CHAPTER I

Introduction

1.1 Introduction

In recent years, issues related with environment such as environmental degradation, deforestation, over exploitation of natural resources, soil erosion, problem of solid waste management, industrial pollution, global warming, greenhouse gas emission etc. has increased attention all over the world. Environmental Protection has become a serious problem which needs to be taken care properly for economic growth and sustainable development. All these problems are directly linked with industrialization which have adverse effect on environment; but are important for economic growth and development of a country. Now, industries are also realizing their role in environmental protection and sustainable development which is a need of the hour.

The world had witnessed several environmental tragedies during the mid 19th Century, like the cause of mercury poisoning in Japan, severe smoke pollution episode in London and the massive oil spill caused by Terry Canyon accident reinforced in people's mind the sense that the quality of air, water and a wide range of other natural resources was being seriously degraded. The intensity of danger from chemicals can be gauged from the extent of havoc caused by the accident in a pesticide factory at Bhopal (India) on 1984. The episode killed over 3,000 people, blinded several thousand and affected over 1, 50,000 people. The awareness of the environment and man's ability to cause damage started from the fifties of the 19th Century. This concern had repeatedly expressed into series of international summits and consensus right from the sixties (Pramanik, 2008, p.1).

During the year 1972, first global initiative was undertaken in the conference held at Stockholm about the issues and problems related to human environment. It was the first occasion on which the political, social and economic problems of the global environment were discussed at inter-governmental forum with a view to take the corrective action. It aimed to "create a basis for comprehensive consideration with the United Nations of the problems of human environment" and to focus the attention of governments and public opinion to various countries on the importance of problem. It ultimately gave birth to a special UN Agency "UN Environmental Programme" (UNEP). The conference was instrumental in awakening the consciousness on environmental issues across the world. It also strengthened and accelerated international action against dumping wastes in the sea and trading in endangered species (Banerjee, 2009, p.24). Also, during that year, our late Prime Minister Mrs. Indira Gandhi in the conference had stated that "it will be India's first priority to solve the problems of environment" (Agarwal & Jain, 2002, p.25). In the mid- eighties, on the basis of changing situation and becoming the environmental issues a world-wide phenomenon in the developed and developing countries, World Commission on Environment and Development (WCED), known as 'BRUNDTLAND COMMISSION', headed by Norway's Prime Minister, Mrs. Gro Harlem Brundtland, was established by the UN. The Commission published a report called "Our Common Future" in 1987 with the proposed concept of Sustainable Development. The concept received worldwide acceptance and led to the convening of the United Nations Conference on Earth and Development (UNCED) in Rio de Janerio, Brazil, known as "EARTH SUMMIT" (Pramanik, 2008, p.2).

Twenty years later, the first Global Conference on Environment, the UN General Assembly organized the Earth Summit in 1992 at Rio de Janeiro. The conference was attended by more than 170 countries and 103 heads of the Government and several hundreds of NGOs. The conference covered 18 Sectoral Environmental and Developmental issues and some cross-sectional issues. The issues taken up at the Conference was to provide an understanding of development that would support socio-economic development, prevent continued deterioration of environment and build a foundation for a global partnership between the developing and more industrialized countries for serving mutual needs and interests towards a healthy future for our planet. The outcome of the conference include the Declaration of Rio (a set of 27 principles), Agenda-21, United National Framework for convention on Climate Change and Convention on Biological Diversity and a set of forestry principles. The Earth Summit succeeded in presenting new perspectives on economic progress. It was considered as the beginning of a new era that was expected to address all relevant issues relating to environment management and integrate environment management issues with economic development for its sustenance. (Banerjee, 2009, p.27).

The issue of environmental protection and the sustainable development has given birth to new branch of accounting i.e. Environmental Accounting and Reporting. Environmental Accounting is relatively a new field in the area of accounting. Therefore, the environmental protection movement throughout the globe had led the corporate houses to accept concept of Environmental Accounting and Reporting (EAR).

In this chapter, scope of Corporate Environment Management (CEM), concept of Environmental Accounting and Reporting (EAR), Environmental Auditing (EA), legal framework of EAR has been discussed and also thrown some lights on different existing literatures which had bought some meaningful contributions in this study. The chapter has also discussed the objectives, methodology and limitations adopted in this study.

1.2 Corporate Environment Management

Industries and corporate now are increasing their role in sustainable development management. The term sustainable development means meeting the demands of the present generation without comprising the ability of future generations to meet their own requirements, without further destroying the world's carrying capacity. The corporate continued to be the biggest consumers of environmental resources and have to shoulder greater responsibilities towards the environmental management (Hyderabad, 2002, p.453). Hence, a new area of management is fast emerging known as "Corporate Environment Management." The scope of Corporate Environment Management is broad which cover various environmental aspects relating to environmental protection. Environmental Impact Assessment, Environmental Risk Management, Environmental Accounting, Compliance of Environmental Laws and Environmental Auditing are some of the important areas falling within the scope of Corporate Environment Management (Dey, 2002, p.55). In this context, the concept of Corporate Environmental Accounting, Reporting and Auditing as a new dimension in effective corporate management as a management tool is being discussed in subsequent paragraphs.

1.2.1 Corporate Environmental Accounting and Reporting: A conceptual and theoretical Framework

According to Hindu Philosophy "Rig-Veda" conceptual framework of Environmental Accounting and Reporting has been described as "sky is like a father, earth is like a mother, a space as their children." In other words, it can be said that the Rig Veda ordains that environment is to be valued like parents and loved like children. Thus, Environment Accounting and Reporting is not a new concept for ancient India but may be new for western accounting thinkers. Environmental Accounting and Reporting has emerged as a new domain in the field of accounting in recent times. It has become an important branch of accounting which involves a process of identification, measurement and allocation of environmental costs and benefits, environmental assets and liabilities and finally converts into monetary terms. In other words, "Environmental Accounting forms that part of accounting which deals with environmental concerns". It also relates to the recording of environmental performance related information to stakeholders at national level or corporate level. In broader term, Environmental Accounting is used in a number of different contexts:

- **Environmental Financial Accounting (EFA)**: Environmental Financial Accounting is concerned with assessment and disclosure of environmental related financial information. It provides financial information on performance of corporate environmental management to shareholders and investors, creditors, government, consumers, local communities and environmental institutes. It emphasizes the analysis and reporting component of internal costs

and liabilities related to environmental matters and also provide consistent and comparable information to investors, regulators and other stakeholders.

- **Environmental Management Accounting (EMA):** Environmental Management Accounting is a system of accounting which is concerned with the assessment and use of environmental related quantitative and financial information for internal decision making. It helps to improve environmental management as well as to identify cost reduction elements through indication of those measured environment related costs hidden in other cost elements.

- **Full Cost Accounting (FCA)**: It refers to the identification, evaluation and allocation of conventional and environmental costs including external social cost in an organization. It deals with estimation of external environmental impacts and costs.

- **Natural Resource Accounting (NRA)**: It is concerned with accounting for stocks and flows of natural resources in both quantitative and financial terms.

- **Corporate level accounting**: It deals with aggregation and reporting of organizational accounting information, natural resources accounting and other information for national accounting purposes.

- **Sustainability accounting**: It refers to the consideration of environment related quantitative and financial information in the broader concept of sustainability.

In narrower terms, Environmental Accounting is a process of making environmental related costs more transparent with corporate accounting systems and reports. Environmental Accounting is a system of making quantitative

assessment of the costs and benefits realized from the environmental preservation activities of a firm. (Rachchh, 2012, p.22).

Various professional bodies and authors have defined Environmental Accounting differently: At macro-level, Environmental Accounting can be defined as, "one of the methods that takes into account environmental resources and services and changes therein and measures their effects on GNP and NNP to reveal maximum income (True Net Capital Formation) which a nation can consume, while maintaining a sustainable development and growth, without jeopardizing the interests of the present and future generations as well as our neighbours (Das Gupta, N., 1997, cited in Oza, H.S., 2002, p.90). At micro level or corporate level, Environmental Accounting relates to the process of communicating the social and environmental effects of an organisation's economic actions to particular interest groups within society and to society at large (Pahuja, 2009, p.13). Some of the definitions of Environmental Accounting are:

According to Gray and Bebbington (2001, p.7) "Environmental Accounting includes accounting for contingent liabilities, environmental assets, environmental expenditure and investment in environmental projects. It also includes analysis and assessment of environmental costs, investment appraisal in terms of environmental factors and assessment of benefits of environmental programmes."

