

Environmental Management Accounting and Albanian Perspectives

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Abstract

In the global economy where companies are in a rough competition to rationalize and improve all the resources and processes for a more convenient product, many companies are using the Environmental Management Accounting.

Environmental Management Accounting (EMA) manage the environment and economic performance of the companies through the development of appropriate strategic planning which includes the costs and benefits of the full life-cycling of the products from their inputs, such as water, minerals , the process of production in aspects of calculation of waste and emissions costs and the finally the end-life of the product weather it will have environmental effects or will be environmentally friendly.EMA is widely used to have a more wide view in the evaluation of business performances and their impacts on the environment, by taking in consideration the "external costs" for which companies are not always legally responsible such as environmental expenditures . The aim of EMA is the contribution towards a sustainable growth .

The purpose of this paper is to evaluate the opportunities of EMA appliance in Albania and the challenges that the EMA presents for the Albanian accountants and businesses.

Key words: EMA, external costs, environmental costs, life-cycling costs .

1. Introduction

For thousand years the aim of our civilization was to expand ,and to create better living standards for us and our successors. The science and industry is developed and continue to be developed , our economies is growing and our life conditions are becoming more comfortable. Despite the great development in science and economical growth , we feel unsecure for the human perspectives when we see the other side of the medal , the environmental disasters and the usage of the prime resources without a certain strategy. Our future will be unsecure as this development continues to grow or expand without a sustainable plan.

A sustainable development can be reached when current needs are met without jeopardizing the needs of future generations (World Commission on Environment and Development ,page 40: 1987) .

The effects of the civilization in the environment are becoming more tangible by people , who , can now "feel" the effects of scientific and industrial achievements ,in their life. The number of people who are influenced by these environmental issues such as air , water , sound pollution ; climate change , is growing , making the environmental problems a mainstream topic among "big" actors such as governments, media , scientist, energy industries , heave industry industries etc. The tendency in minimizing our effects in environment is now a strategic issue that concerns almost everyone.

If you can't measure it , you can't manage it.² In order to prevent or minimize the negative impacts of the industries in environment , firstly we have to specify and measure these effects , in physical or monetary expressions. As a tool to accomplish these needs , accounting is adapted to specific accounts or methods for internal decision making and regulations under the "International accounting standards" for the external reporting.

² Peter Druker , May 2006 , *Innovation and Entrepreneurship*

Environmental accounting, or green accounting, is a tool by which, we can measure or define the effects of the firm's on environment and vice versa. The accounting statement that take in consideration the environmental impacts began in 1970 and till then the need for accounting of nature resources and the firm's impacts on nature, in a more complete and compressive manner, is becoming one of the most important topics in the contemporary accounting studies and literature. It should be stated that the development of EMA goes parallel with the development and improvement of the environmental legislation.

The national accounting standards did not take in consideration the environmental factors , but they were designed to measure only the economic activity. The accountants did not include the benefits that the firms get free from the environment such as air, water , energy , access to biodiversity and the effects of a growth without sustainability in the environment.

Among the first countries who approved and applied the EMA concepts was Norway , followed by Netherland due to the dependency of their economy to the natural resources. They developed accounts for tracing forest resources , fisheries , energy and land.³

International organized efforts for EMA began in 1980 from The United Nations Environment Program (UNEP) supported by world bank , which lead to the publication of two collections of papers that became reference works in the field (Ahmad et al. 1989 ; Lutz 1993). In the declaration of 1992 World Conference on Environment and Development , which called all countries to build environmental accounts (UN 1992, chapter 8) . From the first international treats the environmental accounting standards and workfare is changing and being revised to make a more efficient and useful tool to use for the countries , worldwide. The number of organizations dealing with this issue is being expanded including also the G20 leaders.

This paper bring in discussion the development made in Environmental Management Accounting , EMA, and the benefits that the industries , and the governments can obtain by implementing EMA . We give a basic framework of environmental cost classifications and the basic EMA techniques used, for measurements of environmental costs and revenues.

The aim of this research paper is to give a general view of the Albanian situation regarding the environmental issues and the development of EMA in Albania and the perspectives for EMA implementation. We conducted a survey , in some selected Albanian companies that have significant impact on the environment and presented our conclusions and recommendations as the final part of our study.

