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### The Environmental Cost Accounting: Experience from Oversea and Solutions for Vietnamese Manufacturing Enterprises

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#### Abstract

Vietnam's development strategy in the current period is rapid and sustainable economic development, good environmental protection and harmonious solution of economic, environmental and social issues. During the current period, Vietnam's cement production industry is one of the industries facing many difficulties. Despite having a fairly large market, cement production enterprises have to compete fiercely with each other, especially during the period of regional and world economic integration. In cement production enterprises, the costs incurred related to the production and sales of products are very large,

especially environmental costs. This shows that businesses need to pay attention to environmental cost accounting to serve the management of their business activities. The article summarizes some key points regarding environmental cost accounting, the introduction of environmental cost accounting in some countries around the world, and demonstrates some challenges in our country's application of environmental cost accounting to provide some solutions to boost the application of environmental cost accounting to Vietnamese enterprises.

**Keywords:** Environmental Cost Accounting, Enterprise, Vietnam

#### 1. Introduction

Vietnam's development strategy in the current period is rapid and sustainable economic development, good environmental protection and harmonious solution of economic, environmental and social issues. The State pays attention and promulgates more and more legal regulations to limit the over-exploitation of natural resources to serve economic and social development, and at the same time, also to limit the maximum level of violations, destruction, and environmental pollution. Furthermore, the pressures from customers' increasingly high awareness and understanding of environmental performance on products; Investors; workers, the Government's environmental protection law; requires businesses to change their awareness of environmental protection, moving towards changing corporate behavior in the production and business process, especially is to apply the environmental management apparatus at the enterprise, improve financial capacity to develop operations without causing negative impacts on the environment.

In the trend of building a Green Economy launched by the United Nations in 2010, Vietnam needs a new perspective and thinking in the economic development roadmap to ensure fast, stable and environmentally friendly economic growth. School. The State needs to pay attention and promulgate more and more legal regulations to limit the over-exploitation of natural resources, serve economic and social development while minimizing violations, environmental destruction, and environmental pollution. At the same time, there is also a need for specific instructions on the application of environmental cost accounting in manufacturing enterprises (manufacturing enterprises) to create favorable conditions. For businesses to grow quickly and sustainably.

Reality shows that today the cement production industry is one of the industries that consumes large amounts of non-renewable natural resources, has the potential to destroy the environment and human health, but is an urgent product. With the pace of socio-economic development in Vietnam. On the other hand, in the current period, Vietnam's cement production industry is one of the industries facing many difficulties. Despite having a fairly large market, cement production enterprises have to compete fiercely with each other, especially during the period of regional and world economic integration. Vietnam's cement production industry is currently at a relatively low level of development compared to other countries in the region and the world. The competitiveness of cement products depends on many factors such as price, quality, design, marketing measures,

and distribution channels.

Information about costs in cement manufacturing enterprises in general plays an extremely important role in helping administrators control costs so that they can both offer products at low prices and diversify their base. Structure production products, select marketing measures, thereby creating more profits for the business. In cement manufacturing enterprises, the costs incurred related to the production and sales of products are very large, especially environmental costs. This shows that businesses need to pay attention to environmental cost accounting to serve the management of their business activities. Based on some experiences of existing countries background terrible international broadcast development above position gender including America, Virtue, Japan Ban, Korea, the article summarizes some key points regarding environmental cost accounting, the introduction of environmental cost accounting in some countries around the world, and demonstrates some challenges in our country's application of environmental cost accounting to provide some solutions to boost the application of environmental cost accounting to Vietnamese enterprises.

## 2. Environmental cost accounting

Environmental Cost Accounting (ECA) is the process by which environmental costs are determined and evaluated for specific, operational aspects of a company. The allocated costs reflect their contribution to environmental protection. Environmental costs are a form of cost that includes both internal and external costs, all costs related to environmental damage and environmental protection. Environmental cost accounting features pay attention to internal costs, including direct costs (waste treatment), indirect costs (training), and intangible costs (investment decisions of stakeholders). Work).

However, external costs, such as those related to environmental impacts, are increasing. Often, business environment costs go untracked or are hidden within costs in traditional accounting systems; managing these costs can be an important component of a company's overall cost structure. Ty. Proactively managing these costs is an important aspect of maintaining a sustainable business.

Environmental cost accounting is a particularly important tool in EMA, this is the first and central step necessary for successful EMA implementation. If this step is done well, it will create a premise and basis for expanding the implementation of the next steps. The purpose of ECA is to identify types of environmental costs and find ways to detect and analyze the causes that arise, analyze hidden costs of businesses and find ways to allocate them separately instead of including them in costs. Other general fees. From here, information about financial impacts as well as related environmental issues will be provided more fully and accurately to decision makers. To determine environmental costs, the ECA tool will help identify, classify and identify environmental costs arising in businesses. Environmental costs from a traditional perspective are end-of-pipe treatment costs such as cleaning costs after production, waste treatment costs, etc.