According to United States Environmental Protection Agency (USEPA 1995b), Environmental Accounting is an umbrella term as it covers National Income Accounting, Financial Accounting and Management Accounting. National Accounting deals with accounting for national resources. Financial Accounting is

termed as the estimation of environmental liabilities and costs based on generally accepted accounting principles to report to all stakeholders. Management Accounting refers to collection, identification, analysis of environmental information for internal use. It can be applied at a national or a firm level.

Environmental Accounting is a branch of accounting that deals with activities, methods and systems and with recording, analysing and reporting environmentally induced financial impacts and ecological impacts of a defined economic system (Bennett and James, 2000 cited in Rachchh, 2012, p.21).

From the above definitions, it can be said that Environmental Accounting is concerned with sustainable development and deals with measurement of environmental impacts in monetary terms. In other words, Environmental Accounting deals with recording of both financial and non-financial information that aims at achieving sustainability within the organisation.

1.2.2 Need for Environmental Accounting

Environmental Accounting came into existence due to limitations in the conventional accounting system. In conventional accounting system, environmental cost is not properly valued and therefore, the decisions taken by the management on the basis of this information is not appropriate. Also, conventional accounting system do not take into account external cost for example air, water or soil pollutions by production activities are not reflected in production cost. However, environmental external cost of an enterprise is ultimately converted into future environmental liability and risk due to the international and domestic

environmental regulations. Conventional accounting system fails to satisfy the different stakeholders need for information on environmental activity and performance of business enterprise.

Therefore, it was considered necessary to make an endeavour to incorporate the effect of environmental resources in the entire business functions of a business corporation. It is an attempt to identify the resources exhausted and costs imposed on the environment by a business corporation. Without considering these facts, keeping accounts and interpreting the results thereof may give a dubious scenario of the business corporation. Hence, it is a primary responsibility of every corporate citizen to evaluate a system of accounting to record the benefits and costs render by environment to a business corporation and justifying these costs and benefits are large constituents of Environmental Accounting.

Considering the above limitations, environmental issues need to be integrated into corporate accounting for better results. Accounting for environmental costs and benefits ensures the attainment of environmental sustainability objective and at the same time it can also support the more efficient use of resources and boost productivity as well as bottom line profitability. EA is a management tool that integrates the financial implications of environmental issues in the financial management systems of organizations to enhance more effective decision-making in order to promote environmental and economic sustainability. EA is considered as one of the important tools of environmental management. It is an efficient tool for improvement of economic and environmental performance of

an enterprise. It helps in improving efficient communication and relationship with various stakeholders.

1.2.3 Benefits of Environmental Accounting

Environmental Accounting helps to identify environment related costs and also provides better opportunities to minimize or avoid these costs. In other ways, it helps to improve environmental performance. Environmental Accounting helps to recognize environmental issues and provides useful environmental information for top management in better decision-making, and maintaining environmental commitment to Stakeholders. It helps in gaining a competitive advantage by minimizing negative environmental impacts through improved design or products, packages and processes. It also helps to ensure that the company meets legal compliance and social responsibilities. According to the Environmental Protection Agency, the benefits of EA are:

- Many environmental cost can be significantly reduced or eliminated as a result of effective decisions;
- Environmental cost (and potential savings) may be obscured in overheads or otherwise overlooked;
- Environmental costs can be offset by generating revenues through sale of waste or by-products;
- Understanding of environmental costs can promote more accurate costing and pricing of products;

- Competitive advantage with customers can result from processes, products and services which can be demonstrated to be environmentally friendly; and
- Accounting for environmental costs and performance can support a company's development and operation of overall environmental management systems (e.g., ISO 14001).

Thus, Environmental Accounting helps an organisation in minimizing costs, improving profitability through improved decision-making and meeting social responsibilities. It is also helpful to various interest groups like shareholders, creditors, employees and government in making relevant investment and other decisions.

1.2.4 Issues involved in Environmental Accounting

The following are the specific issues as regards the environmental accounting:

1.2.4.1 Environmental costs

Environmental costs are those costs that are incurred to minimise adverse environmental impact by an enterprise's activity. These costs arises on certain circumstances, for example, environmental damage to property that occurred due to acquisition, an accident or other activities in a prior period that now require clean up, clean-up of property disposed of in a prior period, and costs of disposing or treating hazardous waste. Environmental costs should be capitalised if they relate, directly or indirectly, to future economic benefits that will flow to the enterprise through increasing the capacity, or improving the safety or efficiency of other

assets owned by the enterprise and reducing or preventing environmental contamination likely to occur as a result of future operations or conserving the environment (Bala, S.K. and Imam, S, 2002, p. 341).

Many environmental costs do not result in a future benefits, or are not closely related to future benefits to enable them to be capitalised. Examples would include treatment of waste products, clean-up of damage incurred in a prior period, ongoing environmental administration, and environmental audits. Fines and penalties for non-compliance with environmental regulations and compensation to third parties for environmental damage are regarded as environmentally related costs and also instances of costs incurred that do not result in future benefits. Such costs would therefore be charged to the income statement immediately.

In most cases, environmental costs that are capitalised are related to another capital asset. There is no specific or separate future benefit that results from incurring the environmental costs themselves. The future benefits of such costs lies in another productive asset that is used in the enterprise's operations. When an environmental cost is capitalised and included as an integral part of another asset, the combined asset should be tested for impairment and, where appropriate, written down to its recoverable amount.

The following are the costs related to the environment:

- **Conventional costs:** These are costs of raw materials, capital goods and supplies. The using of these costs are considered in cost accounting and capital budgeting, but are not usually considered as environmental costs.

However, these costs are taken into consideration in business decision making.

- **Hidden costs:** These costs comprise of upfront environmental costs which are incurred prior to the operation of a process, system, or facility. These include costs related to sitting, design of environmentally preferable products or processes, qualifications of suppliers, evaluation of alternative pollution control equipment, and so on. Again these costs may be regulatory and voluntary environmental costs incurred in operating a process, system, or facility; and back-end environmental costs which will have to be incurred in the future.

- **Contingent costs:** These are environmental costs that may or may not occur in the future but depend on uncertain future events. For example, the cost that is involved in remediating and compensating for future accidental releases of contaminants into environment. Therefore, these costs may not receive proper attention in internal forward-looking decision.

- **Image and Relationship Costs:** These costs are less tangible costs because they occurred to affect perceptions of managers, customers, employees and communities. This category can include the costs of annual environmental reports and community relations' activities and these costs increase voluntarily for environmental activities. The costs themselves are not intangible, but the direct benefits that result from relationship or corporate image are treated as expenses.

Table 1.1 Examples of environmental costs incurred by firms

Regulatory Potentially Hidden Costs	**Upfront**	**Voluntary**
Notification	Site studies	Community relations
Reporting	Site preparation	Outreach
Monitoring/testing	Permitting	Monitoring/testing
Studies/modelling	R&D	Training and
Remediation	Engineering Procurement	Audits
Recordkeeping	Installation	Qualifying suppliers
Plans		Reports (e.g., annual environmental reports)
Training		
Inspections	**Conventional Costs**	Insurance
Manifesting	Capital equipment	Planning
Labelling	Materials	Feasibility studies
Preparedness	Labour	Remediation
Protective equipment	Supplies	Recycling
Medical surveillance	Utilities	Environmental studies
Environmental Insurance	Structures	R & D
Financial assurance	Salvage value	Habitat and wetland
Pollution control		Protection
Spill response	**Back-End**	Landscaping
Storm water Management	Closure/ Decommissioning	Other environmental projects
Waste management	Disposal of inventory	Financial support to
Taxes/fees	Post-closure care	Environmental groups
Contingent Costs	Site survey	And/or researchers
Future compliance costs	Remediation	Legal expenses
Penalties/fines	Property damage	Natural resource Damages
Response to future Releases	Personal injury damage	Economic loss damages
Image and Relationship Costs		
Corporate image	Relationship with Professional staff	Relationship with Lenders
Relationship with Customers	Relationship with workers	Relationship with Host communities
Relationship with Investors	Relationship with workers	Relationship with regulators
Relationship with Insurers		

Source: EPA, "An Introduction to Environmental Accounting as a Business Management Tool: Key Concepts and Terms", US: EPA primer, (1995a), cited in Pahuja's Environmental Accounting and Reporting, p.22.