2.Environmental accounting and EMA

Environmental accounting is the general from of the accounting which provides data focused on the environmental impacts of the firms and vice versa. The main difference from the conventional accounting is that the environmental accounting separately identify , analyze and interpret information about the environmental aspects of company activities. From the reporting point of view it can be categorized into two categories EMA (Environmental Management Accounting) and EEA (External Environment Accounting).

Environmental Management Accounting ,EMA is internal accounting , it provides information and reports for the internal decision making and management of the company in both monetary and non monetary forms of reports.

External Environment Accounting ,EEA is external accounting, it provides information and financial report for the third parties outside the company. It is generally reported in monetary units as financial statements but also the non monetary forms of reports are present.EEA is based on IFRS and other national accounting standards.

EMA, provides information for internal management regarding the use of inputs materials, water, energy, soil and other cost information regarding both the conventional and environmental issues to the firm's management. The conventional accounting system , generally classifies the environmental costs as overheads because they were not traced , resulting in distorted calculation of costs. Measuring the environmental costs enables management to better utilize raw and auxiliary materials with less harmful operating materials for lessening

³ Hueting, Roefie, and Bart de Boer. 2001. "Environmental Valuation and Sustainable National Income According to Hueting." In *Economic Growth and Valuation of the Environment, A Debate*, E.C. vanlerland, J. van der Straaten, H. R. J. Vollebergh, eds., Cheltenham UK:Edward Elgar, 17-7

emissions and waste to environment. Management accounting provides us with an analysis of the performance of the business. Traditional accounting systems are unable to deal adequately with environmental costs. As a result, managers are unaware of these costs and have no detailed information, with which to manage or reduce them.

EMA is focused particularly on environment costs, by following them not only in monetary units but also in their physical form. Environmental costs are all costs regarding environmental damage and protection like contaminated sites, effluent control technologies, waste disposal etc. According to the UN DSD (United Nations, Division for Sustainable Development) "waste" should be considered all the materials, including water and energy, that have been purchased and paid for, but have not been turned into marketable products. It comprises all "non-product output" including solid waste, waste water and air emissions. (UN DSD, 2001:12) According to this definition the corporate environmental costs can be formulated as follows:

Table 1 Total corporate environmental costs

Environmental Protection costs (Emission treatment and pollution prevention)
+ Cost of wasted material
+ Cost of wasted capital and labor
= Total corporate environmental costs

Source: UN DSD (2001:12)

The total environment costs/expenditures is composed from these main environmental cost categories:⁴

- 1- Waste disposal and emission treatment, which is consisted of all costs that treat, dispose and clean up extant waste and emissions like fines and penalties for environmental law breaking, provisions for cleanup costs and remediation, depreciation of environmental related machinery etc.
- 2- Prevention and environmental management, where are classified the periodic costs for preventing waste and emissions like external service for environmental management, personnel for environmental maintains, research and development etc.
- 3- The value of material purchases for the non-product output. The non-product output is composed from the cost of wasted material because of inefficient production, such as the cost of raw materials, packaging, operating materials, energy and water.
- 4- Processing costs of non-products output. In this category will be composed of labor hours, depreciation of machinery and financing costs and other costs related to the environment non included in the three first categories.

EMA is particularly important to create a sustainable development for the firm, because it takes in consideration not only the economic factors to measure the performance of the firm but also the environmental factors which will continue to support the firms activity in long terms.

External costs for which firms are not legally responsible are not taken in consideration by EMA. Growing environmental issues are making the governments aware of these external costs like carbon emissions, forest degradation, healthcare costs and social welfare costs and are using taxes and regulations to convert them to internal costs.⁵

EMA measures the specially the environmental costs under two perspectives, the monetary perspective (MEMA), where the costs of inputs and expenses are expressed in monetary form and another perspective where these costs are expressed in their natural, physical units (PEMA)⁶.

⁴ Dina Wahyuni, June 2009, "Environmental management accounting techniques and benefits"

⁵ Environmental Management accounting, published by KAPLAN professional education
<http://kfknowledgebank.kaplan.co.uk/>

⁶ Burritt, R. L., Hahn, T., and Schaltegger, S. 2002. Towards a comprehensive framework for environmental management accounting - links between business actors and environmental management accounting tools. *Australian Accounting Review* 12(2): 39-50.

