reporting disclosure procedures of firms in the automotive, services, and real estate industries listed on the Dhaka Stock Exchange (DSE), Bangladesh [12]. Because of its position, Bangladesh faces the issue of environmental contamination from industrialized nations. Bangladesh now allocates funds for environmental conservation programs and requests reimbursement from wealthier nations. The government's relevant agencies should announce a package to address the issues and urge businesses to use corporate environmental accounting [13]. Furthermore, Uddin et al. (2025). Evaluating Bangladeshi banks' sustainability reporting practices in line with the Global Reporting Initiative (G4) to use artificial intelligence to achieve the Sustainable Development Goals [14]. The primary methods for obtaining a financial advantage by enhancing cost efficiency include implementing environmental accounting procedures and deploying environmental management systems. There is strong evidence indicating that the cost benefits increase with the adoption of environmental systems, such as pollution control, technological innovation, and an early embrace of environmental concerns [15].

In addition, Uddin et al. examined the environmental reporting disclosure practices of Bangladesh's listed ceramic and cement companies on the Dhaka Stock Exchange (DSE) in 2019.[16]
The scope and degree of environmental accounting and reporting (EAR) procedures in Bangladesh are very low and insufficient, although EAR is employed as a proactive tool to address climatic and environmental costs for documenting environmental sustainability. The banking industry is where EAR practices are most prevalent. The Bangladeshi cement, ceramic, IT, and jute industries have not been the subject of any studies.
As a result, the following questions are raised:

- What is the present status of environmental accounting and reporting procedures in the DSE-listed cement, ceramic, IT, and jute industries as stated in Bangladesh's annual report?
- What are the primary reasons for poor performance (if any)?
- Would it be possible to improve Bangladesh's environmental reporting and accounting practices?

## 2. Literature Review

### *2.1. Why Environmental Accounting Matters?*

Environmental accounting has many applications. Included are corporate, national, and worldwide levels. Corporate sector investments aim to mitigate environmental losses from an internal perspective. It includes investments in eco-friendly devices and equipment. Its main constituents are destruction and degradation, including soil erosion, biodiversity loss, pollution of the air, water, and sound, problems with solid waste, and contamination of the coast and sea. Minerals, water, gas, and other nonrenewable natural resources have been overused, leading to their loss or depletion. Both deforestation and land use. This kind of accounting is difficult, as environmental effects cannot be accurately measured in monetary terms [17]. EA is particularly important and helpful in regulating companies that operate in environmentally sensitive sectors, according to a thorough evaluation of academic and professional literature. There is no disclosure of the firms' pledges to share environmental costs. This technology is required to better identify and charge expenditures associated with the environment. Therefore, the EA system helps the entities improve performance and offers a valuable roadmap for internal and external auditors to follow in their accomplishments. There are several national and international policy ramifications [18]. Businesses, which are significant topics of economic activity, are key players in economic activity. Therefore, a strong driving factor behind the structural change of this economic society is the explicit integration of the goal known as environmental conservation into every corporate operation. Individuals, regions, and governments involved in businesses must implement this principle correctly. Analyze these business endeavors and be able to set up the framework that will enable the endeavors of the whole community. The term "environmental accounting" frequently appears in the literature on accounting and environmental management [19].

### *2.2. Environmental Accounting and Reporting Practices at Global Perspective*

This study covers the main legislative statutes in the US that address environmental concerns. These laws fall into two groups: those pertaining to remediation and those pertaining to control and prevention. Additionally, the criteria for determining Principal Responsible Parties (PRPs) are explained.
The accounting guidelines for public corporations' disclosure of environmental liabilities are then provided. The passage also covers the United States Environmental Protection Agency's recent attempt to include environmental protection expenditures in businesses' cost accounting systems [20]. To discuss how environmental accounting research can advance both inside and outside of the European Accounting Review, this study examines how the journal has conceptualized environmental accounting (and to some extent social/sustainability accounting work) over its 30-year history. Give a summary of the many kinds of studies that have been published in EAR after describing the larger social and ecological framework that gave rise to environmental accounting (noting that this framework is changing in significant ways) [21]. Recently, environmental challenges have spread over the world. This trend has led to the implementation of environmental accounting disclosure laws in a number of nations, including China [22]. The amount of environmental disclosures, both financial and non-financial, in company annual reports is not promising in India. The Institute of Chartered Accountants of India's accounting rules and guidelines, as well as company legislation, do not specify how environmental information should be included in business financial statements. Overall, voluntary environmental disclosure in Indian corporations' annual reports is not doing well [23].

### *2.3. Environmental Accounting and Reporting practices in Cement, Ceramic, IT, and Jute Industry*

Based on just ten index items, the study examined the environmental accounting disclosure practices of listed cement and ceramic companies at the Dhaka Stock Exchange (DSE) in Bangladesh. It found that neither the cement nor ceramic companies disclosed any financial information regarding environmental accounting disclosure reporting practices in their annual reports [24]. As part of sustainable reporting, triple-bottom-line reporting encourages businesses to include environmental disclosures and highlight environmental concerns in their yearly reports. This study examined eleven DSE industries, including cement and ceramics, to determine the extent of environmental accounting disclosures made by companies in their annual reports and their profitability. According to the study, just 41 out of 166 corporations provide any kind of environmental disclosures in their annual reports, indicating that environmental accounting standards are still in their infancy [25]. Islam and Rahman, (2022) evaluated the environmental reporting practices in several sectors, including the Bangladeshi cement industry, to create a compliance framework for Environmental Management Accounting (EMA). According to the report, industrial businesses' environmental management accounting is subpar. The lowest level of compliance is 20%, while the highest is 67%. To determine the explanatory factors, the TA, TS BS, and SP have been considered. Board size often has no discernible impact on EMA practices in the tested organizations [26].
Around the globe, environmental accounting is a technique used to safeguard the environment. Through environmental accounting, the company updates stakeholders on its environmental management and future goals. As a consequence, environmental accounting helps stakeholders better comprehend an organization's present environmental management and future environmental activities. Environmental accounting has thus gained popularity and international attention.