1.2.4.2 Environmental liabilities

Environmental liabilities are obligations relating to environmental costs that are incurred by an enterprise and that meet the criteria for recognition as a liability.

An environmental liability has to be recognised when there is an obligation on the part of the enterprise to incur an environmental cost. There may also be cases where an enterprise has a constructive obligation, where there is no legal obligation or where there is an expansion on the legal obligation. The amount of an environmental liability should be estimated, in whole or in part considering the obligation and be disclosed in the notes/ schedules to financial statements. In any event, owners and shareholders are entitled to know the extent to which there is environmental damage to the enterprise's own property, as well as to the property of others at or after balance sheet date. Costs relating to site restoration or the closure or removal of long-lived should be recognised as an environmental liability. Since the obligation relating to future site restoration or closure or removal of long-lived assets arises when the related damage to the environment occurs, an environmental liability be recognised at that time, and not deferred until the activity is completed or the site is closed. Because of their nature, however, an enterprise may choose to recognise decommissioning costs over the life of the related operations (Ansari, 2001, p.85).

1.2.5 Environmental Reporting

Environmental Reporting means disclosure of environmental information into the corporate Annual Reports or in other reports or statements such as sustainability reports, corporate environmental reports or environmental policy statements. Some of the important definitions of Environmental Reporting are:

According to FEE Environment Task Forces, "Environmental Reporting covers the preparation and provision of information, by management, for the use of

multiple stakeholder groups (internal and external), on the environmental status and performance of their company or organisation. This information is most often provided in a separate environmental report, but it may (either as well or alternatively) be included in other forms of reporting (such as financial and social/ ethical reporting)."

Corporate Environmental Reporting can be defined as an umbrella term that describes the various means by which companies disclose information on their environmental activities. This should not be confused with corporate environmental reports, which represents only one form of Corporate Environmental Reporting. A Corporate Environmental Report is a tool to communicate a company's environmental performance (Pramanik, 2008, pp. 42-43).

Environmental Reporting is the disclosure by an entity of environmentally related data, duly verified (audited) or not, regarding environmental risks, environmental impacts, policies, strategies, targets, costs, liabilities, or environmental performance either through (a) the annual report and accounts package; (b) a stand-alone corporate environmental performance report (CER); or (c) a site-centred environmental statement; or (d) some other medium (e.g. staff newsletter, video, CD, ROM, internet site) etc. for perusal of users of such information enabling them to take decisions and enrich their relationship with the reporting entity (Ansari, 2001, p.87).

Thus from the above definitions, it can be said that Environmental Reporting is the process by which a company disclose information regarding its environmental activities to a multiple stakeholders including employees,

shareholders, customers, government and other interest groups in its Annual Reports or by some other statements.

1.2.6 Benefits of Environmental Reporting

The companies have started reporting on environmental issues in their Annual Report because of growing legal and social pressure. Some of the benefits may be stated below:

- Reporting on environmental performance strengthens the company's commitment to gaining a higher level of environmental performance. Reporting on wastage, raw materials usage, reduction of emission can be useful to minimise environmental problems;
- Environmental Reporting would discharge organisation's accountability and increase its environmental transparency. It allows a company to demonstrate its improving environmental performance to pressure groups, the media and society;
- Reporting on environmental performance allows environmental issues to be identified;
- Reporting on environmental performance assists in improving communication of the company with its stakeholders;
- Environmental Reporting helps to identify the environmental risks and thus prevent damage to reputation from negative publicity on the issue. Reporting on

environmental issues also enables the investors to avoid environmental risks associated in investment.

Thus, it is worth to mention that apart from cost involved in Environmental Reporting, many benefits can be avail through it. Environmental Reporting focus the organisation's attention on various environmental issues and can help to identify such issues and be able to reduce cost to some extent.

1.2.7 Environmental Audit

During early 1970s, Environmental Auditing was developed and originated in the United States for complying with new environmental laws and regulations among the companies, particularly for environmentally sensitive companies such as oil, chemical, etc. Now a days, it has become an important tool for assessing a company's environmental performance, policies and procedures. In other words, environmental audit is required for the purpose of verification of environmental statements by the companies disclosed to external stakeholders. Some of the important definitions of Environmental Audit are:

"A management tool comprising a systematic, documented, periodic and objective evaluation of the performance of the organisation, management and equipment designed to protect the environment, with the aim of facilitating management control of environmental practices and assessing compliance with companies' policies, including observance of the existing regulatory requirements" (Commission of the European Community's Eco-Management and Audit Regulation).

The Confederation of British Industry, 1990 (based on International Chamber of Commerce) defines environmental audit as "the systematic examination of the interactions between any business operations and its surroundings. This includes all emission to air; land and water; legal constraints; the ecology; and the public's perception of the operating company in the local area......Environmental Audit does not stop at compliance with legislation. Nor it is a "green- washing" public relations exercise..... Rather it is a total strategic approach to the organisation's activities" (International Chamber of Commerce-Position Paper on Environmental Auditing adopted in November 29, 1989 cited in Pramanik, 2002, p.263).

Environmental Auditing is also defined as "any systematic, documented, periodic review by a firm or other regulated entity of facility operations and practices related to meeting applicable requirement" (U.S. Environmental Protection Agency, 1986).

Environmental Audit refers to a systematic method of verifying that environmental regulations are complied with, the processes and products are environmentally acceptable and the business activities of the company do not affect the environment adversely. Environmental Audit helps a company to identify issues before they become big problems affecting seriously the environment and the company. (Banerjee, 2006, p.1437).

Thus, Environmental Audit is a wider term that involves audit of environment management system, policies, programmes and performance of an organisation with a view to decrease to environmental risks and liabilities within legal regulatory framework.

1.3 Legal framework relating to Environment Accounting and Reporting

Environmental concerns have created awareness among the people worldwide, particularly, since the 1992 Rio Earth Summit. Then after, day-by-day, eco-friendly concept has been accepted by many countries of the world. Under the constitutional provisions, there is also ‘Right to Life’ and the environmental protection and fundamental duty of the citizens (including Corporations) in this regard (Oza, 2002, p.88). There are various laws and guidelines which have been enacted in some advanced countries for protection of environment. Different international organisations and countries like USA, Japan, Norway, Germany, European Union, etc. have issued guidelines which were globally acceptable.

In this regard, Denmark was the first country to adopt legislation on public Environmental Reporting. In Denmark, Danish Environmental Protection Act, as amended, required certain Danish companies to publish information in the form of a “Green Account”. New legislation on mandatory Environmental Reporting has also been adopted in the Netherlands. The only country in Europe currently requiring any disclosure of environmental matters is Norway. In Norway, the new Accounting Act requires that all companies include environmental information in the Annual Report from 1999 onwards. In Sweden, similar legislation has been adopted for mandatory environmental disclosure in Annual Financial Reports ((Pramanik, 2002, p. 19). In USA, the companies are required to submit data on emissions of specified toxic chemicals to the Environmental Protection Agency under the Toxic Release Inventory (TRI). In Canada, the Securities Commission requires public companies to report the current and future financial or operational effects on environmental protection requirements in an Annual Information Form. Australian companies are now expected to give information on performance with regard to the environmental regulations that apply to them. Also, a National Pollutant Inventory (NPI) is being created which requires industrial companies to

report emission and inventories for specified chemicals. In the European Union, based on Article 15 of the Integrated Pollution Prevention and Control (IPPC) Directive, Member States will be required to register emission data from large companies and report this data to the Commission. The important guidelines are briefly presented below in tabular form.

