Chapter - 2
Environmental Accounting and Reporting: An Overview
CHAPTER-2

ENVIRONMENTAL ACCOUNTING AND REPORTING: AN OVERVIEW

Introduction

Industries use natural resources of various types in their production process. It may be water minerals, air, fuel or other resources. Simultaneously industrial activities are responsible for environmental pollution and degradation. Earlier environment pollution was totally ignored by the corporate and no regulatory measures were in vogue. When environmental pollution—water, air, noise, and soil became so grim that human life along with other faunal and floral life came to stake, environmental consciousness emerged. Various legislations were enacted at international, national and regional levels all over the globe. The rapid growing population and economic development is leading to a number of environmental issues in India because of the uncontrolled growth of urbanization and industrialization, expansion and massive intensification of agriculture, and the destruction of forests. Environmental issues in India include various natural hazards, particularly cyclones and annual monsoon floods, population growth, increasing individual consumption, industrialization, infrastructural development, poor agricultural practices, and resource...
misdistribution has led to substantial human transformation of India’s natural environment.

According to **John McConnell**, (founder of International Earth Day)

"Let every individual and institution now think and act as a responsible trustee of Earth, seeking choices in ecology, economics and ethics that will provide a sustainable future, eliminate pollution, poverty and violence, awaken the wonder of life and foster peaceful progress in the human adventure.

In the words of **Mahatma Gandhi**

“You must be the change you wish to see in the world”

As this research work intends to elucidate the ‘Environmental Accounting and Reporting in Indian Public and Private Sector Companies since Liberalization’ first we will understand here the important terms related to my research work.

As already mentioned, when environmental pollution became a serious threat to survival of human life the environment consciousness emerged and debated at various forum, at national and international level. As industries are major culprit for this situation, corporate social responsibility was pondered over.

After globalization, corporate sector started to have environmental accounting and reporting. But it is taken lightly and no concrete efforts are made in this direction so far either by the private or the public sector companies.
Liberalization

Liberalization refers to a relaxation of previous government restrictions, usually in areas of social or economic policy. In some contexts this process or concept is often, but not always, referred to as deregulation. In the arena of social policy it may refer to a relaxation of laws restricting for example divorce, abortion, homosexuality or drugs. Most often, the term is used to refer to economic liberalization, especially trade liberalization or capital market liberalization. Although economic liberalization is often associated with privatization, the two can be quite separate processes. For example, the European Union has liberalized gas and electricity markets, instituting a system of competition; but some of the leading European energy companies (such as EDF and Vattenfall) remain partially or completely in government ownership. Liberalized and privatized public services may be dominated by just a few big companies particularly in sectors with high capital costs, or high such as water, gas and electricity. In some cases there may remain legal monopoly at least for some part of the market (e.g. small consumers). Liberalization is one of three focal points (the others being privatization and stabilization) of the Washington Consensus’s trinity strategy for economies in transition. An example of Liberalization is the “Washington Consensus” which was a set of policies created and used by Argentina. In India Liberalization arrived post 1990-91 during P.B. Narasimha Rao, government.
Accountancy is the art of communicating financial information about a business entity to users such as shareholders and managers. The communication is generally in the form of financial statements that shown in monetary terms the economic resources under the control of management. It is the branch of mathematical science that is useful in discovering the causes of success and failure in business. The principles of accountancy are applied to business entities in three divisions of practical art, named accounting, bookkeeping, and auditing. Accounting is defined by the AICPA as “The art of recording, classifying, and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of financial character, and interpreting the results thereof.” Accounting is an ancient art, certainly as old as money itself even though the art must have been rudimentary in the beginning. Chanakya in India clearly indicates in his Arthashastra, the existence and the need of proper accounting and audit. Basically Accounting is the language of business; Affairs of business unit are communicated to others as well as to those who own, as associated or manage it through accounting information which has to be suitably recorded, classified, summarized and presented. Today, accounting is called “the language of business” because it is the vehicle for reporting financial information about a business entity to many different groups of people. Accounting that concentrates on reporting to people inside the business entity is called management accounting and is used to provide information to employees, managers, owner-managers and auditors. Management
accounting is concerned primarily with providing a basis for making management or operating decisions. Accounting that provides information to people outside the business entity is called financial accounting and provides information to potential shareholders, creditors such as banks or vendors, financial analysts, economists, and government agencies. Because these users have different needs, the presentation of financial accounts is very structured and subject to many more rules than management accounting. The body of rules that governs financial accounting is called Generally Accepted Accounting Principles, or GAAP.

**Environmental Accounting and Reporting**

Environmental protection has become a key issue all over the world these days. Several factors and forces are responsible for destruction of environment. Of these, growing hazardous industrialization is a major culprit. Though swift industrialization is an essential perquisite for overall economic growth, yet it is damaging the environmental drastically, Water pollution, air pollution, solid and toxic waste pollution and other environmental contamination are common in many production process- Every company has a overriding responsibility to make the fullest possible use of its resources both human and material. The issue of environmental responsibility and the sustainable industrial development has given birth to new branch of accounting i.e. environmental accounting and reporting. Environmental accounting is relatively a recent entrant in the domain of accounting. It is process of identification measurement and communication of information in
the environmental responsibility performance of an entity to permit economic decision. In the other words, “Environmental accounting forms that part of accounting that deals with environmental concerns”.