Currently, stakeholders only use financial data and indicators to inform their choices; they also take into account an organization's environmental sensitivity and responsibility. As a consequence, both internally and publicly, companies are now considerably more conscious of environmental accounting. The field of environmental accounting has advanced significantly worldwide, particularly in industrialized nations like the United States, England, the European Union, China, and Japan. Although there is some literature on environmental accounting in Bangladesh, it is mostly banking-based and quite limited. The cement, ceramic, IT, and jute sectors have very little literature available. Even if research indicates that the cement, ceramic, IT, and jute sectors have a big environmental effect, it's still vital to understand how these businesses handle environmental accounting.

Thus, the purpose of this research is to

- Determine the current state of environmental accounting and reporting procedures in the DSE, Bangladesh-based cement, ceramic, IT, and jute businesses.
- Identify the main causes of subpar practices, if any, and
- Provide policy recommendations for enhancing environmental reporting and accounting procedures.

## 3. Materials and Methods

### *3.1. Type and Sources of Data*

The data set was manually created by the researcher using the corporate annual reports of companies under the Cement, Ceramic, IT, and Jute industries listed on the Dhaka Stock Exchange (DSE) in Bangladesh for the years 2023–2024 (or, in the special situation, 2022–2023). This research subjected the firm's corporate annual reports to content and theme analysis. The pre-developed indexed items were given a score of 1 for correct disclosure and a score of 0 for improper disclosure.

Environmental accounting and reporting methods have a total value between 0 and 1. A score of one indicates that environmental accounting and reporting are fully disclosed, while a score of zero indicates that these disclosures are missing.

### *3.2. Selected Sectors*

To complete the study, the researcher selected the following 4 sectors (Table 1) based on activities related to environmental degradation.

*Table 1. Name of the sectors (Industries) and numbers of companies investigated*

| Sl. No. | Name of the Sectors | Number of companies |
|---|---|---|
| 1 | Cement | 7 |
| 2 | Ceramics | 5 |
| 3 | IT Sector | 11 |
| 4 | Jute | 3 |
| Total | | 26 |

***Source:*** *Dhaka Stock Exchange (DSE) as on July 1, 2024*

### 3.1. Development of the Environmental Accounting and Reporting Practices Index (EARPI)

The researcher has developed the Environmental Accounting and Reporting Practices Index (EARPI) for the selected 4 sectors based on existing literature, international initiatives, legal direction, and global standards.

#### *3.1.1. Environmental Accounting and Reporting Practices Index for Cement and Ceramic Industry (EARPICCI)*

The researcher has developed an environmental risk reporting practices index for the cement and ceramic industry (EARPICCI) based on the existing literatures and international guidelines. The ERRPICCI encompasses six (6) broad headings, with a total of twenty nine (29) index items being addressed in this study. Details are given in Table 2.

*Table 2. Components of EARPICCI*

| A. General Disclosures (GD) | Coding |
|---|---|
| Have an environmental policy, strategy, and action plan | $GD_1$ |
| Having green environmental practice | $GD_2$ |
| Eco-friendly in house office management practice | $GD_3$ |
| Environmental management manuals and guidelines | $GD_4$ |
| **B. Disclosures on Sustainable Production and Product (DSPP)** | |
| Environment friendly production process | $DSPP_1$ |
| Maintaining sustainable production guidelines | $DSPP_2$ |
| Decarbonizing of production processes | $DSPP_3$ |
| Innovative green product and production process | $DSPP_4$ |
| New environmental technologies, research and development | $DSPP_5$ |
| **C. Energy, Air, Water, and Waste Management (EAWWM)** | |
| Annual energy consumption matrix | $EAWWM_1$ |
| Initiatives to reduce annual energy consumption | $EAWWM_2$ |
| Amount of $CO_2$ emission to air matrix | $EAWWM_3$ |
| Initiatives to reduce $CO_2$ emission | $EAWWM_4$ |
| Sustainable waste management | $EAWWM_5$ |
| Sustainable waste conversion system | $EAWWM_6$ |
| Wastewater treatment facilities and management | $EAWWM_7$ |
| **D. Industry Specific Outlooks (ISO)** | |
| Implementation of effluent treatment plant | $ISO_1$ |
| Achieving environmental clearance certificate | $ISO_2$ |
| Environmental governance and compliance guidelines and manuals | $ISO_3$ |
| **E. Societal-Environmental Engagement (SEE)** | |
| Pollution preventive awareness initiatives | $SEE_1$ |
| Tree plantation programs and afforestation initiatives | $SEE_2$ |

| | |
|---|---|
| Social environmental campaign and community engagement | $SEE_3$ |
| Staff training and environmental awareness programs | $SEE_4$ |
| Partnerships and stakeholder engagement | $SEE_5$ |
| Communication | $SEE_6$ |
| **F. Environmental Accounting , Reporting and Auditing (EARA)** | |
| Reported environmental issues in annual reports | $EARA_1$ |
| Reported environmental issues in separate chapter in annual report | $EARA_2$ |
| Environmental audit program/ committee | $EARA_3$ |
| Environmental Certification, recognition and awards | $EARA_4$ |

***Source:*** *Developed by Researcher*

### *3.3.2. Environmental Accounting and Reporting Practices Index for IT Sector (EARPIITS)*

The Environmental Accounting and Reporting Practices Index for IT and Telecommunication Sector (EARPIITS) has been developed by the researcher in the understanding of 'Best Environmental Management Practice (BEMP) in the Telecommunications and ICT Services sector' developed by the European Union, Luxembourg, and 'Telecommunication and the Environment: The Path to Sustainable Development" guidelines based on The Rio Declaration and the Agenda 21 Program, United Nations Environment Program (UNEP) [27, 28, 29]. The researcher have identified and reported a total six (6) headings and forty-one (41) components of EARPIITS which is given in details in table 3.

