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Environmental Management in the Indian Context

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Abstract

Environmental management basics, cost of environmental degradation, good management practices for environmentally sustainable development, synergy between environmental management and financial management, and environmental regulations are discussed in the context of India. An organization need to go beyond compliance management, and understand and appreciate limitation of natural resources, preferred waste management hierarchy, pollution prevention vs pollution control, environmental impacts, etc. for reaping maximum benefits. These aspects are expected to be equally relevant to other developing economies.

Introduction

Environmental management is considered to be an integral part of business management in any enterprise. Whereas disciplines like financial management, materials management, production management, marketing management and human resource development form part of the curricula at the business management schools and are well accepted agenda of business organizations for discussion at the Board of Directors level, the environmental management is yet to receive the attention it deserves. The inclusion of a certificate on compliance of the applicable environmental regulations from the concerned executives often suffices for the agenda of the meetings of Board of Directors, which formally gets noted without any discussion. In fact several organizations consider the requirements of environmental approvals for setting up manufacturing, energy and infrastructural projects and for operating the same to be impediments in the higher economic growth of the country. The top management of corporates, especially in the developing economies appears to be concerned more about profitability, net worth and return on investment rather than on the issues related to environmental sustainability in the long run suitable financial systems need to be evolved at the national level to promote environmentally sustainable development. Technology is to be recognized as a driving force for improvements in environmental management. Financial systems of a country including aligning financial sector towards green agenda, restricting investments in highly pollution-potential sectors, and incentivising private investments in green projects could help in bringing the environmental management on the agenda of the corporates.

Managers are generally entrusted with the responsibility of resource management in an organization. Under the existing management practices, such resources generally include financial, materi als and human resources. However, optimal utilization of natural resources with a view to sustain production in the manufacturing and energy sectors does not get the consideration it deserves. Further, while financial audit and cost audit are well accepted tools for financial management and are mandated to be employed for protecting the interest of shareholders, environmental audit lacks proper understanding and acceptability as a tool for improving resource management. Environmental audit and safety audit are still considered as a financial burden on the organization. There is abundant professional expertise available and the practices are fairly well established for conducting financial audit and quality management system audit but environmental audit is yet to be established in true sense in the developing countries. Further, unlike financial and cost audit, environmental audit is not a mandatory requirement yet for protecting interests of the society at large.

It needs to be appreciated that environmental audit report, among others, is expected to bring out inefficiencies with respect to the usage of resources like raw materials, utilities and energy. If environmental auditors are encouraged to carry out audits religiously and suggest effective corrective measures and pro-active actions, such an exercise should be benefiting the industrial as well service organizations. Like-wise energy (electrical as well as thermal) audit is expected to reveal inefficiencies and thereby offer potential of saving power and fuel, and thereby improved quality of environment. Environmental audit and energy audit can thus be used as tools for improving resource management, which would ultimately lead to green productivity besides improving the bottom line of an organization. Thus such good management practices offer a win-win opportunity to the industry [1].

The business experience in the developed economies has shown that going beyond compliance helps in getting several benefits accrued which enhance bottom line. For example, increased

profitability through cost reduction by, say adopting cleaner production practices improves balance sheet of an enterprise and helps in achieving a competitive advantage by creating a better image as environmentally responsible business while contributing to environmental protection at the same time. The major benefit in the long-run is achieving sustainability through resource conservation and minimizing future risks due to environmental liability to the business. It is thus believed that it is only a matter of time that the corporate world and the shareholders of business enterprises in the developing countries will realize that there is a synergy between good environmental management and good financial management.

Environmental Management

Environmental management is essentially internalizing the externalities arising from the developmental activities, i.e., internalizing an informed concern of the environmental consequences of the actions of an enterprise in the management's policies and procedures.

Definition

Environmental management can be defined as a set of activities through which an organization maintains awareness of and control over its interactions with environment. It is a systematic approach to short-term as well as long-term environmental responsibility throughout an organization. For a good environmental management, it is essential that the fundamental types of supporting activities are effective. These include the activities for developing and maintaining awareness of the environmental performance of the environmental matters that are important to an organization, and monitoring and improving environmental performance. Different organizations, depending upon the type of their business and physical location, will have different environmental matters/ issues which are important to them.

For example, important environmental issues for operating:

A. Thermal power plants based on coal include air emissions and fly ash management

B. Ceramic plants include air emissions and solid inert waste management

C. Chemical and petrochemical plants include toxic emissions, wastewater and hazardous waste management

D. Ports include marine water quality, and emissions and risks from storages and transportation

E. Highways include vehicular emissions and noise, and accidental risks

F. Mines include overburden management, sediment transport, air quality, and ecology

Sustainable development

The bottom line for any organization is ensuring compliance to the applicable environmental regulations, and the common goal is contributing to sustainable development, defined in Our Common Future [2], also known as Brundtland Commission report, as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs". A robust and objective definition [3] of sustainable development is given as "... using resources, no faster than they can regenerate themselves and releasing pollutants to no greater extent than natural resources can assimilate them". The Supreme Court of India [4], in its judgment in the case of Vellore Citizens Welfare Forum (VCWF) v/s Union of India and others observed, "the traditional concept that development and ecology are opposed to each other is no longer acceptable. Sustainable development, defined by Brundtland report is the answer". The Apex Court was of the view that the precautionary principle and the polluter pays principle are essential features of sustainable development.