Environmental accounting is essential for an organization implementing the concept of sustainable development as it facilitates to take into account ecological activities of an organization in economic measurement. The economic development without environmental considerations can cause serious environmental damage. This is in turn daggering the life of present as well as future generations. “Environment is the situation or circumstance which exists around us and influence directly and indirectly on the lives and livelihood of man, animals and plants on earth.” Environment means everything which surrounds us. A- native American proverb states that, “only when the last tree is cut, only when the last river is polluted, only when the last fish is caught only when they will realize that we cannot eat money”. The first environmental accountings were constructed by Norway in the 1970s and were only so lowly adopted by other countries. Although, environmental accounting and reporting is voluntary exercise in India, the organization that opt to disclose environmental issues in their statements get various benefits such as improved image of the product or company.

Objectives of Environmental accounting

Environmental Accounting is required to fulfill a lot of demands from different stakeholders. However, for academic reasons, the following
basic objectives can be identified on the logical ground:

1. Environmental accounting would aid the discharge of the organization’s accountability and increase its environmental transparency;

2. It helps negotiation of the concept of environment and determines the company’s relationship with the society in general and the environmental pressure group in particular. This helps an organization seeking to strategically manage a new and emerging issue with its Stakeholders;

3. Because of the ethical investment movement, ethical investors require the companies to be environmentally friendly. Therefore, by upholding friendly image, companies may be successful in attracting fund from ‘green’ individuals and groups;

4. Environmental accounting consumerism movement launched by the environmental lobby groups encourages the consumers to purchase the environmentally friendly products, i.e., green products. Companies, thus producing green products may take competitive marketing advantage by disclosing the same;

5. By making environmental disclosures, companies may show their commitments towards introduction and change and thus appear to be responsive to new factors;

6. Companies engaged in environmentally unfriendly industries arose strong public emotion. There is a strong environmental lobby against
these industries.

7. Green reporting may be used to combat potentially negative public opinions;

8. By cultivating the enlighten approach of environmental accounting, companies can increase their image of being enlightened to the outside world and this, can be regarded as enlightened companies.

Environmental Accounting Approaches

Physical Approach vs. Monetary Approach

Two approaches are adopted in Environmental Accounting. Firstly, the Physical Approach was suggested by the United Nations where a complete guides to be prepared indicating the available resources within a country classified according to its state and uses (for instance, agriculture, desert land etc). Depending on this approach the environmental operations are presented in a physical terms, the current balance of the resource and the additions and deductions from that resource. No monetary value is assigned according to this approach. Then, the monetary approach emerged due to the fact that the Physical Approach does not fulfill the requirements of the Environmental Accounting.

Nevertheless, the physical approach is very important to get physical information about the resources which enables to prepare the environmental statistics and is considered the first step in the Monetary Approach. Despite the difficulties associated with the monetary approach, it gained a lot of
interest as such data will enable to know the profit and loss associated with environmental operations and to get an environmentally adjusted economic indicator (Hamid, 2002).

Environmental accounting related issues

United Nation’s Conference on Trade and Development (UNCTAD), an inter-governmental body and the Principal organ of the United Nations General Assembly in the field of trade and development, plays a positive and pioneering role in the matter of environmental accounting. As its part, Inter-Governmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) was formed in 1982 and till now, fifteen sessions of this Working Group have been held. Specially, at the thirteenth and fourteenth sessions, ISAR considered the feasibility of developing a possible “conceptual framework for environmental accounting with the underlying assumption that the ultimate goal for both Governments and corporate entities is “sustainable Development”. This Working Group in its fifteenth session held in GENEVA on 11-13th Feb 1998 defined only certain terms used in Environmental Accounting (i.e., Environment, Asset, Liability, Contingent Liability, Environmental Costs, Environmental Assets, Environmental Liability etc.) [Recommendation / Position paper of Inter-Governmental Working Group of Experts on ISAR and the relevant paper at the 15th Session of ISAR held in Geneva in the West, different Accounting Statutory Bodies also recommended some GAAP- based solutions to relevant environmental
accounting issues. These are

**Title 1.1: GAAP based solution for some environmental accounting related issue**

<table>
<thead>
<tr>
<th>Environmental Accounting Issues</th>
<th>Proposed Solutions</th>
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<td>Definition of Environmental costs and expenses</td>
<td>Environment costs that do not lead to future expected benefits.</td>
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<td>Environmental costs recognition and measurement issues</td>
<td>Materiality, measurability and certainty</td>
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<tr>
<td>Capital or revenue allocation problem</td>
<td>Capitalize if it is intended to prevent or reduce future environmental damage or to conserve resources</td>
</tr>
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<td>Capitalization of environmental costs incurred subsequent to the acquisition of a capital asset</td>
<td>Capitalize either (i) if the costs results in an increase in expected future economic benefits or (ii) if the costs are considered to be a cost of expected future benefits</td>
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<tr>
<td>Accounting for future environmental expenditure</td>
<td>Where an entity has a legal obligation to incur future costs, the costs involved represent an environmental liability.</td>
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<td>Accounting for the impairment disclosures</td>
<td>Reduce the carrying amount of the assets rather than introduce a liability.</td>
</tr>
<tr>
<td>Environmental accounting policy disclosers</td>
<td>All significant accounting policies relating to financial statements items to be disclosed.</td>
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</tbody>
</table>

