

Environmental Accounting: A Conceptual Study of Indian Context

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I.BACKGROUND

Abstract—As the entire world continues its rapid move towards industrialization, it has seriously threatened mankind's ability to maintain an ecological balance. Geographical and natural forces have a significant influence on the location of industries. Industrialization is the foundation stone of the development of any country, while the unplanned industrialization and discharge of waste by industries is the cause of environmental pollution. There is growing degree of awareness and concern globally among nations about environmental degradation or pollution. Environmental resources endowed by the gift of nature and not manmade are invaluable natural resources of a country like India. Any developmental activity is directly related to natural and environmental resources. Economic development without environmental considerations brings about environmental crises and damages the quality of life of present, as well as future generation. As corporate sectors in the global market, especially in India, are becoming anxious about environmental degradation, naturally more and more emphasis will be ascribed to how environment-friendly the outcomes are. Maintaining accounts of such environmental and natural resources in the country has become more urgent. Moreover, international awareness and acceptance of the importance of environmental issues has motivated the development of a branch of accounting called "Environmental Accounting". Environmental accounting attempts to detect and focus the resources consumed and the costs rendered by an industrial unit to the environment. For the sustainable development of mankind, a healthy environment is indispensable. Gradually, therefore, in many countries including India, environment matters are being given top most priority. Accounting and disclosure of environmental matters have been increasingly manifesting as an important dimension of corporate accounting and reporting practices. But, as conventional accounting deals with mainly non-living things, the formulation of valuation, and measurement and accounting techniques for incorporating environment-related matters in the corporate financial statement sometimes creates problems for the accountant. In the light of this situation, the conceptual analysis of the study is concerned with the rationale of environmental accounting on the economy and society as a whole, and focuses the failures of the traditional accounting system. A modest attempt has been made to throw light on the environmental awareness in developing nations like India and discuss the problems associated with the implementation of environmental accounting. The conceptual study also reflects that despite different anomalies, environmental accounting is becoming an increasing important aspect of the accounting agenda within the corporate sector in India. Lastly, a conclusion, along with recommendations, has been given to overcome the situation.

Keywords—Environmental accounting, environmental degradation, environmental management, environmental resources.

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MORE recently, the environmental crisis has become a global issue. The concept of sustainable development is gradually becoming popular in many countries of the world, including India, where society feels the prevalent role of ecological requirements for economical development. Accounting is no longer confined to the historical description of financial performances; rather, it is now regarded as one of the most important services of society. The ecological role of corporate sectors responsible for their business activities on the environment is becoming particularly explicit. Along with the finance and production results of business activities, their environmental and social effects are also important. Environmental or natural resources are invaluable and hence there is an urgent need to maintain accounts of such resources, and as a result, a new area of accounting under the heading "Environmental Accounting" has emerged.

II.MEANING OF ENVIRONMENTAL ACCOUNTING

Environmental accounting is entirely an emerging and dynamic concept. Environmental accounting is concerned with the accounting for environment encompassing a business. Environmental accounting attempts to identify and bring to the light the resources exhausted and costs rendered reciprocally to the environment by the business houses. In other words, environmental accounting attempts to make the best possible quantitative assessment of the costs and benefits to an enterprise for activities specifically directed to environmental preservation. Environment brings together all inanimate organism and forces functioning in nature including man. In the McGraw Hill Encyclopedia of Environment Science, the term Environment is defined as the "Sum total of all conditions and influences that affect the development and life of an organism," including man. Thus, environmental accounting refers to the measurement and communication of information about the environmental responsibility performance of an organization to interested parties. It is also popularly referred to as "green accounting" or "eco-accounting". Environmental accounting identifies, measures and communicates environmental related information for economic decision making. In short, it records and summarizes the value of environmental goods and services in monetary terms. This branch of accounting provides organizations with the cost of their products and processes, thus leading to resourceful decisions and sustained profitability.