***Table 3. Components of EARPIITS***

| | |
|---|---|
| **A. General Disclosures (GD)** | |
| Having an environmental policy, strategy, and action plan | $GD_1$ |
| Green environmental practice | $GD_2$ |
| Eco-friendly in house office management | $GD_3$ |
| Environmental management manuals and guidelines | $GD_4$ |
| New environmental technologies, research and development, and process | $GD_5$ |
| Organizations' statement on environmental management perspective | $GD_6$ |
| **B. Waste, Water, Waste Water Management (WWWWM)** | |
| Total weight of trash produced, garbage disposed of, and measures to mitigate them | $W_4M_1$ |
| Total water extraction and measures to mitigate it | $W_4M_2$ |
| Total water output and measures to mitigate it | $W_4M_3$ |
| Total greenhouse gas emissions and strategies to mitigate them | $W_4M_4$ |
| Effluents and nuisances, together with measures to mitigate them | $W_4M_5$ |
| Discharge and conveyance of hazardous compounds and measures to mitigate them | $W_4M_6$ |
| Repurposing, recycling, and disposal of wastewater | $W_4M_7$ |
| Management and disposal of hazardous substances | $W_4M_8$ |
| Maximize the uses of recycled wastes | $W_4M_9$ |
| **C. Energy Uses Disclosures (EUD)** | |
| Aggregate energy consumption and strategies to mitigate it | $EUD_1$ |
| Total use of virgin materials and efforts to minimize their usage | $EUD_2$ |
| Optimal use of energy resources (natural gas, coal, water, electricity) | $EUD_3$ |
| Augmenting reliance on renewable energy | $EUD_4$ |
| Sourcing materials from sustainable options | $EUD_5$ |
| **D. Industry Specific Disclosures (ISD)** | |
| Products and services aimed at reducing environmental consequences | $ISD_1$ |
| Eco-friendly infrastructures (towers, substantial overhead cables, aerial cabling, hybrid optical fiber/coaxial cable rolls) | $ISD_2$ |
| Automation systems and integration | $ISD_3$ |
| Initiatives to attain optimal nuclear safety | $ISD_4$ |
| Utilization of the most advanced technologies | $ISD_5$ |
| Minimize electromagnetic radiation emissions | $ISD_6$ |
| **E. Societal-Environmental Engagement (SEE)** | |
| Initiatives for pollution prevention awareness | $SEE_1$ |
| Greening the Plant, Factory and office premises | $SEE_2$ |
| Social environmental campaign | $SEE_3$ |
| Staff training | $SEE_4$ |
| Environmental education and environmental enlightenment activities | $SEE_5$ |
| Community awareness and involvement | $SEE_6$ |
| Ensure social responsibility and caring environment | $SEE_7$ |
| Contribution to society in regard to the environment | $SEE_8$ |
| Social awareness | $SEE_9$ |

| F. Environmental Accounting , Reporting and Auditing (EARA) | |
|---|---|
| Reported environmental issues in annual reports | $EARA_1$ |
| Environmental audit program/ committee | $EARA_2$ |
| Communicate results with shareholders | $EARA_3$ |
| Public Disclosures | $EARA_4$ |
| Documented the financial allocation and expenditures for environmental preservation | $EARA_5$ |
| Funding/ donating for (climate risk fund/ capacity building) | $EARA_6$ |

**Source:** *Developed by Researcher*

### *3.3.3. Environmental Accounting and Reporting Practices Index for Jute Industry (EARPIJI)*

***Table 4. Components of EARPIJI***

| A. General Disclosures (GD) | Coding |
|---|---|
| Green environmental practice | $GD_1$ |
| In-house environmental management | $GD_2$ |
| Environmental management manuals and guidelines | $GD_3$ |
| B. **Disclosures on Sustainable Production and Product (DSPP)** | |
| Environment friendly production process | $DSPP_1$ |
| Green production facilities | $DSPP_2$ |
| Maintaining environmental production guidelines | $DSPP_3$ |
| Changes on production process | $DSPP_4$ |
| Innovative green products | $DSPP_5$ |
| C. **Energy, Air, Water, and Waste Management (EAWWM)** | |
| Annual energy consumption | $EAWWM_1$ |
| Initiatives to reduce annual energy consumption | $EAWWM_2$ |
| Amount of $CO_2$ emission to air | $EAWWM_3$ |
| Initiatives to reduce $CO_2$ emission | $EAWWM_4$ |
| Sustainable waste management | $EAWWM_5$ |
| Sustainable waste conversion system | $EAWWM_6$ |
| Waste water management | $EAWWM_7$ |
| Sustainable waste conversion system | $EAWWM_8$ |
| D. **Industry Specific Outlooks (ISO)** | |
| Implementation of effluent treatment plant | $ISO_1$ |
| Achieving environmental clearance certificate, recognition, and awards | $ISO_2$ |
| Environmental governance and compliance | $ISO_3$ |
| E. **Societal-Environmental Engagement (SEE)** | |
| Pollution preventive awareness initiatives | $SEE_1$ |
| Tree plantation program and initiative | $SEE_2$ |
| Social environmental campaign | $SEE_3$ |
| F. **Environmental Accounting , Reporting and Auditing (EARA)** | |
| Reported environmental issues in annual reports | $EARA_1$ |
| Reported environmental issues in separate chapter in annual report | $EARA_2$ |
| Environmental audit program/ committee | $EARA_3$ |
| Public Disclosures | $EARA_4$ |

**Source:** *Developed by Researcher*

### 3.4. *Model for Measuring Individual Performance of the Company*

The formula developed by researcher to calculate the individual performance of the company is given below.

$$\text{Performance} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{m} X_i I_j}{m}$$

Where, X = Individual company
I = Index item
n = Number of companies
m = Number of index item

## 4. Results, Analysis, and Discussion

### 4.1. EAR Practices in the Ceramic Industry

#### *4.1.1. Aramit Cement Limited*

**Reported Items:** Commitment to preserving a pollution-free environment, diligently overseeing garbage disposal, and regularly implementing tree planting initiatives (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 3 | 10.34 | Director's Report: Environmental Aspect |

### *4.1.2. Confidence Cement Ltd.*

**Reported Items:** Dedication to reducing environmental impacts via the aggressive enforcement of Environment, Health, and Safety (EHS) regulations, ongoing training and education, and a commitment to ecological welfare (Annual report, 2022-2023).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 4 | 13.79% | Director Reports: Safety Health and Environment |