**Sources:** the cost and management (Bangladesh), May-June, 1998

Environmental issues can have an impact on financial statements prepared on an accrual basis in many ways. There are international accounting standards, which address the general principles for the recognition, measurement and disclosure of environmental matters in a
financial report (IAS-37). The introduction of environmental laws and regulations may involve an obligation to recognize impairment of assets and consequently a need to write-down the carrying value. A failure to comply with legal requirements concerning environmental matters, such as emissions or waste disposal, may require accrual of remediation works, compensation or legal costs. For example a failure to comply with pollution control laws may lead to fines and penalties for an entity. Some annual operating costs are environmental in nature. For example, energy costs can be considered an environmental cost as the use of fossil fuels is a source of carbon dioxide and air pollution. Some entities may need to recognize environmental obligations as liabilities in the financial statements. For example, obligations associated with solid waste landfill closure and aftercare and restoration obligations associated with mining operations.

An entity may need to disclose a potential environmental obligation as a contingent liability where

a) The possible obligation depends on the possible occurrence of a future event; or
b) The amount of the present obligation cannot be reasonably estimated; or
c) An outflow of resources to settle the obligation is not probable.

In the course of meeting the relevant accounting standard requirements, some additional disclosures in the notes to the financial statements may be required. Examples may be
1. The industry in which the entity operates and the associated environmental issues

2. The accounting treatment adopted for environmental costs, i.e., what is included, when items are expensed or capitalized, how they are amortized to income etc.

3. Fines and penalties which have been incurred under environmental legislation; and

4. Environmental restoration liabilities, including measurement uncertainties, nature and timing (Pinckard and Wendy, 2000).

Types of environmental accounting

Fig. 2.1: Detailed Description of Environmental Accounts
Source: Burrilt et al., 2002, p.6
Monetary environmental management accounting (MEMA)

Although monetary environmental management accounting (MEMA) is extremely important for successful management, MEMA is designed for internal use; it is normally voluntary and is not needed for external stakeholders (Schaltegger et al 1996). If MEMA is performed correctly, it will be the base for financial accounting, environmental management systems like ISO 14000, and other environmental performance evaluations. In MEMA, environmental costs are recorded in different accounts from no environmental costs. New accounts are regularly created to present direct costs of each environmental impact, in a way that different environmental costs of each process can be easily distinguished. As an example, direct monetary value of waste reduction, the consumption of raw material, or labor and energy costs must be accounted separately (OECD 2000).

Physical environmental management accounting (PEMA)

Physical environmental management accounting (PEMA) is used to determine the level of the environmental impact produced by the company. Physical data are important when the company has set targets to reduce emissions, waste, use of materials, etc. Managers generally find measuring physical quantities easier when monitoring progress towards achieving targets (Envirowise 2003a) Examples would include: recording the level of greenhouse gases emitted; the toxic emissions of an incinerator; and releases of a cleaning facility or sewage plants, tons of wastes generated etc. (Schaltegger et al 1996). The information produced in PEMA can be used in
different ways, for example, it can be used for CO2 equivalent trading, which can produce extra income for the company. In other cases, it can be used to determine pollution levels, better positioning the company for potential new regulations. Additionally, it could be used by some companies to control environmental impact; for example, when sustainable development policies are in place (Burritt et al 2002).

**External monetary environmental accounting (EMEA)**

Some stakeholders have gained enough power over companies to request special information. These stakeholders are commercial banks, creditors and insurance companies (Schaltegger et al 1996). The information that is provided can be used for pollution subsidies, to accelerate depreciation of clean production technologies, to evaluate the consequence of various environmental taxes (e.g. CO2 taxes), and to contract insurance for potential product liabilities. The methodology does not vary from other financial reports though the information must be nominally presented in a very specific format to obtain specific results.

**External physical environmental accounting (EPEA)**

External ecological accounting is a tool to report to external stakeholders, and it has the same objective as EMEA. External stakeholders today put increasing pressure on companies in order to enhance the transparency of the environmental performance of the companies (Schaltegger et al 1996). This type of accounting is becoming extremely important for some companies when they have interest groups and
individuals seeking environmental information more than economic information. Some special mutual funds require that in order to borrow money, the company has to comply with certain criteria or ---, which have to be evaluated by using EPEA. Environmental protection agencies normally have an interest in PU figures such as waste and pollution, and may not have much direct interest in the amount paid by the company for their disposal (National Statistics UK 2002), even more so if the costs are capitalized or considered as expenses in the monetary accounts. Marketing departments can use EPEA to improve the “green” image of a certain company using the information produced by PEAM (Burritt et al 2002).

Other types of environmental accounting

These types of environmental accounting refer to those reports requested by a stakeholder that requires specific information, and forces the company to develop special accounting relationships. This is the case for taxing agencies and in certain cases for environmental protection agencies that require a specially organized report. They may require information in regards to environmental interventions, to check if regulations are met, to evaluate the severity of environmental. Problems in the company ,and to design future environmental policies (Schaltegger et al 1996).
Table 2: Examples of environmental costs incurred by firms