Table 1.2: Environmental Accounting and Reporting Guidelines in different countries

ACBE	(U.K. Government's) Advisory Committee on Business and Environment	Environmental Reporting and the Financial Sector- An Approach to Good Practice (1997)
CERES	Coalition for Environmentally Responsible Economics (US)	Global Reporting Initiative
CIA	Chemical Industries Association (UK)	Reporting to Your Local Community (1995)
D&T	Deloitte and Touche (Denmark)	Assessor's manual for the Analysis and Evaluation of Corporate Environmental Reporting (1996)
Denm'k	Statutory requirements of Environmental Reporting	-
DIN	Deitsche Institute fiar Normierung	Guideline Environmental Report for the Public (1997)
EFFAS	European Federation of Financial Analysis Societies	Eco-Efficiency and Financial Analysis- The Financial Analyst's Views (1996)
EMAS	EC Eco-Management and Audit Scheme	Mandatory Reporting (2001 revised)
FEEM	Fondazione ENI Enrico Mattei (Italy)	Company Environmental Reports- Guidelines for Preparation (1995)
GEMI	Global Environmental Management Initiative (USA)	Global Reporting in a Total Quality Management Framework (1994)
ICAEW	Institute of Chartered Accountants in England and Wales (UK)	Environmental Issues in Financial Reporting (1996)
ICC	International Chamber of Commerce	The Business Charter for Sustainable Development (1991)
ISAR	United Nations	Conclusions on Accounting and Reporting by Trans-National Corporations (Annual)
	The 100 Group of Financial Directors (UK)	Hundred Group Statement of Good Practice
PERI	Public Environmental Reporting Initiative (UK)	The PERI Guidelines (1993)
UNEP	United Nations Environment Programme (and Sustainability)	Engaging Stakeholders: 2nd Inter-national Progress Report on Company Environmental Reporting (1996)
WICE	World Industry Council for The Environment (now part of WBCSD)	Environmental Reporting- A Manager's Guide (1994)
KPMG	International Survey of Corporate	Sustainability Reporting (2002)
MCA	Mineral Council of Australia	Australian Mineral Industry Code for Environmental Management (2000)
VCR	Voluntary Challenge Registry (Canada)	Greenhouse Gas Emissions set of reporting Standards (1998)
VCR	Le rapport environment (France)	Environmental Reporting: Shareholders' Expectations (1996)
VCR	DIN 33922 Environment Reports	For Public (1997)
VCR	Ministry of Environment, Japan	(i) Environmental Reporting Guidelines (2001) (ii) Environmental Performance Indicators (2001)
DEFRA	Department for Environment, Food and Rural Affairs	Guidelines for Environmental reporting on greenhouse gas emissions, on waste and on water (2001)

Source: FEE Discussion Paper towards a Generally Accepted Framework for Environmental Reporting. Cited in Pramanik, 2008, p.84.

In India, the environmental laws have been enacted to implement the various decisions relating to environmental protection and anti pollution measures. The two important international conferences on Environment and development held at Stockholm in 1972 and at Rio de Janerio in 1992 have influenced environmental policies in most countries, including India. The Stockholm Conference on Environment and Development exerted great influence on environmental policymaking leading to an amendment of the Constitution, passage of important legislations such as the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 and creation of institutions such as Central and State Pollution Control Boards for implementing the provisions of the Acts. These Boards' activities' is to minimize the level of pollution discharges in the air as well as in the water by the different industry groups according to compliance of the law. For this, industries have been classified into three categories, i.e., Red, Orange and Green. Industries falling into the 'red' category pollutes the environment to the maximum limit, while orange category industries pollutes the environment to a moderate limit and green category industries pollutes marginally and are environmentally-friendly. The Bhopal gas tragedy in 1984 triggered the passage of comprehensive environment legislation in 1986 and Public Liability Insurance Act in 1991.The Policy Statement on Pollution Abatement issued in 1992 advocates the need for combining regulatory instruments with market-based instruments and various supportive measures to deal with environmental protection. Moreover, the country has also passed various legislations to ensure the protection of environment prior to the Stockholm Conference which includes The Indian Forests Act, 1927, the Factories Act, 1948,

the Atomic Energy Act, 1962, the Insecticides Act, 1958, and the Wildlife (Protection) Act, 1972.

The 42nd Constitution Amendment Act, 1976, provided specific provisions for environmental protection in the form of Directive Principles of State Policy and Fundamental Duties. Article 48A was added to the Directive Principles of State Policy and states that 'The state shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country'. A new chapter entitled 'Fundamental Duties' in Article 51A (g) states that 'It shall be the duty of every citizen of India: to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures'. The 42nd Amendment Act also expanded the Concurrent List by adding 'Forests' and 'Preservation of Wild animals and Birds' from the State List.

Other laws such as Companies Act, 1956 regulates on disclosure of environmental information in Annual Reports by the companies. Sec 217 (1) (e) of the Companies Act, 1956 was amended by the Companies Amendment Act, 1988 which states that the Directors' Report shall include particulars as to "Conservation of energy, technology absorption, foreign exchange earnings and outgo" in the prescribed manner. The Government also specified 21 industry groups which should furnish information in Form A, as a part of Directors' Report.

The Environment (Protection) Act, 1986 was enacted after Bhopal gas tragedy in 1984. According to this Act, environment includes 'water, air and land and the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro organism and property'. It

defines hazardous substance as ‘any substance or preparation which, by reasons of its chemical or physiochemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism, property or the environment.’ The Act aims at protection, regulation of discharge of environmental pollutants, handling of hazardous substances, speedy response in the event of accidents threatening environment and giving deterrent punishment to those who endanger human environment, safety and health (Pradhan, B.B., & Bal, R.K., 2002, p. 38).

In the context of requiring environmental related disclosures from business units on a periodic basis, the first public announcement was made by the Government of India in 1991, immediately after adopting the financial reforms that liberalized the economic policies of the country. The Ministry of Environment and Forests has proposed that “Every company shall, in the Report of its Board of Directors, disclose briefly the particulars of steps taken or proposed to be taken towards the adoption of clean technologies for prevention of pollution, waste minimization, waste recycling and utilization, pollution control measures, investment on environmental protection and impact of these measures on waste reduction, water and other resources conservation” (Shah et al., 2002, p.142).

In 2011, the Securities and Exchange Board of India mandated listed companies to report on Environmental, Social and Governance (ESG) initiatives undertaken by them, according to the key principles enunciated in the 'National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business.'

The Companies Act, 2013 emphasizes on Corporate Social Responsibility (CSR) that makes it mandatory for certain class of profit making enterprises to spend money on social welfare activities. With effect from April 1, 2014, every company, private limited or public limited, which either has a net worth of ₹500 crore or a turnover of ₹1,000 crore or net profit of ₹5 crore, needs to spend at least 2% of its average net profit for the immediately preceding three financial years on CSR activities. The CSR activities should not be undertaken in the normal course of business and must be with respect to any of the activities mentioned in Schedule VII of the 2013 Act. Contribution to any political party is not considered to be a CSR activity and only activities in India would be considered for computing CSR expenditure. Also it provides that the companies are required to give more disclosures besides Company's general state of affair and financial performance regarding conservation of energy and environmental protection.

1.4 Statement of the Problem

The growing awareness towards sustainable development and economic growth has created consciousness among the industries and corporate to a large extent. Among the many environmental impacts, industrial pollution is regarded as the worst that are causing damage through excessive exploitation of resources and degradation of the environment. Now, industries are performing their operational activities in a responsible manner by adopting environment friendly technologies to prevent various environmental hazards. In this context, the development of Environmental Accounting and Reporting has received considerable importance throughout the world in recent times. In India, EAR is voluntary in nature. There

are no standard guidelines and framework for Environmental Accounting and Reporting. Industries, which have been known to have environmental problems i.e., highly polluting industries, may be more responsive in their environmental disclosures than other industries, which are not troubled with environmental problems (Ness & Mirza, 1991 cited in Paul & Pal, 2001, p.30). Certain large scale industries such as petrochemicals, oil refinery, cement, paper, etc. pollute environment more than other industries. It has been observed that most of the companies in Assam are not aware about the adverse effects of environment. Adoption of Environmental Accounting and Reporting by the companies of Assam is of great significance since this helps to decide how environment should be protected and conserved in future for the benefit of all. However, there is a dearth of research in the field of Environmental Accounting and Reporting in Assam. So, a study is conducted on the selected industries of Assam to bridge this gap in research and to create awareness among the companies in Assam towards environmental degradation and protection thereof.