MEMA , Monetary Environmental Management Accounting ,expresses the expenditures or financial reports for a cleaner product or environmental maintenance in monetary from. It is the central , pervasive tool providing , as it does , the basis for most internal management decision as well as addressing how to track , trace , and treat environmentally driven costs (S.Schalteger & Burrit 2000, chap.4.1.2) . MEMA is an account system for the monetary impacts of environmental related activities. It supports strategic and operational planning , provides the main basis for decisions about how to achieve desired goals or targets and acts as a control and accountability device .Generally is accepted that MEMA , is focused in environmentally related impacts on the economic situation of companies like cost of fines paid for breaking environmental laws, investments that improve the environment etc. (S.Schalteger & Burrit 2000, chap.6).

PEMA , Physical Environmental Management Accounting , expresses the expenditures , stocks or the natural inputs based on their physical form. PEMA also serves as an internal information tool , but in contrasts with MEMA , it focuses on the company’s ecological impact on the natural ports environment expresses in physical units for internal use by decision making . According to S.Schalteger & Burrit (2000) PEMA serves as:

- Detect ecological strength and weakness
- Environmental differentiations in product pricing, mix and development decisions.
- A tool for eco-efficiency
- A tool to help promote ecologically sustainable development

Table 2 Environmental Accounting

TYPE OF ACCOUNTING	UNITS	
	MONETRY	PHYSICAL
INTERNAL ACCOUNTING	Monetary environmental management accounting (MEMA)	Physical environmental management accounting (PEMA)
	ENVIRONMENTAL MANAGEMENT ACCOUNTING (EMA)	
EXTERNAL ACCOUNTING	Monetary external environmental accounting and reporting (MEEA)	Physical external environmental accounting and reporting (PEEA)
	EXTERNAL ENVIRONMENT ACCOUNTING (EEA)	

Source : Stefan Schategger,Roger Burrit,Holger Petersen “An Introduction to corporate environmental management striving for sustainability”

EMA can be used as a tool for the internal decision making for both reporting the past , such as identification of annual environmental expenditures or costs, input flow costs and usage , environmental performance as well as a future oriented tool for the budgeting , investment appraisal , setting performance targets etc.

Table 3 Past and Future oriented EMA tools

EMA			
MEMA		PEMA	
Past oriented tools	Future oriented tools	Past oriented tools	Future oriented tools
Annual environmental expenditure or costs, transition from bookkeeping and cost accounting	Monetary environmental budgeting and investment appraisal	Material, energy and water flow balances	Physical environmental budgeting and investment appraisal
	Calculating costs, savings and benefits of projects	Environmental performance evaluation and indicators, benchmarking	Setting quantified performance targets
External disclosure of environmental expenditures, investments and liabilities		External environmental reporting and other reporting to agencies and authorities	Design and implementation of environmental management systems, cleaner production, pollution prevention, design for environment, supply chain management, etc.

Source: United Nations Division for Sustainable Development, Environmental Management Accounting, New York, 2001, <http://www.un.org/esa/sustdev/publications/proceduresandprinciples.pdf>, p.18

2.1 EMA techniques for costing analysis

The goal of the environmental accounting is to make a in-depth study of the real and the total effects of the business on the environment and on the other hand to make environment sustainable to support the business activity in long-terms. It is important in environmental decisions not only the effects of the productions activities in environment , but also the impact of the product itself , during its lifecycle from the production line to the final users and the effects that the product itself would have in its end life ,on environment. Each business can choose the right technique after calculation the cost/benefits for the usage of each technique. Under the cost analysis, based on last studies is generally agreed that EMA has four main techniques : ⁷

- Activity Based Costing (ABC)

In ABC costing , the environment related costs can be attributed directly to costs centers and are distinguished from environment driven costs , which are generally hidden on total overheads. With the ABC costing the environmental driven costs that are hidden in overheads can be separated and traced to products or services directly through the cost centers by reflecting the attributions of these hidden environmental costs to the products or services.

- Input / Output Analysis

Through this technique the recorded environmental inputs like prime materials, energy , water etc. are compared with the materials that are in the final products, and the difference between inflow materials and outflow materials is considered as waste. The input can be raw and auxiliary materials, packaging materials, merchandise, operating materials, water and energy , weather the outputs ,can be products output (products and by-products including packaging) and non products output (solid waste, hazardous waste, wastewater, air emission)⁸. By recording and evaluating the wastes , businesses are encouraged

⁷ *Environmental Management accounting* , published by KAPLAN professional education
<http://kfknowledgebank.kaplan.co.uk/>

⁸ *Environment Management Accounting, August 2005, International guidance document , International Federation of Accountants pg. 37-39.*

to focus on environmental costs by reducing them as much as they can . In fact the businesses not only decreases environmental costs but also increases business efficiency and lower the costs of the products. This technique records material inflows and balances this with outflows on the basis that what comes in, must go out.