<table>
<thead>
<tr>
<th>Regulatory</th>
<th>Upfront</th>
<th>Voluntary (Beyond Compliance)</th>
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<tbody>
<tr>
<td>Notification</td>
<td>Site studies</td>
<td>Community relations/outreach</td>
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<tr>
<td>Reporting</td>
<td>Site preparation</td>
<td>Monitoring/testing</td>
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<tr>
<td>Monitoring/testing</td>
<td>Permitting</td>
<td>Training</td>
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<tr>
<td>Studies/modeling</td>
<td>R&amp;D</td>
<td>Audits</td>
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<tr>
<td>Remediation</td>
<td>Engineering and procurement</td>
<td>Qualifying suppliers</td>
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<tr>
<td>Record keeping</td>
<td>Installation</td>
<td>Reports (e.g., annual environmental reports)</td>
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<tr>
<td>Plans</td>
<td></td>
<td>Insurance</td>
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<tr>
<td>Training</td>
<td></td>
<td>Planning</td>
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<tr>
<td>Inspections</td>
<td>Capital equipment</td>
<td>Feasibility studies</td>
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<tr>
<td>Manifesting</td>
<td>Materials</td>
<td>Remediation</td>
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<td>Labelling</td>
<td>Labour</td>
<td>Recycling</td>
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<tr>
<td>Preparedness</td>
<td>Supplies</td>
<td>Environmental studies</td>
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<tr>
<td>Protective equipment</td>
<td>Utilities</td>
<td>R &amp; D</td>
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<tr>
<td>Medical surveillance</td>
<td>Structures</td>
<td>Habitat and wetland protection</td>
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<td>Environmental insurance</td>
<td>Salvage value</td>
<td>Landscaping</td>
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<tr>
<td>Financial assurance</td>
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<td>Other environmental projects</td>
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<tr>
<td>Pollution control</td>
<td></td>
<td>Financial support to environmental groups and/or researchers</td>
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<tr>
<td>Spill response</td>
<td>Closure/decommissioning</td>
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<tr>
<td>Storm water management</td>
<td>Disposal of inventory</td>
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<tr>
<td>Waste management</td>
<td>Post-closure care</td>
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<tr>
<td>Taxes/fees</td>
<td>Site survey</td>
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<th>Contingent Costs</th>
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<tr>
<td>Future compliance costs</td>
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<td>Penalties/fines</td>
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<td>Response to future releases</td>
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<th>Corporate image</th>
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<tr>
<td>Relationship with customers</td>
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<td>Relationships with investors</td>
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<td>Relationship with insurers</td>
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Source: USEPA (1995 p. 9)
To present all possible environmental costs that should be recorded separately in new EMA accounts would be impossible, because each company will have a different reality. But using information from various studies that are available in the literature (BDO 2002; Block, D. 2000; Dorfman et al. 1992; Envirowise 1996; Envirowise 2002; CCEM 1998; IMU 2002; Lanen 1996; National Statistics UK 2002; Steele and Powell 2002; UN CSD 2001; and USEPA 2000), a list of environmental costs that could be considered the most important, and that should be recorded in separate accounts could be produced. This list is presented below:

1. Atmospheric emissions waste
2. Energy consumption
3. Material usage
4. Oil and gas consumption
5. Packaging
6. Pollution control equipment/mitigation measures
7. Transportation costs
8. Waste

Therefore, it could be expressed that at least these environmental costs should be separated into new accounts in order to recognize the new accounting system as a basic one. This does not mean that more environmental costs could not be included in the first stage, but this will depend on the company or process studied.
Identification of environmental costs

When an environmental accounting system is implemented, two main processes are executed; (1) the identification of the environmental costs, which represents the environmental part of the process; and (2) the allocation of the detected costs, which requires accounting and bookkeeping knowledge. Both activities are the main functions performed by environmental managerial accounting (EMA). To be able to measure environmental issues, environmental costs must be uncovered and recognized. But it must be stressed that there is no universally accepted definition or a generally accepted standard of “environmental costs”. Therefore, how a company defines an environmental cost depends on the company and its specific purposes and how the information will be used (Bouma 1998). According to the United Nations Division for Sustainable Development, “the main problem of environmental management accounting is that we lack a standard definition of environmental costs” (UN CSD 2001 p. 4).

Consequently, recognizing and uncovering environmental costs is one of the most important processes in environmental accounting.

Types of environmental costs

In fact environmental costs include the cost of environmental measures and environmental losses where:

✓ Environmental measures are “steps taken by an entity or on its behalf by others to prevent, abate or remedy damage to the environment or to
deal with the conservation of renewable and non-renewable resources” (CICA 1993 p. 9).

확인 Environmental losses are “costs that have been incurred by an entity with respect to the environment for which there is no return or benefit, for example, fines or penalties for non-compliance with environmental regulations, damages paid to others for environmental damage done, or assets of the entity that have to be written off because their costs cannot be recovered due to environmental concerns” (CICA 1993 p. 11).

Techniques to identify environmental costs

Environmental accounting, as expressed throughout this work, is a tool to record, organize and present environmental cost information, but there are other tools to identify environmental costs within a company:

1. To examine existing facilities an EMS (Environmental Management System) can be used (Steele and Powell 2002).

2. To examine proposed facilities an environmental impact assessment (EIA) is generally used (Steele and Powell 2002).

3. Cumulative impact assessment is a technique used to examine impacts over larger spatial area (e.g. region) (Steele and Powell 2002).

4. Strategic environmental assessment is a technique used to examine impacts of strategies, plans, policies or programmes.

5. Life cycle assessment (LCA) or cycle inventory analysis can be used for many of the above. Life cycle assessment involves reviewing a process, both upstream and downstream, to evaluate issues in product design,
product sourcing, product use, and product disposal, to reduce environmental costs and impacts (Adams 2002). The basic idea of life cycle costing is to consider the costs caused over the whole life cycle of a product (Schaltegger et al 1996).