In this regard, Corporate Environmental Accounting and Reporting practices of certain industries such as oil refinery, cement, paper and other identified polluting industries operating in Assam is studied in detail. This research study had shed some light on environmental policy and performance and suggested appropriate measures for improved environmental performance by the selected industries of Assam. The study had also analysed the nature and extent of Environmental Accounting and Reporting practices of the industries of Assam.

1.5 Review of Literature

This section of the chapter deals with review of literature on Environmental Accounting and Reporting practices in India and abroad. The existing literature review has been made in two categories:

I. Literature Review: International Studies

II. Literature Review: Indian Studies

Review of literature consists of research studies already done in the relevant field. There are quite a good number of articles found to have been written on various aspects of environmental issues by academicians, researchers and others. Some of these are purely theoretical based on text books and experience, and others are based on empirical studies and secondary data.

Literature Review: International Studies

There are many international studies in this area. Some of these studies have been discussed below:

Freedman and Jaggi (1982) examined the relation between environmental disclosures and the financial performance of the firms in four highly polluting industries. The study found that there is no association between environmental disclosures and financial performance.

Harte and Owen (1992) conducted a survey of UK companies and found that only one company utilized a separate report for disclosing information on social issues. They also found that 40 % of the companies mentioned social and

environmental issues in their statement of corporate objectives and these issues were most commonly found in the Chairman's Statement or review of activities. Finally, most of the disclosures were narrative in nature and only a few companies referred to externally derived standards when discussing specific areas of performance.

Bebbington et al. (1994) conducted a survey on 1000 top UK companies (listed on the Times 1000). The survey was based on a questionnaire sent to finance directors of those companies. 350 responses were received of which 181 were used in the study. The study found that accountants were aware that environmental issues would affect their practice in the future and perceived that this impact falls within the role of the accountant and they felt themselves as the appropriate individuals to innovate in this area. Despite this awareness, the accountants revealed that there was an absence of Environmental Accounting activity and accountants were not highly involved in their companies' response to the environmental agenda. They were found to be involved only in traditional accounting area, such as disclosure. The study also observed that the questionnaire respondents worked in companies of different sizes and country of incorporation and country of operation, their attitudes appeared to be homogeneous. Moreover, respondents' characteristics (like age and qualifications) also did not affect their responses.

Gamble et al. (1995) investigated the quality of environmental disclosures in 10 UK and Annual Reports for 234 companies and found that companies belonging to petroleum refining, hazardous waste management, steel workers and

blast furnaces industries provided the highest quality of disclosures. ACCA publishes a report entitled “The State of Corporate Environmental Reporting in Singapore in 2002” that summarized the findings of a study of the latest Annual Reports and any Stand-alone Reports of 160 listed companies and 13 Government Linked Companies (GLCs) and Statutory Boards (SBs). Some 14% of listed companies and 23% of GLCs and SBs had some form.

Deegan and Gordon (1996) investigated the environmental disclosure practices of 20 Australian companies. The content analysis method has been used to study Annual Reports of the sample Australian companies, taking reported words. The researchers observed low voluntary environmental disclosure in Australia - on average only 186 words for the sample of companies and found that environmental disclosures were found to be the positive disclosures rather than negative disclosures. The study also observed that there was an increase in voluntary environmental disclosures during this period due to increases in environmental group membership.

Deegan and Rankin (1996) reported a general absence of professional or legislative rules requiring companies to provide information relating to their environmental performance or any environmental initiatives undertaken within Australia. Previous research studies have shown that many firms present only favourable environmental information which is positive to their corporate image. Further, the amount of positive environmental information significantly outweighs the negative environmental information presented though the firms’ studies did

have bad news to report. The existence of a proven environmental offence was reported by only two of the companies within the sample.

Belal (1999) conducted a study in 1996 and observed that 90 percent of the selected 30 Bangladeshi companies (of which 28 were listed ones) made some environmental disclosure. Most of the voluntary disclosures were found to be descriptive. They were made in notes to the accounts and in the Director's Report. It was found that generally the companies made mandatory disclosures such as expenditure on energy, employees' number and cost.

Bewley and Li (2000) studied the Annual Reports of manufacturing firms with the objective of examining the associated factors of environmental disclosures in Canada. The study examined the level to which voluntary disclosure theory could clarify the general and financial environmental information. The study revealed that firms with more news media coverage of their environmental exposure, higher pollution propensity, and more political exposure concentrated more on general environmental disclosure.

Gray and Bebbington (2000) tried to present the current state of the art in Environmental Accounting research through the 'managerialist' lens and illustrated the essence of the problem through the reporting of a new analysis of data from an international study of accounting, sustainability and transnational corporations. The authors call for more explicit examination of the implicit assumptions held in accounting research generally and Environmental Accounting research in particular. According to them, accounting is contributing to environmental degradation rather than environmental protection.

Imam (2000) conducted an empirical research on environmental disclosure practices in Bangladesh from the Annual Reports of 40 listed companies out of 207 listed companies of the Dhaka; stock Exchange. He observed that about 22 percent of the sample companies disclosed environmental information in the Annual Reports and remaining companies did not show any concern for environmental issues. Environmentally responsible companies also disclosed information only with regard to protection of environment, pollution control, plantation of trees and some other matters. These companies were evidently not aware of issues like waste generation, conservation of energy and water, recycling of waste, odour and noise nuisance. These companies shared only qualitative and positive information to an extent of less than one-fourth of a page or just one or two sentences.

Gray et al. (2001) examined the relation between corporate characteristics and environmental disclosures by taking a sample of 100 UK companies drawn from the Centre for Social and Environmental Accounting Research (CSEAR). The authors observed that the volume of disclosure is related to the turnover, capital employed number of employees and profit, as larger and more profitable firms have disclosed more environmental information.

Frost (2001) examined the reporting practices of 71 Australian companies operating in resources (mining oil and gas), utilities and infrastructure, or paper and packaging industries. The study found that the number of companies disclosing compliance/ non-compliance with environmental regulations significantly increased after introduction of mandatory Corporate Environmental Reporting in

Australia under Sec. 299 (1) (f). More companies disclosed compliance and began to recognize noncompliance with the environmental regulations. The study also found that introduction of mandatory Environmental Reporting significantly improved overall reporting by Australian companies on their environmental performance; contradicting arguments that voluntary and existing disclosure requirements were effective.

Tilt (2001) observed that Australian companies are surprisingly behind other countries in Environmental Reporting trends, and there are some major differences between the content of their environmental policies and their disclosures. The study also reported that studies of environmental disclosure levels in companies' Annual Reports have shown an increasing interest in the environment through development of a corporate environmental policy (CEP). It was found that companies appear to be reporting on the environment internally, they place a low priority on providing environmental performance data to external parties.

Lodhia (2002) in his study which explained Environmental Reporting in Fiji reports that presents practices in Fiji were far from satisfactory, with limited disclosures in corporate Annual Reports and in these reports the focus was good news disclosures.

Cunningham and Gadenne (2003) investigated whether an enhancement in environmental regulations acts as a momentum for changes in Annual Report disclosure behaviour and concluded that environmental regulation acts as an

impetus for companies to include information on certain environmental issues in the Annual Report.

Patten and Crampton (2003) examined the corporate web page environmental disclosure of U.S. firms which is considered as a potentially powerful tool for disclosing environmental information and increasing corporate accountability. The study showed that corporate web pages come out as additional and non-redundant environmental information beyond what is provided in the Annual Reports. The findings showed that "focus of Internet disclosure may be more on corporate attempts at legitimating than on moving toward greater corporate accountability".

Ahmed and Sulaiman (2004) conducted a study to analyse the extent and type of voluntary environmental disclosures in Annual Reports for the year 2000 by Malaysian Companies belonging to construction and industrial products industries. The authors found that the extent of environmental disclosure was very low. They also observed that environmental information disclosed in Annual Reports was scattered all over the report and not concentrated in a specific section.