- **Flow Cost Accounting**

This technique uses not only material flows, but also the organizational structure. It makes material flows transparent by looking at the physical quantities involved, their costs and their value. It divides the material flows into three categories : material, system and delivery and disposal. The values and costs of each of these three flows are then calculated. The main objectives of flow cost accounting is:

- The evaluation of cleaner production potential at the plant level.
- Preliminary estimate of waste generation costs.
- Quantification of the volume and composition of waste streams from raw material to finished product , comprising all material losses along logistic chains , such as rejects , scraps, chipping, expired items , damaged products etc.

- **Lifecycle Costing**

Lifecycle costing focuses in costs and revenues of e product over its whole life rather than one accounting period, trying to calculate and manage the lifecycle costs. Life cycling costing needs sufficient data and continues feedback to allocate the products or services' life-cycle costs. It examines the environmental impacts of a product or activity across its entire life cycle from raw materials until disposal, identifying environmental consequences and assigning measures of monetary and nonmonetary value to those consequences by taking the right provisions or managing better the resources to prevent as much as it is possible the pollution and negative effects of the products on environment. In case of success of this method the environmental harms can be reduced to minimum , by taking the right provisions for the whole life time of the products and results in zero pollution, zero waste and accidents in case of recycling products. It is one of the most completed methods , but the most difficult method to use due to the large information that should be gathered as well as to the extra costs that the usage of this method bear.

3. Advantages of EMA

EMA , by supplying information about the physical / monetary flow of the materials help the decision making in the environmental and performance management for both the private and the government organizations.⁹

Benefits of EMA to Industry:

- The ability track and manage the use and flows of energy and materials, including pollution/waste volumes, types, and fate.
- The ability to more accurately identify, estimates, allocates, and manage/reduce costs, particularly environmental types of costs.
- More accurate and comprehensive information for the measurement and reporting of environmental performance, thus improving company image with stakeholders such as customers, local communities, employees, government, and finance providers

Benefits to Government of EMA Implementation by Industry:

- The more that industry is able to justify environmental programs on the basis of financial self-interest, the lower the financial, political, and other burdens of environmental protection on government.
- Implementation of EMA by industry should strengthen the effectiveness of existing government policies/regulations by revealing to companies the true environmental costs and benefits resulting from those policies/regulations

⁹ *Environmental Management Accounting, TELLUS Institute , Resource and Environmental Strategies . www.tellus.org*

- Government can use industry EMA data to estimate and report financial and environmental performance metrics for government stakeholders such as regulated industries or the industry partners in voluntary programs.
- Industry EMA data can be used to inform government program/policy design.
- Industry EMA data can be used for regional or national-level accounting purposes.

Benefits of Government Implementation of EMA

Government EMA data can be used for environmental and other decisions within government operations, e.g., purchasing, capital budgeting, and federal facility environmental management systems.

- Government EMA data can be used to estimate and report financial and environmental performance metrics for government operations.

4.Environmental Management and Albania

The first Environmental Ministry in Albania was established in September 2001. The main responsibilities of the Environmental Ministry are the cooperation and coordination with different government institutions, organizations and businesses to increase and improve the level of enforcement of environmental legislation; prepare draft agreements, conventions and programs ; support projects in the improvement of the environment.¹⁰

The medium term objectives are oriented in three main directions such as the prevention of environment degradation , rehabilitation of polluted areas and the usage of the resources in a more sustainable method.

The government is paying special attention to harmonize it's laws with the environmental legislation of the European Union. The 2002 law on environmental protection is a comprehensive framework law, which most effectively coordinates the economic and social developments of the country with the requirements of environmental protection and sustainable development. From its establishment Albania has signed and ratified a number of international environmental conventions.

The finance and accounting relationship of the government with the business that have an impact in the environment is related by taxation. There is not a general workfare to adjust the environmental accounting by special accounting regulation or reporting methods. The general policy of the government to obtain a sustainable development is to incorporate taxes to the businesses with negative impacts on the environment.

The taxes are incorporated in the law on taxation no. 8435/1998 , which was introduced in 1998. The law regulate the usage of water resources, mining and manages the revenues and expenses regarding the forestry and fishery. This law on environmental protection states that the physical and legal persons who use and produce with high pollution potential and who discharge into the air , water and soil are subject to environmental taxes. The indexes of taxes are stated in this law according to the amount of the environmental use and extraction of natural resources as well as to the level of the pollution.