6. To the determination of social costs, externalities, contingent costs and environmental costs, environmental economic valuation techniques can be used. These techniques consist of (Steele and Powell 2002; and ACCA 2001); (USEPA 1996).

**Capitalization vs. expense**

One important question when allocating costs is whether they should be recognized as assets or expenses. Indeed, whether environmental cost should be capitalized, expensed or treated as a prior adjustment can be very controversial and can have a significant impact on profits (CICA 1993). If we consider that assets are “economic resources that are controlled by an entity and whose cost (or fair value) at the time of acquisition could be objectively measured” (Anthony et al 1999 p36). An expense represents a “resource consumed by the entity’s earning activities during the current period” (Anthony et al 1999 p 60). GAAP indicate that if we capitalize the expenditure, we must expect future economic benefits from the investment (Anthony et al 1999). The problem arises because some expenditure might provide future environmental benefits but not necessarily future economic benefits (Deegan 2002) and therefore, according to GAAP, should not be capitalized.
Participants: - In order to achieve a successful EMA implementation, a mixed team should be created that is responsible for its implementation (Deegan 2003). It is recommend that for big companies, four main participants should be included: a person from the accounting department with knowledge of existing and potential accounting systems; a person from the environment department to detect environmental costs and provide an environmental point of view; a person from the production area who understands the resources used within the various activities of the organization; and a person associated with senior management who can direct the process. All involved employees will provide an understanding of the business processes and the broader organization (KPMG 2002; and Deegan 2003). SMEs probably don’t have these resources available, but there are no recommendations in the literature on how they should proceed.

Limitations to EMA implementation: - There are important limitations to implement environmental accounting. One of these is that environmental accounting has a cost in terms of time and money (CCEM 1998). This can be a particular barrier for small to medium sized enterprises. A proper implementation of environmental accounting, can take a long time. Companies normally take several years to construct these types of environmental accounting systems, starting with basic information, and advancing in sophistication each year. For example, in a case study done by PricewaterhouseCoopers (2002), they took four months to prepare and understand the business, the accounts and the process. An additional four
months were used for collecting data, carrying out tests and receiving feedback. Finally one month was needed to analyze the data, interpret results and agree on different actions for changes in the process.

**Marketing and perception benefits:** Once the organization has implemented an environmental accounting system and the information has been used to optimize processes reducing the environmental impact and the use of resources by the company, some additional advantages should be seen by the company, these include:

- Reduced risk
- Regulation compliance
- Enhanced company image
- Being proactive and doing the right thing.

The reduction of the risk for accidents, spills, pollution and liabilities is an important aspect for a company. For example, if hazardous products are no longer used, the risk of an accident in the storage and manipulation of products will decrease. Also, to create a situation where the company can be liable for impact on the environment will be less if less impact is caused during operations. This is especially important when managers and directors can be sent to jail for failing to comply with environmental laws.

The reduction in the risk of the company will produce a reduction in the cost of insurance policies and financial institution will be more likely to lend it money.
In regards to legislation compliance, there is an important aspect of being a step ahead of regulations. Legislation changes over time, becoming more stringent every day.

Therefore, it is important to be one step ahead of regulations because last minute changes may cost extra money. There is always the risk of retrospective law enforcement. This has happened in the USA, where companies were forced to clean sites that were contaminated when no regulation was present (Lanen 1994). If a company shows sound environmental behavior, regulators may take a more hands off approach (CCEM 1998). Finally, a sound environmental behavior can also be used to demonstrate “due diligence” which is a basic legal defense. This is useful in case the company has an involuntary accident (Barchard pers. comm. 2003).

The projection of a green image is vital for many companies. Many stakeholders value a green image in a company, for example: employees, shareholders, neighbours, government agencies, clients, suppliers, investors, banks, insurance companies, environmental organizations, and consumers (Foundation Forum Ambient 1999).

Finally, reducing the impact of our society on the environment is the right thing to do. Indeed, we have a duty with the world we live in, therefore, reducing our impact and the use of resources will bring benefits but for our society as a whole.
Environmental Accounting Guidelines 2005 (Regulatory framework)

It is apt to mention that ultimate objective of environmental accounting is to clearly indicate the environmental cost of each process, separating the non-environmental costs from the environmental costs. Therefore, implementing an environmental accounting system can provide more accurate information for analysis options (Mein-chin 2002), because environmental accounting ensures that management decisions are made with knowledge (BDO 2002).

One of the major factors that have influenced the emergence of environmental accounting is that the relative cost of the generation of environmental accounts has been reduced. In the past, the cost of detecting environmental issues was lower than the cost of collecting the information itself. This has changed as the costs of corporate impact on the environment and environmentally induced financial impact on firms is rising rapidly, while the cost of data management has been reduced (Cox 2001). The use and objective of environmental accounting has changed also during these last 17 years, from being used to calm external environmental activists; it is now an important source of information for the company’s managers (Schaltegger et al 1996).

Environmental accounting is a useful and sometimes necessary tool to learn more about the influences of environmental input/output of a company’s activities on its bottom line and on the natural environment. Environmental accounting has become very important during the last years.
This was not necessarily the case a decade ago when environmental accounting was normally only a footnote on the year-end report. Today, in some companies, it has become an integral part of financial reports (Cox 2001).