### *4.1.3. Crown Cement PLC*

**Reported Items:** The implementation of sustainable practices, improvement of energy efficiency, adherence to environmental quality standards and international emission regulations, utilization of high-quality baghouse filters, routine maintenance and upgrades to minimize emissions, regular assessments by external experts, monitoring of emissions, afforestation, and the use of advanced dust-collecting devices, water sprays, and eco-hoppers at material unloading sites to reduce dust emissions. The EHS policy, manuals, SOPs, and risk assessments comply with national and international standards, monthly incentive awards recognize exemplary employees, managers, and engineers for their contributions to environmental conservation, and the organization has attained ISO 9001 accreditation for its quality management system, maintaining the highest global standards (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 20 | 69% | Environmental, Health, and Safety Initiatives |

### *4.1.4. Heidelberg Cement Bangladesh Ltd.*

**Reported Items:** Commitment to sustainable corporate governance, declaration on environmental protection, resource conservation, biodiversity preservation, climate action, sustainable resource management, prioritization of environmental issues, investment in research and development to reduce process- and energy-related CO2 emissions in manufacturing, rapid decarbonization of production processes, a goal to limit CO2 emissions to 400 kg per tonne of cementitious material by 2030, achieving net-zero emissions by 2050 at the latest, initiatives for material reduction and reuse, and a dedication to promoting a nature-positive environment through a leading biodiversity program and sustainable water management practices (Annual report, 2023).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 9 | 31% | Internal Control and Risk Management: Sustainability Compliance Risk, and Sustainability Report |

### *4.1.5. LafargeHolcim Bangladesh Limited*

**Reported Items:** A decrease in net carbon emissions from cementitious materials, a decrease in specific freshwater withdrawal, a 3% increase in recycled waste, a reduction of 84% in dust emissions, initiatives for decarburization, a special green product revolution, sustainable channel transformation via the D2R initiative, implementation of advanced technologies, cycle optimization through high-tech digital solutions, enhanced waste management efficiency and eco-friendly practices, technological innovation, environmental responsibility, community engagement, corporate communications, stakeholder engagement, award and recognition, and investment in research and development (Annual report, 2023).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 16 | 55.17% | Director's Report |

### *4.1.6. Meghna Cement Mills Ltd.*

**Reported Items:** Dedication to environmental stewardship, uniform static policy for manufacturing processes, initiatives to mitigate various forms of pollution, implementation of eco-friendly practices, emphasis on ecological and social sustainability, effective environmental and quality management system, attained ISO 14001:2015 certification for environmental management systems (Annual report, 2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 7 | 24.14 | Directors Report: Environmental Protection |

### *4.1.7. Premier Cement Mills PLC*

**Reported Items:** Verification of adherence to all pertinent environmental, safety, and health statutes and regulations, dedication to environmental preservation, certification, afforestation initiatives, state-of-the-art tri-generation electricity systems, cutting-edge technology, and the elimination of hazardous pollutants (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 7 | 24.14 | Code of Conduct: Ethical Standards, Directors' Reports: Safety, Health, and Environment, Corporate Social Responsibility (CSR) |

***Table 5. EAR performance in Cement Industry***

| Sl. No. | Companies in Cement Industry | Total Index | Reported | In % |
|---|---|---|---|---|
| 1. | Aramit Cement Limited | 29 | 3 | 10.34 |
| 2. | Confidence Cement Ltd. | | 4 | 13.79 |
| 3. | Crown Cement PLC | | 20 | 69 |
| 4. | Heidelberg Cement Bangladesh Ltd. | | 9 | 31 |
| 5. | LafargeHolcim Bangladesh Limited | | 16 | 55.17 |
| 6. | Meghna Cement Mills Ltd. | | 7 | 24 |
| 7. | Premier Cement Mills PLC | | 7 | 24.14 |

***Source:*** *Analyzed and Calculated by Researcher*

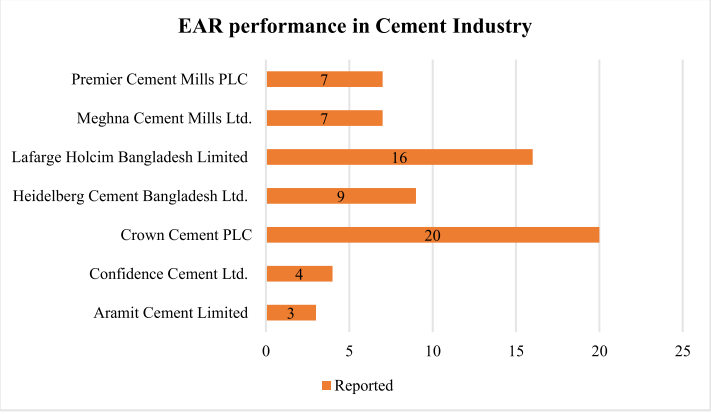


***Fig. 1 EAR Performance in Cement Industry***

Although there were 29 index items in this sector, as the following data illustrates, businesses were able to get anywhere from three to twenty index items.

### 4.2. *EAR Practices in the Ceramic Industry*

#### *4.2.1. Fu-Wang Ceramic Industries Ltd.*

**Reported Items:** The execution of the Effluent Treatment Plant and the Environmental Clearance Certificate (Annual Report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 2 | 6.90% | Directors' Report |
| | | | |

#### *4.2.2. Monno Ceramic Industries Ltd.*

**Reported Items:** Commitment to attain zero carbon manufacturing by 2030 (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 1 | 3.45% | Directors' Report: Environmental Sustainability |

#### *4.2.3. RAK Ceramics (Bangladesh) Limited*

**Reported Items:** Incorporated 'Environment, Social, and Governance (ESG)' as a separate chapter in its annual report, underscoring its commitment to ESG principles. The company's production plant has been meticulously designed to surpass regulatory environmental standards by conserving energy and utilizing natural gas rather than environmentally detrimental alternatives. It adheres to ISO and other compliance standards, emphasizes the preservation of ecological systems, minimizes water and energy consumption, reduces waste, enhances operational efficiency to further decrease the use of essential natural resources, and maintains low greenhouse gas emissions (GHG). Management of clay, water, and energy, minimizing external emissions, contemporary factory configuration, optimizing resource utilization, community engagement initiatives, decreasing reliance on high-emission conventional energy sources, efficient waste management practices including recycling and waste reduction strategies, implementation of water conservation technologies to diminish water consumption in manufacturing processes, philanthropic contributions, process optimization, and precision mixing and blending. Regulated shaping, ongoing enhancement, Water recycling and reuse, water-efficient devices and technologies, training and awareness initiatives, leak detection and remediation, hydrological monitoring, a 6.68% reduction in water consumption over the past two years, conducted energy audits, modernized and retrofitted equipment, and implemented energy management systems, employee engagement and training: A culture of continuous improvement, a 5.17% reduction in energy use over the last two years, mitigation of environmental effect, and improved operational sustainability (Annual report, 2023).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 24 | 82.76% | Environment, Social, and Governance (ESG) |

