Considerations on the Integration of Environmental Information in the Entity's Financial Accounting System

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Abstract

Starting with the ’70, environmental accounting was prone to debates within the scientific community. During the different stages in the environment accounting evolution, the development of this concept took place around the 90’s as an answer to the limitations of traditional accounting, like the lack of an adequate treatment for the internalization of environment externalities and poor allocation of environment protection costs. All these have led to accounting evolution through integration of social and environmental dimensions in the financial system and management of an enterprise. Instruments of environmental management accounting developed by practitioners and theorists in the field, are, for most an adaptation of the traditional methods used by management accounting. These instruments cover cost control, financial analysis and performance evaluation.

Key words

Environment, environment accounting, financial accounting system, financial statements, sustainable development, environment protection

JEL Codes: M41

1. Introduction

Environmental accounting was recently the subject of numerous studies, some of them questioning the techniques that can be used to integrate environmental information in the accounting system. Other specialists included this concept in the management area, emphasizing the need to evaluate environment performance as an indicator of decision (Lafontaine, 2003).

Environmental accounting was originally developed as means for management and operation of the company to meet its immediate needs, but evolved quickly becoming a means of informing the shareholders, employees and third parties in general. Environmental accounting (Environmental accounting, Comptabilité environnementale), also known as green accounting (green accounting, Comptabilité verte) cannot be confused with mere reflection of environmental costs in the traditional financial statements, but is a system of information and reporting of environmental elements. Environmental accounting definition varies according to researchers, thus meeting three reference levels. The first relates strictly to
respecting the traditional role of accounting and to considering cash flows and environmental risks in order to inform stakeholders of an accurate image of the company. The second level is the measurement and information on environmental damage brought by the enterprise and improving their environmental management. The third level emerged from the sustainable development and environmental protection issue only. Even if environmental accounting is a global concept, in this study we refer only to the impact of economic activity on the environment and consider feasible the following definition of environmental accounting - the essential tool for assessing, identifying, analyzing and recording the impact of economic activity on the environment, and use of this information in the financial and enterprise decision-making. Environmental accounting objective is to enable businesses, local government and local organisms to proper evaluate the impact of their activities on the environment.

Sustainable development, eco-social efficiency and responsibility are concepts whose value depends largely on how the environmental, social and economic are, recognized, measured and reported in financial accounting. To fulfill its social responsibilities, enterprises through financial and environmental reports must provide useful information for stakeholders in order for them to make good economic decisions and provide a general framework on entity's liability. According to current regulations, the objective of financial statements is to provide information about the financial position, financial performance and changes in financial position of an entity; this information is useful to a wide range of users in making economic decisions.

Environmental accounting benefited lately from increased attention with the increase of monetary impact that business activity has on the environment. These relate primarily to the generation, analysis and use of financial and non-financial information, to assess and control the environmental aspects of an enterprise. Traditional financial accounting reveals in the financial statements only the stocks and cash flows of an enterprise in financial terms, while environmental accounting tries to provide information according to three different dimensions (The SIGMA Project, Guidelines, 2003):

- The moment of impact–information can provide a situation on goods and services flows at a specific moment or not, during a period of time;
- Place of impact–classification of environmental impact within financial reporting (internal environment) or outside the boundaries of traditional reporting (external environment);
- The type of impact–identifies the type of impact exercised by an activity as environmental, social or economic.
2. Literature review

In the early 70’s, Bertrand de Jouvenel, was the first author to criticize traditional accounting methods, that were considering only goods and services on the market, without the free services offered by nature. After the discovery of oil in 1974, Norway established the first environmental accounts by acting as resource management from land-use. Later (1989-1991) in the Netherlands was developed the idea that the accounts of natural resources should be considered in the economic analysis. This led to the introduction of environmental accounting - NAMEA (National Accounting Matrix Including Environment Accounts).

Since the Earth Summit in Rio, the concept of environmental accounting has been widely recognized as an essential tool which is supported by many organizations, such as the United Nations, World Bank, Organization for Economic Cooperation and Development. The first official document attesting to the introduction of environmental accounting is chapter 8 of Agenda 21, "Integrating environment and development in decision-making", having as ultimate point of debate, the commissioning of an integrated system of environmental accounting. Although the term "environmental accounting" is presented for the first time after the 90s, the concern for environmental protection appeared much earlier, in the early 70’s, (Mathews, 1997), offered three distinct periods in the evolution of environmental accounting (from 1970 to 1980, 1981-1990, 1991-present). It is established that after a progressive specialization in accounting environment, during 1981-1990, took place a promotion and development of environmental accounting, regarding social content (between 1991-2000) and now we are witnessing a significant contribution to environmental information and integration into the annual financial statements.

The main environmental information handled by financial accounting includes identifying, analyzing, recording and managing financial impact that the environment has on the enterprise. The importance given to these environmental issues led to the adoption of numerous standards, regulations and guidelines on the accounting treatment applied to environmental issues, for both national and international bodies (IASB, FASB, UN, OECD). Among the accounting system bodies that deal with environmental issues, we identify (Schaltegger and Burritt, 2004).

- the national regulatory bodies which issue accounting regulations which directly affect the entity’s management by creating legal requirements;

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- Standardization bodies, which influence regulatory bodies by issuing the applicable national standards, supranational (EU directives) and international (IAS/IFRS);
- Other international bodies that have issued, over time, guidelines and recommendations on the accounting treatment applied to environmental issues. Among them the Council of the European Economic Community, which issued recommendations EC 2001/453, and Canadian Institute of Chartered Accountants (CICA) which has issued numerous recommendations and guidelines on environmental accounting, that is: Environmental Auditing and the Role of the Accounting Profession, Reporting on Environmental Performance?