**Necessity of Environmental Accounting**

The quantitative management of environmental conservation activities is an effective way of achieving and maintaining sound business management. In other words, in carrying out environmental conservation activities, a company or other organizations can accurately identify and measure investments and costs related to environmental conservation activities, and can prepare and analyze this data. By having better insight into the potential benefit of these investments and costs, the company can not only improve the efficiency of its activities, but environmental accounting also plays a very important role in supporting rational decision-making.

In addition, companies and other organizations are required to have accountability to stakeholders, such as consumers, business partners, investors, employees, local residents, and administration, when utilizing environmental resources, i.e. public goods, for their business activities. Disclosure of environmental accounting information is a key process in performing accountability. Consequently, environmental accounting helps companies and other organizations boost their public trust and confidence and are associated with receiving a fair assessment.
Improving environmental performance can have economic advantages, for example, CCEM (1998) calculates that the average savings that are achieved in Europe in SME by an environmental review are approximately $20,000. But there are following advantages to the enterprise itself if they apply the above mentioned strategies through the implementation of environmental accounting (CCEM 1998, Larrinaga and Bebbington 2001, Benidickson 1997):

i. Improved management of resources, reducing costs - increasing profit,

ii. Reduced environmental liabilities and regulation compliance,

iii. Enhancing image,

iv. Attracting the financial sector,

v. Reduced environmental risk,

vi. Assisting with environmental certification.

**Functions and Roles of Environmental Accounting:** - The functions of environmental accounting are divided into internal and external functions.

(I) **Internal Functions:** As one step of a company’s environmental information system, internal function makes it possible to manage environmental conservation cost and analyze the cost of environmental conservation activities versus the benefit obtained, and promotes effective and efficient environmental conservation activities through suitable decision-making. It is desirable for environmental accounting to function as a business management tool for use by managers and related business units.
(2) **External Functions**: By disclosing the quantitatively measured results of its environmental conservation activities, external functions allow a company to influence the decision-making of stakeholders, such as consumers, business partners, investors, local residents, and administration. It is hoped that the publication of environmental accounting results will function both as a means for companies to fulfill their responsibility for accountability to stakeholders and, simultaneously, as a means for appropriate evaluation of environmental conservation activities.

**Benefits of Environmental Accounting**

1. Assessment of annual environmental costs/ expenditures
2. Budgeting
3. Business planning processes
4. Calculating costs and savings of environmental projects
5. Cleaner production and eco-design projects
6. Design and implementation of environmental management systems
7. Developing of environmental performance measures, evaluation, indicators and benchmarking
8. Ensuring that environmental performance management systems are integrated into the business management systems (including performance appraisal exercises)
9. External disclosure of environmental expenditures, investments and liabilities
10. External environmental or sustainability reporting
11. Incorporating environmental considerations into the capital budgeting decision

12. Investment appraisal, calculating investment options

13. Other reporting of environmental data to statistical agencies and local authorities

14. Participation in strategy formulation

15. Product costing or pricing

16. Setting quantified performance targets

Environmental accounting consists of the following structural elements with the purpose of attaining two types of benefits derived from costs incurred from environmental conservation activities during the regular course of business.

(1) Environmental Conservation Cost: Investments and expense related to the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in monetary value.

Investment amounts are expenditures allocated during a target period for the purpose of environmental conservation. The benefits from these investments are seen over several periods and are recorded as expense during the depreciation period (the amount of depreciable assets recorded during the period). Expense amounts refer to the expense or losses recorded under financial accounting standards resulting from the consumption of goods or services for the purpose of environmental conservation.
(2) **Environmental Conservation Benefit:** - Benefits obtained from the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in physical units.

(3) **Economic Benefit Associated with Environmental Conservation Activities:** - Benefits to a company’s profit as a result of carrying forward with environmental conservation activities are measured in monetary value.

**Environmental Conservation Cost Categories :-**

*Categories Corresponding to Business Activities:* - Business activities are divided into categories including key business activities, administrative activities, R&D activities, and social activities, according to the relationship between the business and environmental impacts. Each environmental cost is then categorized according to the relevant business activity. Key business activities span the range of goods and services purchasing through production and distribution. Administrative activities, R&D, and social activities are considered separate categories in the series of business activities through sales or services rendered.

*Categories corresponding to business activities:*

(1) **Business Area Cost:** - Business area costs are for activities to reduce environmental impact which occurs within the business area due to key business operations. The business area is the region where the company can directly manage environmental impacts. Business area cost associated with environmental conservation is divided into three categories, pollution
prevention cost, global environmental conservation cost and resource recycling cost.

**(2) Pollution Prevention Cost: -** Pollution prevention cost is cost made for efforts to reduce environmental impact, such as equipment or facilities attached to an emissions terminus (“end of pipe”) for the purpose of preventing pollution. “Pollution” refers to damage to human health or the living environment created by damaging effects caused by business activities. In actual terms, typical forms of pollution are as defined in the Basic Environment Law, such as air pollution, water pollution, ground contamination, vibration, odor, and ground linkage.

i. Cost for preventing air pollution (including acid rain)

ii. Cost for preventing water pollution

iii. Cost for preventing ground contamination

iv. Cost for preventing noise pollution

v. Cost for preventing vibration pollution

vi. Cost for preventing odor pollution

vii. Cost for preventing ground linkage

viii. Cost for preventing other types of pollution

**Global Environmental Conservation Cost: -** Global environmental conservation costs are those costs associated with negative environmental impacts on the global environment or a wide portion of it, resulting from human activities. Costs are allocated for the prevention of global warming, to
prevent the ozone depletion and other global environmental conservation efforts.