#### *4.2.4. Shinepukur Ceramics Limited*

**Reported Items:** Shinepukur Ceramics Limited has established 'Sustainability Reporting' as a separate chapter in its annual report, demonstrating its commitment to environmental, social, and governance (ESG) initiatives, responsible business practices, gardening, and afforestation. No effluent or residual waste is released into the external environment. Certification from the Department of Environment is obtained. Heat and wastewater are recycled, investments are made in waste recycling, energy consumption is optimized, and heat generated from kilns is recovered and used for dry goods. Up Value Recycling, a sedimentation tank, Green Factory Award (Annual Report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | 12 | 41.38% | Sustainability Reporting |

#### *4.2.5. Standard Ceramic Industries Ltd.*

**Reported Items:** Standard Ceramic Industries Ltd. did not provide any information pertaining to environmental problems in its annual reports in any format (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 29 | - | - | - |

*Table 6. EAR performance in Ceramic Industry*

| Sl. No. | Companies in Ceramic Industry | Total Index | Reported | In % |
|---|---|---|---|---|
| 1. | Fu-Wang Ceramic Industries Ltd. | 29 | 2 | 6.90 |
| 2. | Monno Ceramic Industries Ltd. | | 1 | 3.45 |
| 3. | RAK Ceramics (Bangladesh) Limited | | 24 | 82.76 |
| 4. | Shinepukur Ceramics Limited | | 12 | 41.38 |
| 5. | Standard Ceramic Industries Ltd. | | 0 | 0 |

***Source:*** *Analyzed and Calculated by Researcher*

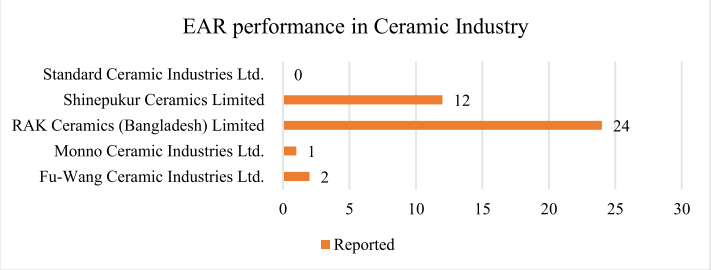


*Fig.2 EAR Performance in Ceramic Industry*

As the following data shows, enterprises were able to get anywhere from zero to twenty-four index items, despite the fact that this sector had 29 index items.

### *4.3. EAR Practices in the IT Industry*

#### *4.3.1. Aamra networks limited*

**Reported Items:** Mitigating greenhouse gas emissions, conserving biodiversity, and safeguarding natural resources (Annual report, 2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 3 | 7.32 | Environmental Sustainability Strategy |

#### 4.3.2. *Aamra technologies limited*

**Reported Items:** Aamra Technologies Limited did not provide any information on environmental accounting and reporting in its annual report (Annual report, 2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

#### *4.3.3. AND Telecom Limited*

**Reported Items:** Commitment to environmental sustainability, implementation of sustainable practices in service delivery, enhancement of energy efficiency via an IoT-based smart monitoring system, reduction of carbon footprint, promotion of innovation and digital outreach, pursuit of transformation, engagement in community development, and establishment of a sustainable supply chain (Annual report, 2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 10 | 24.39 | Director's Report: Environment, Health, Safety & Governance |

#### 4.3.4. Agni Systems Ltd.

**Reported Items:** No information pertaining to environmental accounting and reporting is included in the annual report of Agni Systems Ltd (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

#### 4.3.5. BDCOM Online Ltd.

**Reported Items:** Green IT practices include the use of environmentally sustainable methods in data centers and operational procedures, using energy-efficient technology, minimizing electronic waste, and maximizing resource utilization, preserving operational efficiency, community engagement, enhancing digital infrastructure, promoting digital inclusion, establishing robust stakeholder relationships, adapting to technological change, minimizing ecological impact, helping local communities, practicing environmental stewardship, achieving energy savings, managing waste, overseeing water management, decreasing our carbon footprint, integrating eco-friendly practices into core activities, minimizing energy use, enacting a zero-waste policy, improving community involvement via educational and vocational training initiatives, substituting high-energy-consuming desktop computers with energy-efficient laptops, and reducing prolonged office hours by two hours, hence decreasing power, water, and other resource use during peak periods. Initiate an awareness campaign to use natural sunlight in lieu of artificial office illumination wherever feasible. Implemented energy-efficient lighting systems in all our offices, which led to a reduction in electricity consumption while maintaining sufficient illumination, standardized air conditioning temperatures to 26°C and planned to install solar panels, managed electronic waste according to certified protocols and e-waste recyclers, minimized single-use items, implemented digital solutions to replace paper documents, achieved a 40% reduction in office paper usage, replaced all single-use plastic items with biodegradable alternatives, employees are taught regularly how to properly get rid of trash, reduce it at workstations, install low-flow fixtures and automated taps, improve rainwater collection, look into water reclamation technologies, use little paper as possible and to switch to long-lasting lithium-ion batteries for backup power at our Data Centers (DC at Gulshan), Disaster Recovery (DR at Dhanmondi) centers, Points of Presence (PoPs), reduces reliance on generators during power outages, thereby decreasing carbon impact, integrated electric three-wheelers, conducted a comprehensive carbon audit to identify potential areas for emissions reduction, A tree-planting initiative aims for net-zero emissions by 2040, with interim goals of reducing emissions by fifty percent every three years (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 30 | 73.17 | BDCOM's Approaches to Sustainability |

#### 4.3.6. Daffodil Computers Ltd.

**Reported Items:** Daffodil Computers Ltd. did not include any environmental reporting information in its annual report (Annual report, 2023-24).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

