ENVIRONMENTAL ACCOUNTING: A MANAGEMENT TOOL FOR SUSTAINABLE DEVELOPMENT

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Abstract

The paper aims to analyze the ways in which accounting as a social science and management information tool can contribute to sustainable development. The paper highlights the emergence of the environmental accounting concept, the applicability of the environmental accounting, types of environmental accounting, scope and benefits of environmental accounting.

Key words: environmental accounting, accounting, sustainable development
JEL Codes: Q56, M41

Introduction

Sustainable development aims to the fulfilment of the present needs, without compromising the ability of future generations to fulfil their own needs. The overall objective is to not compromise ecological, economic and social development basis, on which the development continues.

The purpose of this paper is to present a short review of the development of the environmental accounting research and its future contribution for sustainable development.

Also, in this paper, we analyze how accounting, as a social science and management information tool can contribute to sustainable development.

Literature review

A significant role and contribution of developing the concept has Accounting, Auditing & Accountability Journal. He combines a literature review and critique, with particular emphasis on papers published in AAAJ (1988-2007) together with other papers published in a range of leading-edge journals (2004-2007) (Owen, 2007).

Another analysis and critique of social and environmental accounting is presented by Lee D. Parker. The study revisits two key prior seminal papers on the field, examines the remit for social and environmental accounting researcher's focus on practice and policy. It also offers an empirical analysis of social and environmental accounting publication (Parker, 2005).

Material and methods/research methodology

This paper intends to be an approach that combines a literature review and critique about the environmental concept. This study aims two aspects. Firs aspect is the development of environmental accounting concept and second is the applicability in management for sustainable development.

1. The emergence and evolution of the environmental accounting concept

Environmental or green accounting was developed simultaneously with the introduction of the concept of sustainable development. In the 70's, a large number of experts sounded the alarm and have joined forces in finding viable solutions to address the current needs of the planet without compromising the needs of future generations.

In 1987, sustainable development has become a special place with the advent Report Brutland and while awareness of the greenhouse effect. This report presents the definition of sustainable development. Thus, sustainable development is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Within the United Nations World Summit in Rio de Janeiro in 1992, Agenda 21 was developed as a promotional tool. This defines sustainable development as development that does not destroy or compromise the ecological, economic and social basic, on which depends the continued development.

Sustainable development does not take only into environmental issues. Reference Document of the World Summit on Sustainable Development in 2002 speaks of independence and mutual support pillars of sustainable development as economic development, social development and environmental protection.

Thus sustainable development is based on these three pillars and there is a reciprocal relationship.

For Romania, as a member state of the European Union, sustainable development is not one of the possible options, but the only rational perspective as a nation, resulting in the establishment of a new development paradigm at the confluence of economic, social and environmental. SNDDRO - National Strategy for Sustainable Development Horizons 2013-2020-2030 Romania, the Romanian Government through the ministry of Environment and Sustainable Development.

As regards environmental accounting or green accounting has been defined in the literature such as:

- Green Accounting is a quantitative technique for collecting, processing, registration and provision of information of economic, social and environmental; this definition is in accordance with the accounting approach as a technique or tool.
- Organization The American Institute of Certified Public Accountants defines green accounting as the identification, measurement and allocation of environmental costs and integrates these environmental costs into business decisions and subsequent communication of this information to stakeholders.

A point of view about the development of environmental accounting is presented by David Owen. The purpose of his paper is to present a critical review of the development and the state-of-the-art of social and environmental accounting (SEA) research. He offers a particular reference to the role and contribution of the Accounting, Auditing & Accountability Journal. He also offers some pointers as to how the field may develop in the future (Owen, 2007)

A particular concern about environmental accounting presents Professor Lee D. Parker. In his paper, he analysis and critiques the social and environmental accountability research field since 1980s. He argues the need for the development of research in environmental accounting.

2. Applicability of environmental accounting

A key objective of environmental accounting is to measure the effects resulting from corporate action on the environment and how it relates to these effects (Crowter, 2002).

Environmental Accounting has many meanings and uses. Environmental Accounting can include national income accounting, financial accounting and management accounting.

Different uses of environmental accounting appear in three contexts: national, financial and managerial accounting (Table 1).

Table 1. Types of environmental accounting

Type of environmental accounting	Object	User
national income accounting	nation	external
financial accounting	economic entity	external and internal
managerial accounting	economic entity, department, production line	internal

Source: authors' own view

From this view, environmental accounting can be seen as a tool for the management process that determines an additional concept, environmental costs, which has at least two dimensions:

1. costs that have a direct impact on the company's total expenses being referred to **private costs**.
2. costs for individuals, nation, and the environment that a company does not accounts, called **social costs**.