Al-Tuwaijri et al (2004) analyzed the associations among environmental disclosure, environmental performance and economic performance based on the argument that management's overall strategy affects each of these corporate responsibilities. The study revealed that good environmental performance was significantly associated with good economic performance and also with more extensive quantifiable environmental disclosures.

Campbell (2004) analyzed the Annual Reports of UK-based companies in five sectors between 1974 and 2000 to assess the volume of voluntary environmental disclosures. They observed an overall increase in disclosure volume over the period with a marked upturn in the late 1980s. He also discovered a positive association between environmental disclosure and the structural vulnerability of the five sectors to environmental liability and criticism.

Cowan and Gadenne (2005) studied Annual Reports of Australian listed companies and found that these companies have propensity to disclose higher levels of positive environmental disclosures in the voluntary sections of the Annual Report than in the statutory sections of the Annual Report.

Shil and Iqbal (2005) conducted a study based on the Annual Reports of 121 companies in Bangladesh and analysed the current status of Environmental Accounting practices and disclosure. It is found that 11 percent i.e., only 13 companies out of 121 companies disclosed the environmental related information. These companies made qualitative disclosure only. Moreover, none of the companies is making any disclosure regarding environmental costs.

Bose (2006) investigated the present scenario of Environmental Accounting and Reporting practices of Petrobangla companies in Bangladesh. The study revealed that during 1998-99 and 1999-2000 only 45.45% companies, during 2000-01, 63.63% companies and during 2001-02 and 2002-03, 81.81% of companies of Petrobangla disclosed environmental information. The study also found that Petrobangla companies disclosed only qualitative, descriptive and positive information without any quantification and negative information. Most of the

Petrobangla companies identified environmental issues regarding protection of the environment, pollution control, planting of trees and other matters. Moreover, it has been observed that the Petrobangla has already given much effort in the field of environmental protection but the current accounting system does not reflect such efforts for its stakeholders.

Gray (2006) examined the extent to which Social, Environmental and Sustainability Accounting and Reporting (SEA) should contribute to shareholder value. It is argued that sustainability is a pressing and demanding issue and suggested that there is an essential need to challenge the statements of organizations and representative bodies.

Moore (2008) investigated the impact of public sector reforms on Environmental Accounting procedures. The study analyzed the different reforms in the 1980s and 1990s which influenced the accounting for environmental expenditure in the public sector. The analysis found that a little benefit was notice from Environmental Accounting procedures in the company with efficiency being recognized as the main driver for accounting.

Ullah et al. (2013) examined the extent of environmental disclosure by select listed companies in Bangladesh and also studied the association between company specific attributes and environmental disclosure of the sample companies. The study found that on an average sample companies disclosed 15.23% of the expected information in their Annual Reports and environmental disclosure volume and total asset of the companies are significantly correlated. The study further

opined that Bangladesh companies are disclosing very insufficient environmental information in their Annual Reports.

Literature Review: Indian Studies

Over the past 30 years, Corporate Environmental Accounting and Reporting practices have greatly evolved in India in which different studies had been undertaken. Notable among them are the following:

The Institute of Chartered Accountants of India (1981) made a study based on Annual Reports of 25 public sector companies and 177 private sector companies in India for the year ending 1979. It was found that 123 companies out of a total number of 202 companies provided some information in their Director's Report regarding contribution towards social responsibility but only one company under study had disclosed the information regarding pollution control.

Sengupta (1988) studied Annual Reports comprises of 11 foreign and Indian polluting companies and observed that 21.43% of reports provide Descriptive information in the President's letter to stock holders, 42.86% in the Director's Report, 7.14% in the notes to the Financial Statements, 7.14% in Social Accounts and 21.43% in the supplement to Annual Reports. The environmental information disclosed in Annual Reports was mostly descriptive and quantitative in nature and mainly disclosed descriptive information in the Director's report.

Porwal and Sharma (1991) conducted a study based on Annual Reports of which 30 public sector companies were selected from the year 1988 and 147 private sector companies from 1987. They observed that there was marked

difference in the percentage of companies which made social disclosure between those in the private sector and public sector.

Eresi (1996) examined whether environmental awareness of many companies as expressed in different statements are translated into specific action plans. His study comprises 68 companies for the period 1991-92 and 1992-93. The outcome of the study revealed that disclosure on environmental issues was few and far between and that such disclosure, apart from that under section 217(1) (e), was mainly made in narrative form in the Director's Report.

Vasal (1998) conducted a study on 144 companies where 50% companies were in the public and 22.20% in private sector respectively. These companies disclosed information on their environmental impact through their Annual Reports. Moreover, the study found that practice of preparing standalone environmental reports was yet to take roots in India and Environmental Audit was conducted by a limited number of companies in India.

Mishra (1999) relates the macro aspects of Environmental Reporting and disclosure. He emphasizes that Government can take measures through instruments like pollution tax, tradable pollution permits, surround spoiling tax, effluent charges, etc. The ICAI, ICWAI and ICSI have to be assigned to play their social role.

Roy (2000) conducted a study to examine the Indian practices of environmental disclosure in corporate Annual Reports of sample of 55 companies (25 public and 30 private sector companies). The Annual Reports of these

companies for three years, i.e., 1987, 1991 and 1996 were analysed that the common practice followed by the Indian companies, in both the sectors over the years regarding environmental disclosures, was to offer descriptive information and itemize the same in the Director's Report. A few companies disclosed information through notes, schedules and a separate social account. The extent of disclosure of environmental issues (except energy conservation) did not exceed even one-fourth of a page in most of the cases. He found that the percentage of companies disclosing environmental information was considerably low in both the sectors. However, the public sectors companies giving environmental information were more than private sector.

Ansari (2001) in his study analyzed the proper framework for appropriate norms of accounting and reporting about the environment and discussed environmental costs and liabilities with its recognition and measurement in accounting briefly. He concluded that the Corporate Environmental Accounting and Reporting was misleading in the absence of any International and Indian Accounting Standard on this issue and therefore an effective corporate Environmental Accounting and Reporting system should be introduced.

Paul & Pal (2001) conducted an empirical study highlighting the nature and extent of Environmental Reporting practices by companies in India. They tried to concentrate on the study by establishing the relationship between the Environmental Reporting and the profitability of the companies. The study was undertaken on those companies, which were listed in the Bombay stock exchange in 1986 having a paid-up capital of Rs.7, 50, 00,000 to constitute the population.

They attained the objectives by ascertaining the nature and extent of Corporate Environmental Reporting in India and also identifying the causes leading to variation in the extent of reporting. The outcome of the study revealed that there is some sort of relationship between profitability and Environmental Reporting. If the Environmental Reporting is accepted then environmental performance is reflected. They finally justified their statement by putting forward arguments about the perception that if a company earns more profit, the more it could bear the burden of auditing environmental measures.

Ghosh (2001) examined 18 Annual Reports and found that 16 Annual Reports contained information relating to environment. He also found that only 2 Annual Reports contained information in quantitative form and 8 in descriptive form. The remaining 6 Annual Reports used mixed form.

Bhate (2002) investigated the extent to which Indian consumers are aware of environmental issues and it was found that Indians are most involved with environmental issues.

Gautam & Bora (2002) wrote an article highlighting certain fundamental and theoretical aspects of the concept of Environmental Accounting. They also attempted to examine whether environmental awareness of the companies as expressed in different statements is translated into action programme or not. A study based on the Annual Reports of four major oil companies in Assam in public sector and six other public sector industries were made to examine which companies are environmentally sensitive and to ascertain the extent and form of environmental information disclosure. Finally it was observed that financial

information concerning environment were totally absent in the amount were reports. The authors suggested that these companies, on their one part, can go for fiscal incentives in four of exemption from income tax, depreciation allowance, on capital game etc. by adopting measures that encourage control of pollution and preservation of environment etc.

Dey (2002) in his article suggested for implementing Environmental Audit in various areas such as production management, industrial management, environmental engineering and also in commerce. He also put emphasis on the practices of Environmental Audit by every corporate sector.

Pradhan & Bal (2002) conducted a study based on the primary data collected from a sample of eighty (80) corporate managers. They found that responses from the corporate managers were positive and are fully aware of the environmental issues and strongly agreed on the disclosure of Corporate Environmental Policy, Environmental Audit report, qualifiable future goals and targeted environmental issues, disposal of toxic or hazardous substance and on environmental spending.