1) Cost for preventing global warming and energy conservation

2) Cost for preventing the ozone depletion

3) Cost for other global environmental conservation activities

**Environmental Reporting**

Reporting in the corporate world first began in the form of financial reporting, and was used as a means of informing shareholders about the financial performance of a company. Additional types of corporate reporting are now being used to gather a wider range of information, including health and safety reporting, quality reporting, environmental reporting, social responsibility reporting, and most recently sustainability reporting. These newer types of reporting are typically used to inform stakeholders (who include customers, employees, neighbors, investors, government, non-governmental organizations (NGO’s), civic associations and the public) about the overall performance of the organization.

Corporate environmental reporting began in response to community and NGO pressure on companies to show move towards greater environmental practice. Corporate environmental reporting was traditionally a voluntary process but from the mid-1990s, a number of countries began to introduce mandatory reporting requirements. In 1996 Denmark was the first country to introduce the requirement for public environmental reporting for companies, followed by Norway, Sweden and the Netherlands in 1999 (Scott, 2001a).
Public and private companies in Australia were expected to report on economic, social and environmental issues in terms of an amendment to the Companies Act which came into effect from 2000. In the European Union (EU), a European Pollutant Emission Register (EPER) has been established and member states have had to adapt or introduce national legislation to establish national emission registration and reporting systems. In the United States of America reporting on specific toxic chemicals is required in terms of the Toxic Release Inventory (TRI; KPMG, 1999). The United Kingdom is introducing changes to company law which will require the mandatory filing of an Operating and Financial Review (OFR) from January 2005 and will include environmental, social and community issues (Anon, 2004). Corporate environmental reporting has undergone a change in the focus of the contents, reflecting a similar shift in the use and management of information within the corporate structure. It is difficult to pinpoint any particular reason behind this shift, but the driver is most likely the emerging philosophy of corporate governance and accountability.

It must be noted that the emerging focus represents an ideal which is achieved by few companies. However where the original focus was based on what companies chose to report, the emerging focus depends on what users want company information provided on. Corporate environmental reports have become the tools used in assessing the reliability and accountability of companies to manage their non-financial assets and liabilities.
**Need of corporate environmental reporting.** The historical reasons for undertaking environmental reporting vary from region to region. Studies indicate that the main drivers in Europe included duty to the environment, public relations, gaining a competitive advantage, and legal compliance. In North America shareholder pressure seemed to be more significant than legal compliance. In Japan consumer and shareholder pressure, campaign interest groups, environmental duty and public relations all scored higher than legal compliance as reasons for undertaking environmental reporting (Wheeler and Elkington, 2001). The use of environmental reports depends very much upon the target audience of the report. Corporate environmental reports are used by investors to check whether there are environmental liabilities which if not properly managed could cost them heavy losses in dividends and returns on their investments. There are indications that the contents of environmental reports are being used more extensively by NGOs and pressure groups to encourage greater responsibility towards the environment. In some cases, there is opposition to certain types of environmental reports because it is believed that they release information which could be used by other parties for their own gain. For example, companies, by analyzing the environmental statistics of their competitors, could gain valuable insights into their technology being used and gain competitive advantage. There are also calls from some quarters for more information in environmental reports to enable a better picture to be built of environmental performance. As with any form of
reporting the cost of generating the information and producing the reports must be carefully weighed against the benefits gained from the reports.

Corporate environmental reporting becomes a crucial issue in today’s corporate reporting. The present status and future focus gives every indication that it is going to capture a permanent position in the bundle of general-purpose financial statement. Because, the corporate reporting is for the stakeholders and every stakeholders show a keen interest on such disclosure. Protecting the environment is the social responsibility and commitment of corporations towards the society.

It is believed that corporation is responsible for the environmental crisis and so they should pay for this (cost-benefit trade off). However, reporting is mostly guided by standards, guidelines etc. And, we do not have any standards designed for such disclosure. So, reporting without proper format and style is still voluntary. Voluntary disclosure often leads to non-disclosure and mandatory disclosure leads to minimal disclosure. Thus, environmental Disclosure should have both type of orientation, as it is a question of life and sustainability. Environmental Reporting or Environmental journalism is the collection, verification, production, distribution and exhibition of information regarding current events, trends, issues and people that are associated with the non-human world with which humans necessarily interact. To be an environmental journalist, one must have an understanding of scientific language and practice, knowledge of historical environmental events, the ability to keep abreast of environmental
policy decisions and the work of environmental organizations, a general understanding of current environmental concerns, and the ability to communicate all of that information to the public in such a way that it can be easily understood, despite its complexity.