III. OBJECTIVE AND METHODOLOGY

This paper is basically based on concepts. As such, the opinions expressed in this paper are the author's own opinion and the opinion of some reputed authors. This paper throws light on certain fundamental and theoretical aspects of the concept of "Environmental Accounting". It also attempts to examine the drawbacks of the traditional accounting system and importance of environmental accounting today. In light of this, the motivation for this paper is not to seek new solutions to the underlying problems facing environmental accounting, rather it is, however, hoped that some light will be shed on the theoretical development of environmental accounting research. The discussion will hopefully provide insights and a basis from which accountants can test their current practices and seek to foster them in terms of providing a better understanding of the interaction between business and the natural environment. More emphasis is given on environmental accounting and awareness, since this is supposed to be the crying need of the day.

IV. FAILURES OF CONVENTIONAL ACCOUNTING

From the earliest days of modern accounting systems, economists have emphasized the limitations of using monetary transactions to measure total economic activity. Conventional economic accounting is practiced by most of countries in the world, since it supports economic policy in two important directions. Firstly, it provides a summary of measures of a nation's economic performance and also an instant picture of the flow of economic activities [1]. Secondly, changes in the environment and in the natural resources have not been expressly included in economic accounts, particularly because disagreement lies in the ways to measure these changes monetarily and thus, it is still impossible to bring them together with other entries in the accounts. The conventional accounting system does not provide firms with their cost of products and procedures. Identifying undisclosed or misallocated internal and external environmental costs and allocating them to particular products or processes are not done in the system. Thus, effective business decisions and sustained profitability suffers. The conventional accounting system deals with only non-living things and their relevant transactions. But environmental accounting identifies the resources exhausted and costs imposed by a business corporation during its activities. The results achieved without considering the natural resources may give us an ambiguous picture. Recording the benefits and costs rendered by the environment to a business corporation and justifying them are the prime responsibilities of environmental accounting.

V. RATIONALE OF ENVIRONMENTAL ACCOUNTING

Better insight into the potential benefits of investment and costs related to environmental conversation activities does not only help a company improve its efficiency of activities, but environmental accounting also plays a very vital role in supporting rational decision-making. As a result, environmental accounting helps companies and other

organizations boost their public trust and confidence and are associated with receiving a fair assessment. Through environmental accounting, an enterprise can enjoy the following benefits:

- i. Environmental accounting encourages consumers and helps them purchase environmentally friendly products, i.e., green products produced by the corporate, and as such, both consumers and corporate benefit.
- ii. Corporate sectors can show their commitments towards introduction and change, and thus seem to be responsive to new factors. Countries giving importance to the ecological aspect of activities are becoming more and more popular, particularly in Western countries.
- iii. Environmental i.e. natural resources taking place in the production as inputs are revealed in this accounting system. Shadow prices of environmental resources are usually defined as the value added attributable to them in the activities.
- iv. Pollution control, as a burning topic of discussion, environmental accounting shows the extent to which pollution has been controlled by the corporate sectors.
- v. Environmental accounting is of the utmost importance in answering certain queries, such as the extent of natural resources available in countries, what are the incomes arising out of them, what are the expenses incurred to protect the resources, what is its importance from the view of the nation, and at what values should they be shown in the nation's balance sheet, etc.?
- vi. Environmental accounting is beneficial in another sense, which offers an idea about industrial development, a nation's economic progress and social welfare and the fulfillment of responsibility towards society [2].
- vii. The current national accounting practice does not duly consider the value of natural resources, and as such, it becomes a complicated issue to measure the inter-relationship between environment and development. Environmental accounting is justified when the arguments related to market, society, etc., are considered.
- viii. Environment accounting helps in discharging organizational accountability and increasing environmental transparency. Sustainable development is possible with the help of environmental accounting as it helps include ecological ability of enterprise.
- ix. Negotiation between the environment and society is helpful to organizations which seek to strategically manage a new and emerging issue with different categories of users.
- x. Corporate sectors may be successful in attracting funds from green individuals and new groups with the help of sustaining an environmentally-friendly green image.
- xi. In the global economy there is an existence of a strong environmental lobby against environmentally unfriendly industries. Green reporting can be used to combat effectively all negative public opinions.
- xii. A corporate sector can be considered as an enlightened corporate sector if it takes the enlightenment approach of environment accounting and thus increases its image of

awareness to the outside world. Environment accounting expressing the concept of sustainable development is very often used as an efficient tool for improving the management of enterprise.