Even the different and detailed taxation for specific use and extraction of natural resources , and environment re-generation , there is no development in environmental accounting framework that can detail the expenses and investments as well as the revenues from the environment and to predict a sustainable business development. Although there is no accounting framework that is based on environmental accounting development , major companies, specially the international companies uses the EMA as an inside tool to evaluate environmental issues.

4.1EMA appliance in Albanian businesses

Our survey was based in selected businesses that operates in Albania and have a considerable effects on environment , such as steel production industry , oil refinery and mining industry . From the interviews with respective accounting departments , we found that in Albanian owned business the accounting departments do not have special accounts to track and recognize the environmental expenses and revenues. As a result , only big investments for environmental issues were properly classified and represented in financial tables . The taxes paid for the usage and extraction of inputs from the environment ,expenses made for the prevention of the pollution and the waste management as well as the investments made to environment to obtain sustainability were not categorized under environmental accounts but were treated as overhead expenses.

Interesting was the fact that in international companies , operating in Albania the accounting department recognizes and categorize the environmental expenses and investments. Generally they use input / output

¹⁰ *Environmental Performance review , Albania 2011 , Economic commission for Europe ,Committee on Environmental policy*

analysis as it is less expensive and easier method to apply. With this analysis it is sufficient to record all inputs , prime material, water , energy and other related resources and to compare the amount used with the amount of these inputs that are present in the final products as well as non products which are wastes. In the usage of input/output analysis the observed entities used PEMA , as e preferred method to calculate the wastes in their respective physical amounts.

MEMA was used to account the costs and investments made by the entity , in regard to the internal environmental accounting. Generally the categories of these expenditures was classified as below:

- Pollution prevention costs
- Resource circulating costs
- Recycling costs
- Cost of maintenance and environmental management
- R&D costs to develop products that contribute to environmental conservation
- Cost of donation to environmental groups
- Cost for re-generation of the environmental resources
- Costs of environmental taxes, fines and penalties

All the expenses classified into these main categories were divided into costs and the investments made by the entity in the environment. The entities that used EMA , at the end of the financial report were able to give reports about environmental performance , regarding the usage of energy per unit, water usage per unit, waste generation for each production process and the measurement of stock of input resources. The entities using EMA , were able to control the environmental costs , and to optimize the products costs by optimizing the input/output ratio of the materials as well as to increase the production of cleaner products in a sustainable way.

5.Conclusions and recommendations

Albania has done a lot of progress in ratifying all major environmental draft agreements, conventions , and programs with related organizations and as a country that adhere to be part of EU . Albania is in a process of harmonization and adopting the national legislation to that of the EU. In this respect it has adopted most of important environment legislation.

Albania has a modern environmental legislation ,but, difficulties are seen in the law implementation. Even that the legislation predicts the related taxes and penalties for the environmental usage the entities, because of the lack of the law implementation , entities do not take it in consideration , neglecting the environmental issues and as a result they are not motivated to implement the required environmental accounting method.

Form our survey we stated that the companies that use environmental accounting , generally are international companies that have experience in the field from their respective countries and use it to lower the production costs and to reach a sustainable growth.

The Albanian companies interviewed were interested at EMA, for preparing environmental information especially for internal decision making , so that they can be able to manage the environmental costs and to reach a sustainable business growth. From our interview we stated that they have no sufficient information for EMA and no experience in adopting EMA .

In Albania , like in other countries the environmental problems are becoming more tangible. We predict that in near future the environmental law implementation will be more efficient and the entities will be more concerned to implement the environmental accounting in order to produce cleaner products with lower costs and to guarantee a sustainable growth.

In order to precede the demand for the entities for environmental accounting implementation , government and non government institutions like Environmental Ministry and the Institute of Authorized Chartered of Accountants should begin as soon as possible to create and implement a framework for both internal and external reporting of environmental accounting, and to begin the training of the accountants.

With the implementation of an environmental accounting, both the economic entities and the Government will benefit. The economic entities will be more efficient by reducing the wastes and inefficiency of the input materials, will reduce the environmental costs by managing them more adequately and will be able to build a good reputation among their clients. On the other hand the Government will be able to design more adequate environmental programs and policies and to reach a sustainable development.

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