Environmental accounting terminology always uses the phrases "whole", "full", "life cycle" to emphasize that traditional methods are not applicable because they ignore costs. Important environment. To determine environmental costs, the ECA tool will help identify, classify and identify

environmental costs. Environmental costs from a traditional perspective are end-of-pipe treatment costs, such as costs associated with post-production cleaning sites and waste treatment costs. In addition, the term environmental costs also encompasses the materials and energy used to produce goods and services, the input costs associated with the waste produced (including capital costs, labor costs, raw material costs, and energy used to produce the waste) plus a combination of landfill costs, special material storage costs, environmental liability insurance, and other Environmental regulation costs such as compliance costs and licensing fees and fines. To account for environmental costs and separate them from general costs and production costs requires clearly identifying whether this cost or that cost is an environmental cost or not? Environmental cost accounting (ECA) tools will help identify, classify and identify environmental costs. It is used to address the increasing availability of environmental cost information in current accounting regulations and to identify associated environmental costs and their allocation to products or production lines.

## 3. Experience in Applying Environmental Accounting in a number of Countries around the World

### 3.1 Experience of the United States

- Environmental accounting in the US appeared in 1972, focusing on accounting at the national level, and research at the corporate level began in 1990. In 1992, the US Environmental Protection Committee (EPC) (EPA - Environmental Protection Agency) promulgates a model for Environmental Accounting.
- Environmental cost accounting in the US is applied mainly in businesses to focus on environmental cost issues to serve the decision-making process of managers (determining prices, profits, choosing investment projects), providing information to prepare environmental reports that meet the requirements of the US Securities Commission. Recording and disclosing environmental accounting information in financial statements must be done in accordance with FASB and EITF regulations, including: "Environmental cost accounting. Environmental costs are identified in companies depending on the level and scope of use of the information. In American businesses, environmental costs are classified and determined in 4 levels according to the 5-level scale guided by the EPA: Traditional costs, hidden costs, hidden costs, image relationship costs, social costs alone are not identified in the enterprise's internal costs.

### 3.2 Experience of Germany

Environmental cost accounting is based on ecological balance, requiring information provided mainly with in-kind and physical measures. Environmental cost accounting focuses on environmental costs and energy flows such as: input and output accounting of the flow of materials, energy, and water to effectively use resources. Accounting information for the flow of materials, energy, and water serves internal administrators to make decisions related to the effective use of enterprise resources. In addition, accounting information about the flow of materials, energy, and water is also used to prepare environmental reports for external sources.

In German businesses, environmental cost management accounting is considered a tool in the environmental management system, so the process of applying environmental cost management accounting is integrated with the system. Resource management system (ERP), information management system (IMIS)... Therefore, besides the accounting system, the operations management system also provides useful information about environmental costs, especially for with businesses applying the material flow cost accounting model. In German businesses, there is a budget allocated to the environment, and costs related to the environment such as energy and waste treatment (although not always identified as related to the environment) are accounted for. Clearly recorded and monitored, but they pay less attention to fines or environmental insurance costs. Like production costs, German companies allocate environmental costs by process and product. The environmental cost management accounting model commonly applied in German businesses is the material flow accounting model (MFCA). Costs in an enterprise are analyzed by material flow including material costs, system costs, supply and disposal costs. Still bearing the characteristics of the traditional German cost management accounting system, it is a flexible standard cost system with the characteristic of dividing the enterprise into many cost centers, analyzing input/output according to Material flows at German companies can be broken down at process and product levels. Depending on the characteristics of production activities and management requirements at businesses, choose the appropriate cost center in cost analysis by material flow.

### 3.3 Experience of Japan

In Japan, the development of environmental cost accounting is reflected in the development of environmental accounting in general with the purpose of serving internal businesses. Japanese businesses mainly perform environmental cost accounting according to the instructions of the Japanese Ministry of the Environment. Environmental costs are identified by businesses as the total cost of environmental investment (equipment, research and development) and environmental costs in a certain period of time. Environmental costs are classified by activity including: environmental costs in business departments, upstream and downstream environmental costs, environmental management activities costs, research and development costs, social costs, environmental damage compensation costs. To serve the goal of managing and controlling costs within businesses, Japanese businesses also recognize that environmental costs also include material costs of waste and waste processing costs and Perform cost classification according to material flows. Accordingly, environmental costs include environmental protection costs, waste material costs and waste processing costs. However, these costs are only used in internal corporate management reports. For environmental cost reports issued outside businesses at the request of the Japanese Securities Commission, environmental costs for waste and social costs will not be included. Companies can choose to report information about environmental costs voluntarily in three ways: (1) Independent reporting of environmental costs and environmental benefits; (2) Report combining environmental costs and environmental benefits; (3) The report combines environmental costs, environmental