- xiii. Environmental accounting minimizes the risk stemming from the management of product liabilities. A business cannot fully include the necessary environmental changes until and unless accounting and finance do so.
- xiv. Environmental accounting improves environmental performance through better management of environmental cost and thus, benefits the natural and human environments.
- xv. By minimizing environmental impacts through improved design of products, packages and processes, environmental accounting takes the competitive advantage. Inter and intra firm comparison reveals whether environmental costs are adequate or not.
- xvi. Environmental accounting detects that part of the gross domestic product which exhibits the requisite cost to compensate for the negative impact of economic growth.
- xvii. Environmental accounting estimates the total expenditure on production or enhancement of the environment. Companies seeking long-term profits are possible only when the ecological aspect in its business strategy and policy is considered.
- xviii. Multinational bodies like the IMF, World Bank, UNO, etc., are looking for countries seeking their assistance to meet their environmental requirements.
- xix. Environmental accounting reveals true maximum income which accounting can actually consume without exhausting the stock of natural assets.
- xx. Government can use the data through the changes in financial budget and by other measures to achieve optimal allocation of scarce resources in the economy of a country.
- xxi. Environmental accounting shows unsound production and consumption patterns, misuse and scanty use of resources and assets like water etc.
- xxii. Optimal allocation of scarce resources in the economy is possible with the help of environmental accounting.
- xxiii. Environmental accounting discloses areas of soil and vegetarian deterioration through building construction in open areas due to increasing population pressures.
- xxiv. Comparison with conventional accounting discloses the main reasons for the change in net capital formation and the extent of substantiality of conventional accounting.
- xxv. Environmental accounting has proved to be highly essential in measuring a nation's economic development, social welfare, industrial development, pollution control and in satisfying the needs of government, still the system is in its infancy and not all countries have been able to develop such a system [3]. But with the passage of time, the system will gradually develop, research will be undertaken and it will fulfill the needs for which it was originated.

xxvi. Through environmental disclosure practices, a company can show its commitments towards introduction and change, and thus appear to be responsive to new factors.

- xxvii. Environmental accounting helps negotiation and establishes the company's relationship with society in general and environmental pressure groups in particular. This helps an organization seeking to strategically manage a new and emerging issue with its stakeholders.

The Environmental Protection Agency (EPA) [4] suggests the following benefits:

- i. Impressive decision taking through the application of environmental accounting reduces or eliminates many environmental problems.
- ii. Environmental costs and potential savings may be obscured in overheads or overlooked;
- iii. Environmental costs can keep its balance by generating revenue through the sale of waste or by-products or recycling them;
- iv. The understanding of environmental costs encourages more accurate costing and pricing of products;
- v. Competitive advantage with customers resulting from processes, products and services can be demonstrated to be environmentally friendly; and,
- vi. Accounting for environmental costs and performances nourishes a company's development and operation for an all-round environmental management system [5].

In the light of evolutionary wisdom it is considered prudent to make an endeavor to incorporate the effect of environmental resources in the entire business functions of a business house. Environmental accounting is an attempt to identify the resources exhausted and the costs imposed on the environment by a business.

Excepting the above, keeping books of accounts and interpreting the results thereof may provide an obscure picture of the business corporation. Hence, every corporate citizen should evaluate a system of accounting to record the benefits and costs rendered by the environment of a corporate and justifying these costs and benefits are large constituents of environmental accounting.

Monetary values for natural resources are not ascertained by demand and supply law, but it can be determined on the basis of a shadow pricing method- a method of ascertaining the value of natural resources from a sample group of persons by using its importance to them and how much they are prepared to pay for them. Whatever they assert, the average of a sample of responses is considered its pricing. The identification of environmental expenses provides a comprehensive picture of the efforts undertaken by a business and other sectors of the economy to safeguard the environment. Very often owing to unrecorded environmental costs and the difficulty in extracting and separating environmental costs, industry data are not usually reliable. Maintaining confidentiality and widely following different accounting systems also make the task very difficult. But still, environmental accounting is highly useful in planning, public resource management, pollution control and for policy analysis.