Shah et al. (2002) examined 50 Annual Reports published by public limited companies in India, mainly those which affected environment. It was found that most of the companies formally complied with statutory requirements as to disclosure of energy conservation measures. The companies disclosing on environmental aspects mainly focused on pollution control measures, conservation of energy, achievements and awards, and activities like afforestation and community health services. But it was found that most of the companies did not

disclose report regarding environmental protection or damage caused by the company to the environment and society. The study concluded that companies had taken reporting on environment more a statutory obligation and less as a social responsibility. Moreover, the legal provisions on reporting of environment are not enough to procure true and fair information about the effect of companies' operations on environment.

Patra (2003) conducted a case study of TISCO for the financial years 1995-96 to 1999-00 to examine Environmental Accounting and Reporting practices and found that the company launched environmental management programmes and spent on an average, an expenditure of ₹ 25 crore per annum towards prevention of pollution and welfare purposes. Financial data have not been separately disclosed in the financial statement under the head "Environmental cost and expenditure". Contingent liabilities related to environmental pollution have not been disclosed. According to the author, as initiative on the part of TISCO may encourage other companies to follow suit. He suggested that Government of India should enact new piece of company law to make disclosure of environmental information mandatory. Award for best presentation can also be introduced.

Sahay (2004) conducted a study on questionnaire survey of top 250 Indian companies ranked by sales as reported by The Economic Times in 2003 to investigate their environmental disclosure practices. The author observed that Environmental Reporting is not properly maintained and non-comparable and these reports were mainly used as marketing tool. The reason behind inadequate environmental disclosure was mostly due to less pressure imposed on Indian

companies to report this information. The environmental awareness in India was lower than the awareness in developed economies. Indeed, there was no regulation on Environmental Reporting to guide the preparation of environmental reports.

Banerjee (2005) conducted a case study to examine the Environmental Accounting and Reporting practices of a few selected Indian companies for the financial year 2002-2003. He found that the disclosure of environmental information by the selected sample companies in their Annual Report is not significant. Very few companies have showed their awareness to disclose quantitative environmental information voluntarily. Companies like Indian Oil Corporation, ITC and Tata Motors have showcased their performance, viz., policy awareness, measures taken and the commitment of the company in this context, in a descriptive way, generally in the Director's report. The positive indication is that many companies have got ISO accreditation and adopted ISO 14000 series of standards. In fact, the sample companies have started environmental audit, which showed that in the near future, things would improve but need to take some measures also.

Oza (2005) discussed the need to be concerned for environmental imbalances by a corporate citizen, how Environmental Accounting can help environmental accountability, the present status of environment allied information and practices, and what to be done for long term profitability after facing the challenges of environmental accountability. The study observed environmental accountability by corporate citizens needs change in mindset of people within the organization, the top management, the key managers, the supervisory staff and

front line and floor people. It needs to be proactive rather than reactive in fulfilling the environmental accountability to attain the ultimate aim of sustainable development.

Singh (2005) examined the status of voluntary environmental disclosure of top 200 Indian companies. The study found that the level of disclosure which may have negative effect on the goodwill of the companies was very poor. The study also revealed that the environmental disclosure in Indian companies was very poor, inaccurate and was not self-explanatory and the company wise status of voluntary disclosure was not very satisfactory. Highly polluting industries were disclosing more environmental information than low polluting industries. The reasons behind the poor environmental disclosure practices of India are mainly its voluntary nature, costly, lack of awareness and commitment is noticed in case of Indian companies about social responsibility of the business. Also, the environmental performance of the Indian companies is very poor. And lastly, enforcement of the environmental protection law is also found to be poor.

Chauhan (2006) in his article described the issue of environmental indicators which could be used by the corporate sector to judge the sustainable management of environment for better disclosure of facts related to environment.

Banerjee (2009) wrote on the issues related to financial accounting, reporting, and auditing concerning environmental performance of the company with special regards to India. The author also analyzed the need for environmental regulation along with international environmental developments and the developments specific to India's environmental laws. With the help of case study,

he reached a conclusion and made suggestions to and recommendations of the various areas of corporate environment management like the structural changes at a macro- level, general changes, and also suggested for the improvement of environmental disclosure.

Mitra et al. (2009) conducted an empirical study to establish a relationship between environmental management and business strategy and focused upon six primary indicators (viz., environmental policy, regulatory compliance of standards pertaining to air pollution, release of liquid effluents, generation of solid and hazardous wastes and noise pollution, EMS certification under 1S0 14001: environmental audits and environmental cost management) that influence business unit's environmental pro-activeness. The study called for strengthening the regulatory mechanism to ensure better environmental management practices in the Indian corporate sector. The authors also suggested for informing the quality of environmental regulatory enforcement in India and to increase managerial commitment of business enterprises for incorporating environmental issues into all organisational activities.

Pahuja (2000) introduced the book with broader concepts of Environmental Accounting and Reporting along with legal framework of different countries. The author also conducted an empirical study of 339 companies. In this regard, questionnaire was distributed and responses received from 101 CAs to understand the nature and extent of Environmental Reporting practices. Multiple regression tests were used for determining the impact of independent variables (sector, nature of industry, foreign association, control by large business, size,

profitability, debt-equity ratio, exports and environmental performance) on the environmental disclosure practices of the companies. It was found that size, profitability and environmental performance emerged as important explanatory variables. The results obtained from the study reveals that big and more profitable companies provide more information on environment than small and less profitable companies respectively. The result also found that companies which have better environmental performance reported more on environment than companies which have no environmental performance.

Mukherjee et al. (2010) conducted a study on firm characteristics relating to environmental disclosure practices of top 80 Indian polluting firms under 10 identified industries that were marked as 'Red Category'. They observed that leverage; effective tax rate and liquidity were found as important variable and also suggested for legitimacy theory to explain environmental disclosure. Their findings reported that size and profitability were not considered as good variable to explain environmental disclosures practice in India.

Bora and Das (2013) examined the disclosure practices of the select companies in Assam regarding environmental issues. They have also constructed an index and termed it as "Index of Green Disclosure" The study reveals that voluntary disclosures made by the company on environmental issues are of qualitative in nature in the Annual Reports and also found that profitability and foreign link have significant relation with environmental disclosure made by the company.

1.6 Research Gap

Having gone through the review of existing literature, it has been found that there are a good number of studies on the Corporate Environmental Accounting and Reporting practices. But no research study has been conducted regarding Corporate Environmental Accounting and Reporting practices on selected industries of Assam. Considering the gap, a study have been conducted to examine the Annual Reports of companies spread over the industries primarily identified as pollution – prone and also drawn out some remedial measures to overcome the identified problem.

1.7 Objectives of the Study

The objectives of the study are as follows:

1. To examine the Environmental Policy and Performance of the selected industries of Assam.
2. To analyse the nature of Corporate Environmental Accounting and Reporting of the selected industries of Assam.
3. To assess the extent of Corporate Environmental Accounting and Reporting of the selected industries of Assam.

1.8 Research Questions

1. What are the existing Environmental Policy and Performance of the selected industries operating in Assam?
2. What is the nature and extent of Environmental Accounting and Reporting practiced by the industries operating in Assam?

1.9 Methodology of the study

Industries primarily identified as highly polluting industries by Central Pollution Control Board (CPCB) and also categorised as 'Red' and 'Orange' (moderately polluting industries) by the State Pollution Control Board, Assam were selected for the Study. Eight industries have been identified from red and two from orange category. The identified 'Red' category industries are paper & pulp, cement, oil refinery, petroleum and natural gas, petrochemicals, fertilizer, coal and Thermal power. Under 'Orange' category there are Tea and Plywood industries. The petroleum and natural gas industry has been classified under red category on the basis of petroleum products manufacturing and oil/ crude oil/ residues reprocessing and petroleum products/ crude oil storage and transfer excluding cross-country pipeline under orange category. The whole population of Oil Refinery, Pulp and Paper, Fertilizer, Petrochemicals, Coal, Thermal Power, Petroleum and Natural Gas represents sample of the Study. The industrial units of Cement, Tea and Plywood are selected by purposive sampling method to constitute the sample. The Study has been conducted through scrutinizing the Annual Reports of the sample companies spread over the industries identified as 'Red' and 'Orange' category. This is shown in **Appendix I**.