#### 4.3.7. eGeneration PLC.

**Reported Items:** Dedication to promoting sustainable growth, prioritizing environmentally friendly practices, conserving resources, initiatives aimed at minimizing carbon footprints, adopting energy-efficient technologies, waste reduction, implementing green IT practices, offering remote work options, creating energy-efficient office environments, developing sustainable transportation solutions, utilizing eco-friendly technologies, and engaging stakeholders (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 13 | 31.70 | Environmental, Social, and Governance ( ESG) Report |

#### 4.3.8. Genex Infosys PLC

**Reported Items:** Genex Infosys PLC omitted any environmental reporting information from its annual report (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

#### 4.3.9. Intech Limited

**Reported Items:** Intech Limited omitted any environmental reporting information from its annual report (Annual report, 2023-2024).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

#### 4.3.10. Information Services Network Ltd.

**Reported Items:** Information Services Network Ltd.

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | Not Accessible | | |

#### 4.3.11. IT Consultants PLC.

**Reported Items:** No information about environmental accounting and reporting is available in the annual report of IT Consultants PLC.

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 41 | 0 | 0 | - |

*Table 7. EAR performance in IT Industry*

| Sl. No. | Companies in IT Industry | Total Index | Reported | In % |
|---|---|---|---|---|
| 1. | Aamra networks limited | 41 | 3 | 7.32 |
| 2. | Aamra technologies limited | | 0 | 0 |
| 3. | ADN Telecom Limited | | 10 | 24.39 |
| 4. | Agni Systems Ltd. | | 0 | 0 |
| 5. | BDCOM Online Ltd. | | 30 | 73.17 |
| 6. | Daffodil Computers Ltd. | | 0 | 0 |
| 7. | eGeneration PLC. | | 13 | 31.70 |
| 8. | Genex Infosys PLC | | 0 | 0 |
| 9. | Intech Limited | | 0 | 0 |
| 10. | Information Services Network Ltd. | | NA | |
| 11. | IT Consultants PLC. | | 0 | 0 |

***Source:** Analyzed and Calculated by Researcher [**NA**= Not Accessible]*

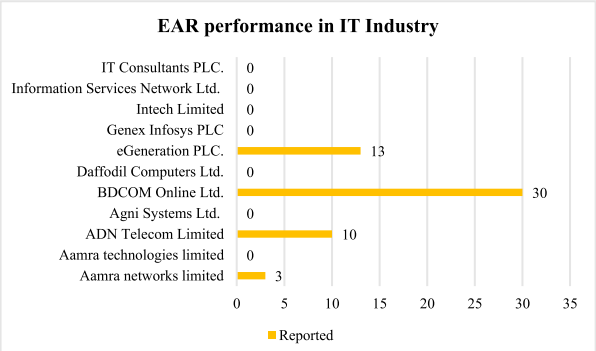


*Fig. 3 EAR Performance in IT Industry*

Although this industry has 41 index items, the majority of businesses are free to remain silent on any of them. Thirty-three back sites were saved by one firm. This industry is in a precarious shape.

### *4.4. EAR Practices in the Jute Industry*

#### *4.4.1. Jute Spinners Ltd.*

**Reported Items:** The researcher attempted to get the annual report of Jute Spinners Ltd. but was unsuccessful. The website address for Jute Spinners Ltd. was not found on the Dhaka Stock Exchange (DSE) website.

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 26 | Not Accessible | | |

#### *4.4.2. Northern Jute Manufacturing Co. Ltd.*

**Reported Items:** The researcher accessed the official website of Northern Jute Manufacturing Co. Ltd. but was unable to locate the annual reports for 2021, 2022, 2023, and 2024. The website displays the yearly report for 2019-2020. No information regarding environmental accounting and reporting is given in the company's annual report for 2019-2020.

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 26 | 0 | 0 | - |

#### *4.4.3. Sonali Aansh Industries Limited*

**Reported Items:** The Company's annual report has no information on environmental accounting and reporting (Annual Report, 2022-2023).

| Total Index | Reported | In % | Heading of the Report |
|---|---|---|---|
| 26 | 0 | 0 | - |

*Table 8. EAR performance in Jute Industry*

| Sl. No. | Companies in Jute Industry | Total Index | Reported | In % |
|---|---|---|---|---|
| 1. | Jute Spinners Ltd. | 26 | NA | |
| 2. | Northern Jute Manufacturing Co. Ltd. | | 0 | 0 |
| 3. | Sonali Aansh Industries Limited | | 0 | 0 |

*Source: Analyzed and Calculated by Researcher [NA= Not Accessible]*

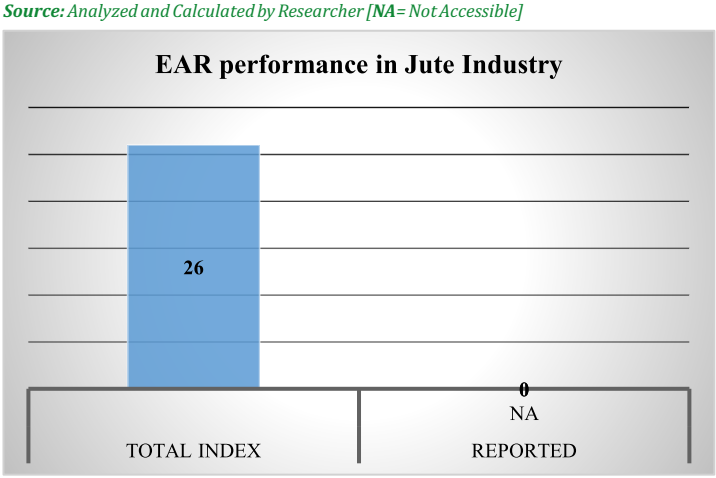


*Fig. 4 EAR Performance in Jute Industry*

In the jute sector, it is evident that no company upholds environmental reporting and accounting standards. The state of this industry is at its worst.