With regard to social costs, environmental accounting provides important information, vital to the development of country strategies in the medium and long term. One aspect examined by Niculae Tabără (2009) is the need to assess environmental damage. The point of this analysis is based on the general principle of economic rationality. Economy, the science management of scarce resources aim their administration with maximum effectiveness in order to achieve maximum welfare what corresponds to an optimal situation.

The correlation between GDP and the amount of carbon dioxide reveals several aspects of the national economy. It may represent an index of industry technologisation and aging productive capacity.

If the GDP growth trend follows a growth curve of CO2 emissions than growth described by the GDP is not sustainable, being dependent on non-renewable energy consumption and having as results the environmental pollution. If trend growth is accompanied by a decrease in the amount of carbon dioxide emissions, it can be concluded that traditional energy sources, strong polluters were replaced by renewable alternatives.

We develop more private costs because this are actually start environmental accounting.

Returning to private costs, these are part of an enterprise costs and are carried out to generate future economic benefits. Environmental performance is one of many ways to measure the success of a business.

Both, costs and environmental performance deserves special attention by the management for the following reasons (Fig.1):

1. Many environmental costs can be significantly reduced or eliminated as a result of managerial activity, ranging from operational and administrative changes, to investments in the process of upgrading the "green" technology or restructuring processes / products.
2. The environmental costs (and therefore potential savings) may be hidden in various accounts or otherwise overlooked.
3. Many companies have found that environmental costs can be offset by generating revenue through the sale of waste.
4. Better management of environmental costs can lead to improved environmental performance and significant benefits to human health simultaneously with business success.
5. Understand the environmental costs and performance of processes and products can promote a more accurate calculation of the costs and pricing of products. It can help companies in the design of processes, products and better service agreed in ecologically, for the future.
6. Competitive advantages with customers can result from processes, products and services that can demonstrate that they are environmentally friendly.
7. Accounting for environmental costs and environmental performance can support the development and implementation of an environmental management system. An example of this is the standard EMS according to ISO 14001. This is a management tool available which allows you to:

- identify and control the environmental impact of its activities, products or services,
- permanent improvement on its environmental performance,
- implementing a systematic approach of processes, to establish environmental objectives and targets to achieve these objectives and demonstrate their achievement.

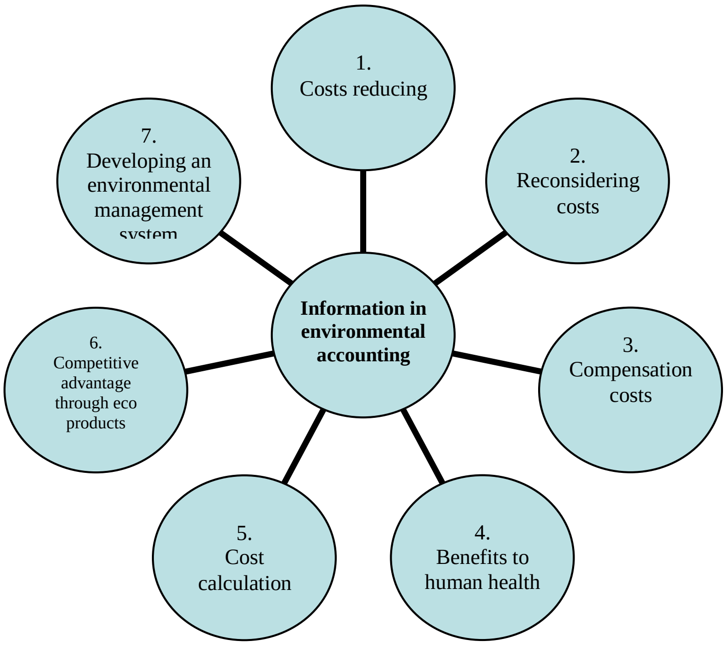

Figure 1 The Benefits of implementing environmental accounting in a company
Source: authors' view

An study about Global perspectives on global standards (Corbett et al., 2003) reveals that companies are interested to implement ISO 14000.The authors built a list with possible motivations by industry and by country. The possible motivations for seeking ISO14000 certification, by economy and by business, activity were: cost reductions; environmental improvements; marketing advantage; customer pressure; many competitors certified; benefits experienced by others; avoid potential export barrier; capturing workers' knowledge; relations with authorities; corporate image; relations with communities.

The main motivations for seeking ISO14000 certification are "environmental improvements" and "corporate image" and, to a lesser extent, "marketing advantage" and improved "relations with communities".