Initially, 30 companies of Assam are selected under 11 major industry groups from the official website of the Government of Assam (National Informatics Centre) and Assam Industrial Development Corporation (AIDC). Out of these 30 companies, 2 companies have merged with other companies and 2 companies were found as non- operational units during the field survey and one

company's five years (2007-08 to 2011-12) Annual Report was not available. So, these 5 companies were excluded from the study. Finally, 25 companies under 10 major industry groups were selected for the Study.

Table 1.3: Lists of 25 sample companies under 10 industry groups

Sl. No	Sample Companies	Abbreviated Form	Type of Industry	Category
1	Cement Corporation of India, Bokajan Cement Factory	CCI	Cement	Red
2	Vinay Cements Ltd.	VCL		Red
3	Barak Valley Cements Ltd.	BVCL		Red
4	Bhramaputra Valley Fertilizer Corporation Ltd.	BVFCL	Fertilizer	Red
5	Indian Oil Corporation Ltd. – (i) Digboi Refinery	IOCL	Oil Refinery	Red
	(ii) Guwahati Refinery			Red
6	Bongaigaon Refinery (earlier known as Bongaigaon Refinery and Petrochemicals Ltd.)	BGR- IOCL		Red
7	Numaligarh Refinery Ltd.	NRL		Red
8	Assam Petrochemicals Ltd.	APL	Petrochemicals	Red
9	Hindustan Paper Corporation Ltd.	HPCL	Pulp & Paper	Red
10	Assam Power Generation Company Ltd. (Namrup Thermal Power)	APGCL	Power (Thermal)	Red
11	North Eastern Electric Power Corporation Ltd. (Assam Gas Based Power Plant)	NEEPCO		Red
12	Coal India Ltd.	CIL	Coal	Red
13	Oil India Ltd.	OIL	Petroleum and Natural Gas	Red
14	Oil and Natural Gas Corporation Ltd.	ONGC		Red
15	India Carbon Ltd.	ICL		Red
16	Assam Gas Company Ltd.	AGCL		Orange
17	Assam Carbon products Ltd.	ACPL		Red
18	Gas Authority of India Ltd.	GAIL		Red
19	Kitply Industries Ltd.	KIL	Plywood	Orange
20	Sarada Plywood Industries	SPI		Orange
21	Assam Company India Ltd.	ACIL	Tea	Orange
22	Dhunseri Tea and Industries Ltd.	DTIL		Orange
23	Jay Shree Tea and Industries Ltd.	JTIL		Orange
24	Goodricke Group Ltd.	GGL		Orange
25	Tata Global Beverages Ltd.	TGBL		Orange

Source: Website of Assam Industrial Development Corporation and National informatics Centre

1.9.1 Criteria for selecting sample

1. Companies are selected on the basis of availability of Annual Reports of 25 companies under 10 major industry groups of Assam.

2. All the sample companies under industry groups should have at least one Annual Report for the study period.

3. All the companies selected under major industry groups have a plant operating in the state of Assam.

4. Purposive sampling has been used for selecting sample.

1.9.2 Data Source

The Study is based both on primary data and secondary data.

Primary data:

The primary data was collected from 13 industrial units located in the state of Assam through Schedule during field survey. In case of collection of primary data, the researcher faced difficulty with regard to time constraints and nature of data. It took around six months in different spell of time. The sample schedule is given in **Appendix II**.

Secondary data:

The Annual Report is the primary medium for collecting secondary source of data. The published Annual Reports of 25 sample companies under 10 industry groups were available either in hard copies or electronic publications. Some of the Annual Reports are also purchased from the Report Junction database.

1.9.3 Techniques of Analysis

In the present study, both analytical and explanatory techniques have been followed. The data has been analysed using qualitative methods. Corporate Environmental Policy Statements was collected from the websites of sample companies. Also, during field survey, the respondents were then asked to provide their Corporate Environmental Policy (CEP), their Annual Reports and any other items that they use to disclose environmental information (such as press releases, advertisements, employee magazines or newsletters, separate booklets or internal documents). Environmental performance of the sample companies were examined with the help of primary data. A schedule was prepared mainly on the basis of a study conducted by Banerjee (2009) with necessary modifications wherever necessary. During field survey, queries relating to study were obtained with the help of schedule. Other studies (Banerjee, 1994; Porwal, 1994; Roy, 1991 cited in Banerjee, 2009, p.89) found that "An average response rate of 43.3% which, going by the general experience of data collection in India may be considered satisfactory." In the present study, 52% sample companies' data were collected, tabulated and analysed. The review of available literatures had shown that there are various forms followed by different organizations for their Environmental Reporting (Sengupta, 1988; Eresi, 1996; Paul & Pal, 2001). Company may present their environmental disclosure either through descriptive statements or through quantitative and financial form. They also may use pictorial or graphical form. These different forms of Environmental Reporting used by organizations indicate the importance they give in environmental matters which helps to know the nature for each of the environmental information of the respective companies in Assam.

Also, some of the past research studies (Deegan & Gordon, 1996; Singh, 2005) have dealt with the measurement of EAR using content analysis. Content analysis is a method of codifying the text or the content of a piece of writing into various groups or categories based on some selected criteria (Singh, 2005, p.129). It involves the selection of analytical categories within the context of the content material. In this particular study, content analysis has been employed to assess the disclosure performance in the Annual Reports of selected companies in Assam. The environmental disclosures items were taken from the Annual Reports of the sample companies to assess the extent of Environmental Accounting and Reporting practices. A dichotomous procedure was used to measure the reporting score (RS). Disclosure of an item is assigned score1 while in case of no disclosure of the item score is 0 and finally the total score is calculated and thereafter percentage of the score is used. The other attributes of the companies like size (Total assets), profitability (Return on total assets), debt-equity (Outsiders funds to shareholder funds), liquidity (Current ratio) and age (Establishment of the company) which have some influence on environmental disclosures were considered in this study to see if there is any association between them.

1.9.4 Statistical Analysis and Tools Used

Statistical Analysis is used to see that if there is any association between environmental disclosure with number of words and sentences used in disclosing environmental information by the sample companies in their Annual Reports. Also, statistical analysis is used to see that if there is any relation between environment disclosure with the size, profitability, debt-equity, liquidity and age of the company.

The simple statistical tools like average and percentage have been used to measure, evaluate and interpret the concerned variables. Further, statistical tools like standard deviation, correlation, regression coefficients etc. have been used to interpret the variability, consistency, uniformity, stability and also the casual relationship among variables. For the purpose of analysis, Microsoft Office Excel Worksheet (Windows 8 Version) and SPSS (Statistical Package for Social Science) Software are used.

1.10 Chapter Schemes of the study

Chapter 1: Introduction: Corporate Environment Management, Conceptual framework of Environmental Accounting and Reporting, Statement of the problem, Literature Review, Research Gap, Objectives of the Study, Research Questions, Research Methodology and Limitations.

Chapter 2: Brief Profile of Selected Industrial Units of Assam.

Chapter 3: Environmental Policy and Performance of the selected industries of Assam.

Chapter 4: Nature and Extent of Environmental Accounting and Reporting practices of the selected industries of Assam.

Chapter 5: Findings, Suggestions and Conclusion.

1.11 Limitations of the Study

The research study has certain limitations. First, situation has encountered concerning the non-availability of data fully from the sample companies in Assam.

Secondly, the selected industrial units in Assam have shut down or shifted to other states due to uncertain circumstances. Current disclosure practices followed by the selected industries do not fully reflect the environmental impact of corporate operations. The responses given by the respondents could not be crosschecked through published secondary data. Also, limited statistical techniques have been used to analyse the data for obvious reasons. The regression model is somewhat low which may also indicate that some important variables have not been introduced in this study. By adding more independent variables, it might probably be able to increase the power of the regression model and hence a better explanation could be providing for the industries motives to environmental disclosure. Though these limitations may not affect our study, yet further research may be demanded on this important topic. A limitation of the study also arises from the focus on the firm reported environmental activities rather than on direct observation of the firms' environmental activities.