Cost of environmental degradation

The annual cost of environmental degradation in India amounts to about Rs. 3.75trillion ($80billion) which is equivalent to 5.7% of its GDP [5]. While 3% is attributed to the particulate matter pollution in the air resulting in substantial cardiopulmonary and chronic obstructive pulmonary disease mortality load among adult, 2.7% is attributed to lack of access to clean water supply, sanitation and hygiene and natural resources depletion resulting in water borne diseases. The study further brings out that about 23% of child mortality in the India could be attributed to environmental degradation. The need, importance and serious consideration of environmental management at different levels could thus be sensed from these statistics.

Scope of environmental management

The scope of environmental management is not limited to compliance management. It includes integrated environmental assessment [6] as the interdisciplinary process of identification and analysed appraisal of all relevant natural and human processes and their interactions that determine both the current and future state of environmental quality, and resources on appropriate spatial and temporal scales. It facilitates the framing and implementation of suitable policies and strategies [7]. Environmental management for the operational manufacturing and fossil-fuel based energy plants needs to include devising systems [8] to meet long term challenges like improving the understanding on structure-toxicity relations, biological and physic-chemical interactions in response to environmental stresses, fate and transport of anthropogenic chemicals, bio-geochemical cycles, gas-to-particle conversion in the atmosphere, functional genomics and the chemical processes that govern organism environment relationships, chemical-gene interactions in the real environment, and persistent organic products.

The new approaches of green chemistry and sustainable chemistry for new chemical processes require:

A. Increased understanding of bio-geochemical processes and cycles

B. Advances in industrial ecology - new attitudes about waste utilization

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C. Development of environmental-friendly materials (e.g., bio-degradable packaging)

D. New methods for pollution prevention and waste management

E. Green chemistry and new chemical processes

F. Discovery of unknown environmental problems and identification of their underlying causes and mechanisms

Development of improved modelling and simulation techniques that will have major contributions in

A. Fundamental understanding of the environment

B. Remediation of the existing environmental problems

C. Prevention of environmental problems in the future

D. Protection of the environment

Thus systems approach is needed in several areas, including

A. Actions that affect any of the three principal environmental sinks, viz., air, water, and soil media, and the biological systems with which they interact, where attempts to manage each of them separately will invariably transfer environmental problems from one medium to another rather than solving.

B. Spatial and temporal management of environmental impact sources where and when the impacts are generated in processing and manufacturing.

Approach to environmental management

It may be recalled that the approach to the environmental management even in the developed economies was essentially limited to reacting to an environmental, rather pollution-related problem by adopting end-of-pipe control till 1970s. Thereafter, gradually environmental management started encompassing increased focus on proactive measures like anticipation and prevention, aspirational horizon from local to global, immediate and short term to the needs of next generation, and environmental performance. The shift in the approach to environmental management was triggered by some of the major disasters including Seveso explosion in 1976, Bhopal tragedy in 1984, and Exxon Valdez oil spill in 1989. The environmental management, especially for conventional sources of power generation and manufacturing facilities, includes cleaner production [9,10], clean technologies [11], waste minimization, green chemistry, use of renewable energy and enhancement of energy efficiency in addition to key sustainability principles like anticipating and preventing environmental consequences of an activity. It will thus be in the interest of the corporates to go beyond compliance to the applicable environmental regulations and focus on enhancing their environmental performance, which is expected to enhance financial performance as well. This could be initiated by having Board of Directors level committee [12] on Environment, Safety and Health with a mandate of conservation of natural resources, minimization of environmental pollution load, loss prevention, and occupational health.

It is reported that an ever-increasing number of companies are recognizing the need to make their operations more sustainable, and governments, stock exchanges, markets, investors, and society at large in the developed economies are calling on companies to be transparent about their sustainability goals, performance and impacts. A number of companies have started voluntary sustainability reporting in accordance with G4 sustainability reporting guidelines [13], and many more continue to join. A survey conducted by MIT [14] revealed that sustainability started appearing on management agenda of several organizations from 2000, and that several of these companies are profiting from sustainability activities.

Environmental Legislations

Agenda 21, finalized in the United Nations Conference on Environment & Development held at Rio de Janerio, Brazil during 3-14 June 1992, observed that "humanity was faced with a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which well-being of humanity depends. The integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. This requires taking a balanced and integrated approach to environment and development questions". The first Earth Summit was followed by several International Conventions and Protocols, which necessitated the signatory countries legislate suitable environmental regulations. Some of the environment-related aspects were also used by the developed countries as non-tariff trade barriers to put pressure on the developing countries so that they put in place and improve their environmental regulatory regime.

It may be observed that in addition to the constitutional provisions, India has established a comprehensive set of laws for the management and protection of the environment. The Courts have played a very important role in framing as well as enforcing environmental regulations in democratic countries. The environmental management in India has essentially been responding to the environmental legislations notified from time to time by way of taking measures for meeting compliance requirements. Availability of natural resources and improving environmental quality are the major challenges; necessitating improving the understanding and appreciation of limitation of natural resources, preferred waste management hierarchy [15], pollution prevention vs pollution control, environmental impacts [16,17], etc.

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