VI. PROCEDURE FOR ENVIRONMENTAL ACCOUNTING AND MAJOR ISSUES AND CHALLENGES

- i. Profit and Loss Account: All revenue expenditures incurred for the protection of the environment should be debited to this account.
- ii. Balance Sheet: All environmental and natural resources consumed by the business should be regarded as environmental assets and it should be the liability of the organization towards society to utilize such assets at maximum possible capacity and at minimum cost without adversely affecting society's interest. Any capital expenditure incurred by the organization should be shown in the balance sheet.
- iii. Budgets: The environmental budget should be prepared by the organization to ascertain the amount required for environmental activities. The responsible person should check and verify the actual amount of expenditure spent on environmental activities.
- iv. Reporting: The organization should report for environmental activities, the cost imposed by the organization on the environmental benefits served by the business organizations, benefits received from the environment and the costs imposed by the environment. In short, social responsibility of business will be satisfied by the reporting system.

The major burning issues and challenges with regard to environmental accounting include: a. Identification of environmental costs; b. Capitalization of costs; c. Identification of environmental liabilities; and, d. Measurement of liabilities. Different guidelines regarding these issues have been issued by many organizations from time to time, but the guidelines are almost advisory in nature.

VII. ENVIRONMENTAL AWARENESS IN INDIA

Public awareness towards the environment has grown tremendously since the '70s, when laws for the protection of the environment were passed. Smt. Indira Gandhi, the then Prime Minister felt the necessity of healthy environment and expressed her strong opinion in favor of the environment at the United Nation's Conference on the human environment in Stockholm, 1972. Since then various laws have been enacted from time to time and India have been facing strong international competition, particularly after the opening of the Indian economy in the early 1990s. The first public announcement with regard to environmental related information from business on a periodic basis was made by the Central Government in 1991. The keeping of accounts and records relating to the environment would be beneficial to deter exploitation of natural resources and prevent their depletion. A flexible approach and flexible framework may be adopted and modified according to national priority. The statistical agency being entrusted to collect and handle data will be able to overcome the difficulties with regard to various degrees and categories of natural and environmental resources and services. The Environmental Reporting Practices of the corporate sectors in India are not satisfactory; very few

corporate entities have some mention about the environment in general terms. Most corporate entities have taken reporting on environmental aspects under more statutory obligations and less social responsibility. The provisions about reporting on environment protection are not sufficient to submit true and fair information about the effect of corporate operation on environment. By keeping the global environment in mind, a standard accounting policy for determining the Gross National Product (GNP) with environmental data, like industrially developed and experienced countries, may be formulated by the Government of India. Although the Government has launched different programs to maintain an ecological balance and healthy environment at central and state levels through research and education, still it requires special treatment for determination of GNP, a tool for development of economics of the country. Cost benefit analysis can also to be done carefully. An alternative resource allocation mechanism can also be followed to observe the fate of environmental resources. Developing countries like India should develop the environmental accounting without any loss of natural resources. Although environmental accounting and reporting is voluntary exercise in India, the organizations opting to disclose environmental issues in their statements enjoy various benefits such as improved image of the product or company.

VIII. PROBLEMS

Environmental accounting shows the extent of pollution controlled by business entities. Although it has drawn the attention of many countries of the world, the concept of environmental accounting suffers from certain problems viz. poor valuation techniques, partial values, uncertainty in values, changing social values, non-economic values, individual and aggregate values, incremental and relative values, inapplicable assumptions, uncertainty and risk, lack of reliable industry data, etc. The basic financial accounting is concerned with monetary transactions which yields price through the transfer of property rights. As property rights do not exist over environmental goods, financial accountant cannot account for the full cost of production, including cost of consuming essential natural resources. A mismatch is found between accounting information and its application to ecological issues by excluding the environmental aspects in financial accounting, the worst polluting company seems to be the most successful and attracts additional investment from an investing public [6]. Environmental goods can easily be valued with the help of any method viz. the replacement cost method, opportunity cost method, Delphi techniques, etc. Measuring the inter-relationship between environment and development is a complicated issue mainly because the current national accounting does not duly consider the value of natural resources. The problem of environment protection is becoming more and more acute and the necessity for considering the value of services of environmental resources is also increasing day by day. Monetary values assigned to environment goods and services under the shadow pricing process are uncertain and insufficiently quantified. Many conditions and assumptions underlying economic theory are