Another role of accounting in environmental sustainability is presented by Al Gore. In his view, environmental crises are inefficiencies deriving from a failure to calculate all social costs, internalize externalities, or design enough properly-functioning markets. Even global warming, according to this perspective, is a mere 'market failure' (Stern, 2007), correctable through improved pricing and information flow (Al Gore, 2007).

Environmental accounting is supposed to address such crises in two ways. First, it makes environmental crises more visible to decision-makers, by classifying them in a way that makes explicit pre-existing equivalences or quantifiable relationships with commodities and other economic objects (Lohmann, 2009).

3. The cost of environmental reporting

The types of management decisions that may benefit from the information in environmental accounting: product design, maintenance or replacement of a product; procurement costs; cost allocation; cost control; pricing; a design process; capital investment; waste management; risk management; strategy compliance with environmental legislation.

4. The scale and scope of application of environmental accounting

Environmental Accounting is a flexible tool that can be applied at different levels and used for different areas:

Depending on corporate needs, interests, goals and resources, environmental accounting can be applied at different scales such as at:

- process - a single process or multiple processes (a production line);
- system - (lighting, reducing water losses, packaging);
- product - a single product or range of products;
- infrastructure - infrastructure and utilities at local or regional level;
- company - part of the corporate division or the entire company.

The specific problems of environmental accounting can develop according to the scale of application.

5. Who can use environmental accounting?

Environmental accounting can be kept by small and large firms in almost every industry, both in manufacturing and services. It can be applied to a large-scale or small-scale, systematic or as needed. The form it takes may reflect the goals and information needs of the company.

In any business, managers and management teams are essential to the successful implementation of environmental accounting. Environmental Accounting may entail a new way of looking at cost, performance and environmental decisions concerning the company.

In this respect, dedication managers can instil a positive tone and stimulate implementation of environmental accounting in the entity.

With the help and support of management, in companies can be formed mix deco-functional teams in order to implement environmental accounting. Environmental accounting is not an end in itself, but with the information it can provide to members of eco-functional group, it becomes a common interest. Interest in environmental accounting comes from the fact that group members must communicate to develop a language and then a common vision on sustainable development entity.

In the relationship environmental accounting and accounting regulations, are small steps. In order 3055/2009 approving accounting regulations compliant with

European directives, provides a separate account for environmental protection expenditure account 652.
Subsequent changes are made by order 1118/2012 which brings additions to the accounting procedures and items used to highlight them.
At the end of 2013 is issued a new order, 2067/2013 published in June 2014 which brings further clarification on accounting for green certificates.
In a study conducted in Brasov, those involved have shown a SWOT analysis of the main aspects of environmental accounting organization at the enterprise level (Baba, 2012).

Table 2. SWOT analysis on environmental accounting organization

Strengths	**Weaknesses**
- Entities are motivated to get involved in environmental activities; - This is an area that has a special dynamic power; - Selective waste, pollution prevention could create financial resources for businesses; - There is strong competition in the market for cleaning (sanitation).	- Not all managers still understand the importance of environmental accounting; - There is untrained personnel in this environmental accounting field; - Staff accounting department does not have enough information about environmental accounting and do not know how issues are reflected in the environmental accounting and what impact has on the economic entity and environmental policies; - There is no system in terms of environmental accounting that could be applied at the economic entity; - Technologies that are used to recycle and produce added value from waste and prevent pollution are outdated.
Opportunities	**Threats**
- The entire legislation of the European Parliament EU regarding environmental accounting is applied also in Romania so that it can be applied for the economic agents; - There is a clear perspective for needing a large number of workers in the field of environmental accounting, capitalization, and remediation; - Possibility to bring new and advanced technology and equipment; - Ability to attract foreign investment.	- There are many difficulties in introducing an information system; - It takes a significant budget to implement environmental accounting and benefits are not immediately obtained, which creates a reluctance to entity; - The corresponding legislation is very little and approached tangentially

Source: Baba, 2012

Conclusions

By developing and using environmental accounting policies, entities may benefit from several advantages such as:
- Strict control of environmental costs, knowing at any moment which is environmental performance;
- Gaining more customers and therefore higher incomes in the long term;

- Improving their reputation (image), access to new markets (but it is possible to generate also some other disadvantages: high cost of environmental investment);
- Necessary framework for continuous improvement in environmental performance.

By costs controlling and revenues connected to the environment, a manager can identify ways to save money and improve the external image. Environmental accounting information provided on the environmental costs may help the management team in decision making related to product design, manufacturing process, waste management, investments and so on.

Information provided by environmental accounting, analysis of the relationship between costs and benefits helps managers to base their decisions regarding environmental protection, to take measures to prevent environmental damage and help on environmental costs evaluation.

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