One of the significant buzzwords emerging out of the globalization and privatization paradigms of the 1990s has been corporate social responsibility. Consumers now-a-days expect firms to meet high health and safety standards for workers, respect human rights, protect the interests of consumers and meet environmental standards regardless of where they operate (Smith, 2002). Therefore, it is expected that companies provide relevant information about their environmental performance and policies, together with management systems in operation to support them (Fortes, 2002), commonly known as triple bottom line reporting (Elkington, 1997). It may appear that greater attention to environmental matters may lead to an increase in costs and hence lower profits (Fortes, 2002). But environmental reporting choices may influence the way stakeholders interpret the financial performance of a firm, enhancing investor confidence leading to a lower cost of capital, resulting in a rise in stock valuation multiples, enhancement in stock liquidity and an increase in the interest of institutional investors (Cormier and Magnan, 2003). As business organizations compete in the global economy, they must do so within the constraints of a society that features ever-increasing environmental accountability. This accountability consists of an increased public scrutiny of both the environmental performance of the
firm and its public disclosure of that performance (Al-Tuwaijri, Christensen and Hughes, 2004).

Of late Indian companies have faced strong international competition over the past few decades, especially after the opening of the Indian economy in the early 1990s, as international competitors tried to establish their footholds in India. These international firms are disclosing non-financial information including environmental information leading to an enhanced expectation from Indian companies to act responsibly towards the environment and be accountable to the society beyond the traditional role of providing financial account (referred to as ‘bottom line’ perspectives by Elkington, 1997) to the shareholders. Hence, to improve corporate image concerning socially responsible behavior, it is expected that an increasing number of Indian companies will report their environmental performance and social issues. However, most of the available literature in regard to environmental performance reporting has concentrated on developed countries and little attention has been given to the state of environmental reporting of developing countries.

ENVIRONMENTAL AUDIT

Environmental audits are intended to quantify environmental performance and environmental position. In this way they perform an analogous function to financial audits. An environmental audit report ideally contains a statement of environmental performance and environmental position, and may also aim to define what needs to be done to sustain or improve on
indicators of such performance and position. Environmental audits are reviews of a company's operations and processes for the purpose of assessing compliance with environmental rules and regulations. Environmental audits cover a broad spectrum of business activities and areas, including buildings and building sites; activities and procedures; industrial and commercial developments; and engineering hazard and operability studies. They can range from legally mandated reviews of plant safety or emissions to voluntary inspections of environmental practices. The term environmental audit means different things to different people. Terms such as assessment, survey and review are used to describe the same type of activity. Furthermore, some organizations consider that an “environmental audit” addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environmental matters. Although there is no universal definition, auditing, as practiced by many leading companies, follows the same basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication Environmental Auditing (1989). The ICC defines environmental auditing as:

A management tool comprising a systematic, documented periodic and objective evaluation of how well environmental organization, management and equipment are performing, with the aim of helping safeguard the environment by:

(i) Facilitating management control of environmental practices.
(ii) Assessing compliance with company policies which would include meeting regulatory requirements.

(iii) The European Commission in its proposed regulation on environmental auditing also adopts the ICC definition of environmental audit. Environmental Auditors can get certified through written exam and acceptance of the Environmental Auditor Association code of ethics. Depending on the nature of the audit, there are several different designations to choose from. CECAB administers these designations (Cecab/Bcrpse Canadian Environmental Certification Approvals Board) the term 'environmental auditing' is broad. Many definitions cover auditing in the private and public sector.

(iv) Private sector environmental auditing has been variously defined as:

'a management tool comprising a systematic, documented, periodic and objective evaluation of the performance of the organization, management system and processes designed to protect the environment with the aim of: (1) facilitating management control of practices which may have impact on the environment, and (2) assessing compliance with company policies'. (CEC, 1993); and the systematic examination of the interaction between any business operation and its surrounding. This includes all emissions to air, land and water legal constraints; the effects on the neighboring
community, landscape and ecology; and the public's perception of the operating company in the local area' (CBI, 1990).

**Origins of Environmental Auditing** Environmental safety and health auditing developed in the early 1970s, largely among companies operating in environmentally intensive sectors such as oils and chemicals. Since then environmental auditing has spreaded rapidly with a corresponding development of the approaches and techniques adopted. Several factors have influenced this growth. Environmental auditing originated in the United States in the 1970s. At first reactive in focus, environmental considerations were dealt with by 'end of pipe' solutions. Control measures were heavily influenced by the need to reduce remediation costs and fines which might stem from industrial accidents, and from the need to manage following environmental liabilities.

(i) **Industrial accidents.** Major incidents such as the Bhopal, Chernobyl and Exxon-Valdez disasters have reminded companies that it is not sufficient to set corporate policies and standards on environmental health and safety matters without ensuring that they are being implemented. Audits can help reduce the risk of unpleasant surprises.

(ii) **Regulatory developments.** Since the early 1970s regulations on environmental topics have increased substantially. This has made it steadily more difficult for a company to ascertain whether a specific plant in a particular country is complying with all of the relevant legislation.
(iii) **Public awareness.** The public has become increasingly aware of, and vocal about, environmental and safety issues. Companies have had to demonstrate to the public that they are managing environmental risks effectively.

(iv) **Litigation.** The growth of legislation has led to a corresponding explosion of litigation and liability claims, particularly in the United States. In Europe and elsewhere, there is growing emphasis on the responsibilities of individual directors and on making information available to the public.

Thus, Environmental auditing is a management tool to objectively and systematically evaluate environment management systems with the following objectives:

(i) **Waste prevention and reduction.**

(ii) **Assessing compliance with regulatory requirements.**

(iii) **Placing environmental information in the public domain.**

ISO 14001 defines an environmental audit as the environmental standard against which organizations are assessed. It specifies the requirements for an EMS, which provides a framework for an organization to control the environmental impacts of its activities, products and services. Another standard for environmental issues is ISO 1000.
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