not met. As International firms are inclined to disclose non-financial information including environmental information they have enhanced expectation from Indian companies to act responsibly towards the environment and be accountable to society beyond the traditional role of providing financial accounts to shareholders. For improving the corporate image relating to socially responsible behavior, it is desirable that an increasing number of Indian companies report their environmental performances 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 states of environmental reporting of developing countries. Of late, protection of environment and the potential involvement of accountants is a common subject of discussion among accountants around the world. Accountants are to take a proactive role in the environmental protection process. With the opening of liberalization, free trade makes it possible that the costs of environmental degradation due to industrial activities must be internalized in corporate accounts to the best extent possible. So far, no accounting standard has been issued extensively for accounting treatment of the aforesaid problems. Some guidelines regarding these problems have been issued by many organizations internationally, but these are mostly advisory in nature. Although an increasing number of countries impose requirements on companies to report on their environmental performance, in India, companies are required to prepare a so-called "Green Account". The absence of comprehensive and verifiable information and financial data on environmental performance of companies may induce them to pollute the environment and yet appear more efficient economically than others which incur costs to protect the environment. The economics approach to environmental issues as recorded in some countries, assumes that companies in unscrupulous pursuit of profits can do much social harm and the environment suffers. Hence, there is a need for a meeting point between the corporate objective of profit maximization and the need for environmental management. Discretionary environmental disclosures sometimes suggest that corporations strive to unimaginable control over the preparation and disclosure of social and environmental information. Audited financial statements should contain environmental information. Environmental aspects are so significant to a company that there is a risk for the occurrence of significant misrepresentations or inadequate or incomplete presentation of information within financial statements. In such cases, an auditor must pay due attention to environmental aspects during the course of the audit of financial statements.

IX. CONCLUSION AND RECOMMENDATION

The existence for a number of paradigms from which environmental research has been developed has resulted in a lack of cohesion in the expectations and desired outcomes of environmental accounting. Further lack of cohesion seeking explanation about the motivation behind corporate environmental accounting adds fuel to this. It can also be said that, even if the environmental goods and services can be

quantified in monetary terms, then also certain questions arise as to how far society will benefit from the effects of environmental accounting? The social values placed on environmental goods and services are changing so fast that estimates are likely to be obsolete before they are available for use. Planning for sustainable development requires an estimate of environmentally adjusted GNP. Most of the application of environmental accounting requires shadow pricing because we cannot establish market values, since the economic goods and services concerned are never traded or because we do not want them to be traded, but we do not want to know what they are worth. However, despite these theoretical irregularities, the slogan for environmental accounting has won perpetual benefit inherent in it. The international awareness and acceptance of the importance of natural and environmental resources has laid to the development of environmental accounting. Valuation of environmental goods and services and incorporation of environmental data into the national and corporate levels suggests different techniques. There is high degree of confusion among accountants about how to fit environmental data into financial statements and the techniques available for valuation are also not free from uncertainty. In different countries, the accounting and disclosure practices in respect of environmental issues have become mandatory. But in many countries, no such mandates have been issued. There is now an urgent need to take steps globally and particularly to formulate the accounting and valuation techniques regarding environmental issues. Mandatory guidelines can be issued in each and every country to incorporate these in the company's annual report, including environment related legislations, as in developed countries [7]. The dedication with which work for the development of environmental accounting is going on will surely lead to environmental accounting occupying a more stable and effective position in the coming future, as it could greatly improve the value of economics as a decision-making tool, particularly in determining national policy. The implementation of environmental accounting is expected to bring about a change in the managerial attitudes and thinking. Despite difficulties associated with environmental accounting, there is much evidence to show that a large number of countries around the world have honestly attempted to pick-up the new challenges and threats. Economic activity should not be guided by "profit motive" alone, but should also include "quality of life" and "ecological balance". The key to sustainable growth, therefore, is not to produce less but to produce efficiently, with the help of adopting a proper environmental accounting system.