### 4.5. *Overall Summery of the Study*

*Table 9. Overall Summery of the Study*

| Particulars | No. of Companies | In % |
|---|---|---|
| Not Accessible | 2 | 7.69 |
| Not Reporting | 9 | 34.62 |
| Reporting | 15 | 57.23 |
| Total | 26 | 100 |

*Source: Analyzed and Calculated by Researcher*

The annual reports of 26 firms were examined in this research; nine of these companies do not report on environmental issues at all, two companies did not submit their annual reports to us, and the remaining 15 companies report on environmental issues, but with considerable variety.

### *4.6. Details of the Reported Companies*

*Table 10. Details of Reported Companies*

| Particulars | No. of Companies | In % |
|---|---|---|
| Reported <5 index items | 5 | 33.33 |
| Reported 5 to 10 index items | 4 | 26.67 |
| Reported 11 to 20 index items | 4 | 26.67 |
| Reported 21 to 30 index items | 2 | 13.33 |
| Reported >30 index items | 0 | 0 |
| Total | 15 | 100 |

Fifteen of the twenty-six businesses engage in environmental reporting and accounting. Four businesses have index scores below five. Four businesses have index scores between five and ten. Four businesses have index scores between 11 and 20. Four businesses have index scores between 21 and 30. Furthermore, no business has ever received an index score higher than 30.

### *4.7. Reasons of Poor Practices of 'Environmental Accounting and Reporting':*

For companies listed on the Dhaka Stock Exchange (DSE), there is no obligatory regulatory framework for "environmental accounting and reporting" in Bangladesh. For this reason, businesses are willingly planning EAR. The 'Environmental Conservation Act, 1995,' 'Environmental Conservation Rules, 2023,' 'Solid Waste Management Rules, 2021,' and 'Air Emission Control Rules, 2022' are among the regulations that Bangladesh has put in place to protect the environment and lessen the impact of corporate operations on environmental degradation, but they are not mandatory in nature.

## 5. Conclusion

Bangladesh is a coastal nation that is particularly vulnerable to climate change and global warming. The negative consequences of climate change and global warming are already threatening the resilience of many regions' livelihoods. The application of environmental accounting and reporting practices by businesses in their annual reports is a proactive way to manage climate risk. The purpose of this study is to evaluate the level and extent of environmental accounting and reporting practices among companies in the cement, ceramic, IT, and jute industries that are listed on the Dhaka Stock Exchange (DSE). Based on existing literature, international initiatives, legal frameworks, and global standards, the researcher created the Environmental Accounting and Reporting Practices Index (EARPI) for four chosen sectors: the Cement and Ceramic Industry (EARPICCI), the IT Sector (EARPIITTS), and the Jute Industry (EARPIJI).

Using content and topic analysis, the researcher manually assembled the data set from the selected companies' corporate annual reports. We have investigated in 26 companies. According to the study findings, 9 companies' annual reports lacked any language about environmental issues. Additionally, 2 companies' annual reports are not available on their websites. Significant differences were found among the 15 companies that disclosed environmental issues in their annual reports. 5 of the 26 companies employed fewer than five index components, 4 reported five to ten index items, 4 reported eleven to twenty, 2 disclosed twenty-one to thirty. Additionally, there is a notable variation in the locations and methods of reporting. The annual report's environmental concerns are handled under several different areas, according to this inquiry. Instead of acknowledging environmental accounting and reporting as distinct chapters, the majority of businesses choose to use the "Director's Report." Due to the lack of a mandated regulatory framework, businesses in Bangladesh choose to use environmental accounting and reporting procedures.

### *5.1. Policy Implication*

Businesses and management decision-making are significantly impacted by the study's findings, especially those that operate in coastal regions like Bangladesh.

This research first describes how much information on environmental accounting and reporting methods is included in the corporate annual reports of the DSE-listed businesses. Second, from the standpoint of coastal states, the research determined the real status of the industry's companies concerning environmental accounting and reporting methods. Thirdly, considering the continuing discussion about the real role of companies in society and the financial responsibility and transparency of businesses operating in Bangladesh, this research emphasized the urgent need to create a "mandatory legal framework" for environmental reporting standards. Fourth, the study's findings helped policymakers by demonstrating how to mandate environmental reporting in coastal states for future development and long-term growth. Achieving the Sustainable Development Goals (SDGs) would be facilitated by this. Fifth, the cement, ceramics, IT, and jute industries' index items for environmental accounting and reporting procedures were found in this research. Consequently, the index items may be used by the appropriate authorities to create industry-specific rules. Sixth, the results of the research may be very important in establishing industry-specific guidelines to lessen adverse environmental effects.

### *5.2. Limitation and Future Research Direction*

This research focused only on Bangladeshi companies that are listed in the cement, ceramic, IT, and jute categories on the Dhaka Stock Exchange (DSE). This research does not take into account other non-DSE groups that can harm the environment. Furthermore, this research meticulously examined the concerns and efforts disclosed in the yearly reports. Here, the veracity of the material stated in the annual report is not verified; instead, the businesses' annual reports are relied upon. This research pledges not to disseminate any material that could have an adverse environmental effect. Future studies might expand their scope, comparability, and present position to include non-DSE-listed companies. Future studies may also take into account data from other sources in addition to yearly reports.

## 6. References


1. Biswas, M. (2013). Climate change & its impacts on Bangladesh. *Plan. Decent. Aspired Dev*, 86-95.

2. Saremi, H., & Nezhad, B. M. (2014). Role of environmental accounting in enterprises. *Ecology Environment and Conservation*, *20*(3), 1257-1268.

3. Uddin, M. M., Rabbi, M. F., & Parvin, M. H. (2023). Corporate Environmental Reporting for Achieving Environmental Sustainability: Evidence from Real-estate, Engineering, and Automobiles Industry. *Int. J. Acad. Res. Account. Financ. Manag. Sci.*, *13*(2), 1-21. http://dx.doi.org/10.6007/IJARAFMS/v13-i2/16615 J

4. Jones, M. J. (2010, June). Accounting for the environment: Towards a theoretical perspective for environmental accounting and reporting. In *Accounting forum* (Vol. 34, No. 2, pp. 123-138). No longer published by Elsevier. https://doi.org/10.1016/j.accfor.2010.03.001

5. Rounaghi, M. M. (2019). Economic analysis of using green accounting and environmental accounting to identify environmental costs and sustainability indicators. *International Journal of Ethics and Systems*, *35*(4), 504-512. https://doi.org/10.1108/IJOES-03-2019-0056

6. Ganesh, C. (2019). The environmental impact caused by the ceramic industries and assessment methodologies. *International Journal for Quality Research*, *13*(2), 315-334.