benefits and economic benefits. In particular, the third reporting method is recommended to be applied. Environmental cost management accounting in Japanese businesses is used for the purpose of cost management and control of estimates, not for business decisions. The material flow cost accounting model is applied to this goal and successfully applied to control and save production costs through controlling and reducing product waste costs, finding materials as well as improve production processes at the lowest cost.

### 3.4 Experience of Korea

Environmental cost accounting in Korea received attention from the Government and companies in the mid-1990s. In January 2000, the Korean Ministry of Environment began researching the project: Environmental cost accounting system and indicators. Effectively target environmental activities with funding from the World Bank. The application of environmental cost accounting in Korean companies focuses on measuring environmental operating costs, specifically environmental pollution treatment costs, and allocating environmental costs on an activity basis (ABC), measuring and evaluating MT benefits. Environmental information of Korean companies is presented in the annual MT Report.

### 4. Current Situation of Research and Application of Environmental Cost Accounting in Vietnam

Vietnam is increasingly focusing on environmental management. The Environmental Protection Law established in 2014 marked a positive change in environmental management and control, which has helped the environmental management system in Vietnamese businesses to gradually be improved. In addition, many other regulations issued in recent years to replace old regulations have also focused more on environmental protection issues such as the 2012 Water Resources Law, 2013 Land Law, and 2013 Law on Science and Technology. Technology 2013, Construction Law 2014. However, the implementation of legal tools faces many difficulties due to many reasons, possibly due to the limited capacity of the environmental management apparatus, the provisions of the Law and regulations being unclear. Specified in guiding documents, planners' awareness of the relationship between economic development and environmental performance is not truly thorough, all of which can limit the effectiveness of Legal tools in environmental management. Under such conditions, the introduction of environmental cost accounting can be a useful solution for Vietnamese business administrators to capture accurate information about the costs that must be spent to compensate. Negative impacts of economic activities on the environment as well as costs for measures to prevent, suppress and control negative environmental impacts.

Environmental cost accounting is successfully applied in many fields from manufacturing, trade to services, from the private sector to the public sector, from developed countries to developing countries. This shows that Vietnam has the conditions to learn, gain experience, and use theoretical bases, methodologies and case studies from around the world to apply to businesses first and foremost. Is a manufacturing enterprise. On the other hand, the issue of environmental pollution has become a hot topic in seminars and conferences in Vietnam with the participation of

international experts discussing environmental accounting at the micro (enterprise) level. And macro (national). This is also an initial advantage showing the international community's willingness to cooperate and help Vietnam in sustainable development. Although environmental cost accounting is a new field in both research and practice, Vietnam has initially had a number of studies carried out. The results of those studies have confirmed that building an accounting information system that integrates environmental aspects in business operations is essential.

### 5. Solutions to Develop Environmental Cost Accounting for Vietnamese Enterprises

From the experience of applying environmental cost accounting in countries around the world, some lessons can be drawn for Vietnam as follows:

- To apply environmental cost accounting in businesses, it is first necessary to build a legal framework for environmental cost accounting, which requires a complete and synchronous system of policies and laws., there must be close coordination between Government agencies related to environmental and accounting issues, environmental protection organizations, professional associations such as: Accounting Association, Environmental Protection Committee, etc., for the Developing countries like Vietnam need support from international financial organizations such as the World Bank, International Monetary Fund, etc.
- Applying environmental protection measures and applying environmental cost accounting will lead to saving costs of raw materials, energy, water, and waste treatment costs, helping businesses make decisions. Changes in techniques, management and organization systems, product strategies towards green products, and use of environmentally friendly materials, thereby improving business efficiency associated with the efficiency of Environmental protection.
- Vietnamese businesses, depending on their technical facilities, capacity and management level at each stage, can emphasize one or more contents of environmental cost accounting, but basically the content is of environmental cost accounting according to the author's approach is: identifying and classifying environmental costs, building norms and estimating environmental costs, methods of determining environmental costs, recording Receive environmental cost accounting, provide and use environmental cost accounting information for audiences inside and outside the business.
- Vietnamese enterprises, depending on their technical facilities, capacity and management level at each stage, can implement the contents of environmental cost accounting in each stage, each product, each department or apply to the entire enterprise.

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