A comprehensive plan in connection with applying environmental accounting may be initiated for all types of companies to develop harmonization following accounting policy. Environmental accounting, as a part of social accounting, creates an environmentally consciousness atmosphere in corporate sectors and prepares and publishes environmental balance sheets which would pave the way for the increased earnestness among corporates. Traditionally, many internal environmental costs are unrecognized,

unallocated or unassigned to the activities. It is suggested that companies should fully recognize and control all environmental costs, including the aforesaid costs. A business should internalize these costs by anticipating and managing them. Environmental expenditures must be separated to improve decision making and accountability for environmental responsibilities. Every company should focus and set aside a part of their funds for environmental and ecological balance. Environmental accounting requires comprehension of the business environment, business activities and capabilities and the constraints upon its operations. In the absence of specific guidelines with regard to environmental accounting and reporting techniques, usually social cost is considered as a measure of cost of the resources used by an organization during its activities. Unless comprehensive records for the use of natural resources and environment and their services is maintained, reliable and sustainable development cannot be planned and achieved. To foster, create and encourage greening all over the world nobody can deny social costs alone to atmospheric pollution arising out of the discharge of dangerous affluent and wastes. In the light of evolved wisdom, it is considered essential to make an endeavor to incorporate the effect of environmental resources in the entire business function of a business corporation. The technology is available today to reduce environmental pollution and it must be used to correct the excess ecological brutality and minimize the degree of environmental degradation. Current disclosure practices by most companies in India do not fully reflect the environmental impact of corporate operations. There is a need and challenge for companies to become greener when we are marching towards industrialization and globalization. No company has a secure future unless it is environmentally acceptable. Companies aiming at long-term profits must consider an ecological aspect in its business strategy and policy. The sooner precautions are taken to safeguard them, the better it would be. However in the beginning, developing countries can adopt any method with necessary alterations as experiences are gained and requirements are increased. The Rigveda reflects that the environment is to be valued like parents and loved like children [8]. The last two decades have witnessed a tremendous increase in environmental concerns around the globe. The possible long-term harmful effects of unrestricted and unregulated economic growth demand to preserve the environment for future generations. A few other recommendations are:

- i. Statement showing disclosures of the conservation of energy and natural resources and expenditures incurred to protect the environment and for replacing environmental degradation may be developed and shown as an annexure to a Director's Report. Installation of pollution control equipment or use of better technology may be considered as positive contribution. The necessary amendments may be made in the Company's Act to ensure such disclosures.
- ii. Necessary changes in the rating guideline may be made as companies contributing to environmental degradation are rated low.

- iii. Annexure may be added to a Director's Report with necessary amendment in the Company's Act for development of pollution standards for industries or products vs. actual pollution generation position of the company.
- iv. Although efforts are being made to prepare financial statements from the national angle, what is required is the establishment of the framework of environmental accounting in determining the environmental policy at the state and national level where the revenues and costs of natural resources, their estimates, dedication, values and assets must be recorded in books of accounts. With increasing social awareness on the environment, accounting fills an expectation role to measure environmental performance. Environmental awareness provides a dynamic for business reporting its environmental performance. In India, the level of environmental related disclosures in corporate annual reports is not encouraging [9]. On the whole, the status of voluntary of environmental disclosure in the annual reports of the Indian companies is not satisfactory. Rather, it can be termed as poor. There are several reasons for the poor disclosure of environmental information. Lack of awareness or commitment, poor environmental performance, poor enforcement of the environment protection acts, etc., may be responsible to some extent for making companies free from obligation to disclosure of such information. Hence, it can be concluded that the absence of standardized environmental accounting practices and disclosure techniques, both at national and international levels, and their legal enforcement, necessitates the urgent and pressing need to take steps nationally and globally to formulate these techniques and practices in regard to environmental issues.

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