7. Devi, K. S., Lakshmi, V. V., & Alakanandana, A. (2017). Impacts of cement industry on environment-an overview. *Asia Pac. J. Res*, *1*, 156-161.

8. Mohamad, N., Muthusamy, K., Embong, R., Kusbiantoro, A., & Hashim, M. H. (2022). Environmental impact of cement production and Solutions: A review. *Materials Today: Proceedings*, *48*, 741-746..https://doi.org/10.1016/j.matpr.2021.02.212

9. Agarwal, S. (2014). Impact of green computing in IT industry to make eco friendly environment. *Journal of global research in computer science*, *5*(4), 05-10.

10. Nureen, N., Rafizul, I.M. and Kühlewindt, S., 2024. HEALTH RISK ASSESSMENT AND ENVIRONMENTAL IMPACTS OF JUTE MANUFACTURING: A CRITICAL REVIEW AND IMPLICATIONS.

11. Masud, M. A. K., Bae, S. M., & Kim, J. D. (2017). Analysis of environmental accounting and reporting practices of listed banking companies in Bangladesh. *Sustainability*, *9*(10), 1717..https://doi.org/10.3390/su9101717

12. Uddin, M. M., Rabbi, M. F., & Parvin, M. H. (2023). Corporate Environmental Reporting for Achieving Environmental Sustainability: Evidence from Real-estate, Engineering, and Automobiles Industry. *Int. J. Acad. Res. Account. Financ. Manag. Sci.*, *13*(2), 1-21. http://dx.doi.org/10.6007/IJARAFMS/v13-i2/16615 J

13. Chowdhury, A. A., & Hamid, K. (2013). Present status of corporate environmental accounting (CEA) in Bangladesh: A study based on some selected textile companies. *Research Journal of Finance and Accounting*, *4*(17), 122-129.

14. **Uddin, M.M**., Hasan, M., Hoque, S., Hossain, M.A. and Asauzzaman, A.S.M. (2024), Assessing sustainability reporting practice in accordance with the global reporting initiative (G4) towards achieving sustainable development goals using artificial intelligence", *Journal of Management Accounting, Governance and Performance, 1* (1), 40-68. https://doi.org/10.63817/jmagp.05.2024.002

15. Rahman, M. M., Rahman, M. S., & Deb, B. C. (2021). Competitive cost advantage: an application of environmental accounting and management approach with reference to Bangladesh. *The Cost and Management*, *49*(3), 47-59.

16. Uddin, M. M., Islam, R., Rouf, M. A., & Kayser, M. J. (2019). Environmental Reporting Disclosures Practices of Listed Ceramic and Cement Companies at DSE in Bangladesh. *Global Journal of Management and Business Research: Accounting and Auditing*, *19*(5), 1-10. https://doi.org/10.34257/GJMBRDVOL19IS5PG7

17. Şenol, H., & Özçelik, H. (2012, May). The importance of environmental accounting in the context of sustainable development and within IFRS evaluation. In *3rd International Symposium on Sustainable Development* (Vol. 31, pp. 81-89).

18. Haleem, A., Abdul Nazar, M. C., & Mujahid Hilal, M. I. (2021). A systematic review on environmental accounting. http://ir.lib.seu.ac.lk/handle/123456789/5589

19. Saremi, H., & Nezhad, B. M. (2014). Role of environmental accounting in enterprises. *Ecology Environment and Conservation*, *20*(3), 1257-1268.

20. Abdolmohammadi, M., Burnaby, P., Greenlay, L., & Thibodeau, J. (1997). Environmental accounting in the United States: From control and prevention to remediation. *Asia-Pacific Journal of Accounting*, *4*(2), 199-217. https://doi.org/10.1080/10293574.1997.10510520

21. Collison, D., & Slomp, S. (2000). Environmental accounting, auditing and reporting in Europe: The role of FEE. *European Accounting Review*, *9*(1), 111-129. https://doi.org/10.1080/09638180.2023.2254351

22. Agyemang, A. O., Yusheng, K., Twum, A. K., Edziah, B. K., & Ayamba, E. C. (2024). Environmental accounting and performance: empirical evidence from China. *Environment, Development and Sustainability*, *26*(2), 3687-3712. https://doi.org/10.1007/s10668-022-02853-y

23. Pramanik, A. K., Shil, N. C., & Das, B. (2007). Environmental accounting and reporting with special reference to India.

24. Uddin, M. M., Islam, R., Rouf, M. A., & Kayser, M. J. (2019). Environmental Reporting Disclosures Practices of Listed Ceramic and Cement Companies at DSE in Bangladesh. *Global Journal of Management and Business Research: Accounting and Auditing*, *19*(5), 1-10. https://doi.org/10.34257/GJMBRDVOL19IS5PG7

25. Rakiv, M., Islam, F., & Rahman, R. (2016). Environmental accounting reporting disclosure and company profitability: A case study on listed manufacturing companies of Bangladesh. *International Journal of Ethics in Social Sciences*, *4*(2), 21-30.

26. Islam, N., & Rahman, S. K. (2022). Corporate Environmental Management Accounting Practicing and Reporting in Bangladesh. *arXiv preprint arXiv:2208.12541*.

27. Paolo, C. A. N. F. O. R. A., Pierre, G. A. U. D. I. L. L. A. T., Ioannis, A. N. T. O. N. O. P. O. U. L. O. S., & Marco, D. (2020). *Best Environmental Management Practice in the Telecommunications and ICT Services sector* (No. JRC121781). Joint Research Centre.

28. Kim, D., & Kim, S. (2019). An institutional analysis of environmental management in the Korean mobile communications industry. *Telecommunications Policy*, *43*(10), 101815.

29. Uddin, M. M., Rashid, M. M., Hasan, M., Hossain, M. A., & Fang, Y. (2022). Investigating corporate environmental risk disclosure using machine learning algorithm. *Sustainability*, *14*(16), 10316. https://doi.org/10.3390/su141610316