3. Methodology of research

The research conducted in this study is part of research positivism. Therefore we combined theoretical research, qualitative with quantitative research using the methods of research: comparative analysis with transverse and longitudinal nature, content analysis and data interpretation (deductive method). Source information used consists of literature in environmental protection, environmental economy and environmental accounting, articles in the field of accounting and economic environment research, study of normative internal and international acts, analysis and interpretation of information published in annual reports on the use of the environment, other press reports and communications regarding environmental information. To retrieving information from theoretical data databases of national libraries and databases available in international libraries were used. Other specialized books, papers and articles in accounting were accessed, various reports and studies, national and international accounting regulations, statistical data obtained from the National Institute of Statistics and information presented officially in on-line format.

4. Submission environmental assets in financial accounting

Environmental assets are defined as activities undertaken to prevent, mitigate or repair environmental degradation, for conservation of existing resources. According to financial accounting regulations, an asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow towards the entity (IFRS, 2013).

4.1. Tangible assets

Tangible assets are according to IAS 16, position 6, tangible elements held by an enterprise to be used in the production of goods or services, for rental to others or for administrative purposes and are expected to be used over several periods. Tangible assets are represented by land, buildings, machinery, equipment, goods
that may generate environmental costs (costs of remediation, decontamination, a
good improvement imposed by environmental rules and regulations). IAS 16
specifies the accounting for intangible assets acquired from environmental reasons,
on the one hand, and the costs of dismantling and restoring of the location on the
other hand. IAS 16, item 11 sets an emphasis on accounting of tangible assets of
acquisitions for environmental and security reasons. Rules specify that assets,
even if they don't directly increase the future economic benefits, may be helpful to an
entity to obtain economic benefits from its other assets. These items are recorded
as assets because they allow the entity to obtain greater economic benefits from
related assets than those that would have been obtained if no purchase was made.
IAS 16, item 7 states: the cost of a tangible asset can be recognized as an asset if it
is probable to generate future economic benefits associated with this element and if
it can be reliably measured in the cost of this asset. Environmental expenses related
to a fixed asset represent an exception to this rule because assets are recognized
as economic benefits generated not as an independent tangible asset but as a set
of core assets. Even if these assets do not directly increase the future economic
benefits it is necessary for the company to obtain future benefits from the use of
other assets owned.

One example provided by IAS 16 in this respect is how a chemical manufacturer
complies with new environmental regulations, such as improvements to the
production process, based on modernization of installations will be recorded as
assets because without them the company is not able to develop and market those
products in optimal conditions required. IAS 16, position 16, analyzes the removal or
relocation costs of an asset and site restoration. The cost of dismantling and
relocation of tangible assets and site restoration is included in the entry cost of that
asset. These costs represent an obligation acquired by the entity at the time of
purchase or the consequence of using the item during a particular period for
purposes other than to produce inventory. Also, IAS 16, position 18, states that
those obligations are recognized and measured in accordance with IAS 37
"Provisions, Contingent Liabilities and Contingent Assets". According to IAS 16,
subsequent expenditure incurred in connection with tangible assets which have the
role to maintain or keep them in service are recorded as expenses during the period
in which they were made. When costs incurred relate to replacing a component of
the asset, it is necessary to deduct the old part and then the new part is recognized
if the recognition criteria are met. Environmental spending can help improve the
existing installations (improves the initial performance and generate future economic

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Financial Accounting and Reporting at the Corporate Level”, p. 5
benefits) or used to purchase new assets, often forced by environmental regulations. Accounting for these expenditures will be made in accordance with the rules on renewal costs, with those of the periodic reviews or directly charged to assets in accordance with the rules of IAS/IFRS.

4.2. Intangible assets

Tangible assets are defined in IAS 38 as identifiable non-monetary assets without physical substance. Can be considered intangible assets expenditure made by the acquisition, development, storage or expansion of scientific or technical knowledge, design and implementation of new processes or systems, licenses, or intellectual property rights. Thus environmental costs which qualify to be capitalized must be recognized as intangible assets according to IAS 38. IAS 38 provides a distinction between research and development expenses, so, research expenses are recorded as expenses according to IAS 38, position 54, while development expenses are recorded as assets according to IAS 38, position 57. Immobilizing development expenses is possible if the criteria established by IAS 38 are met:

- the technical feasibility is proven in order to complete the intangible asset so that it can be available to be sold or used;
- enterprise initiative to complete the intangible asset in question, to use it or sell it;
- the capacity to use or sell the asset;
- how the asset is going to generate future economic benefits;
- availability of technical, financial or otherwise to develop and complete asset;
- the ability to measure reliably the expenditure allocated to the intangible asset during its development.

According to MFP Order no. 1802/2014, constitution expenses are intangible assets, so some enterprises in our country record as intangible assets, as constitution expenses the environmental permits. This usually happens when the enterprise is established, the following permits being considered expenses of that specific time.

4.3. Impairment of assets

Evolution or ecological factors may cause impairment of an existing asset. According to IAS 36, item 8 an asset is impaired when its recoverable amount is less than the carrying amount. The principles applicable to settling the value from the environment point of view are the same as those for impairments, but the

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4 M.F.P. order no. 1802/2014 for the approval of accounting regulations on the annual individual and consolidated financial statements, pt. 185 (2)
uncertainty is higher. We have to consider the unpleasant repercussions of pollution on the value of adjacent goods. Environmental factors may cause the reduction in value of an asset, for example, degradation of land or buildings. If the current value has become less than the carrying value then we will proceed to the correction of value, recording the impairment under IAS 36, as follows:

- the entity can appreciate the closure of each financial year and each intermediary situations if there is an indication indicating that an asset has lost value significantly. In this case proceed to an impairment test, comparing the carrying amount of the asset by its current value;
- if the current value of an asset is less than the net book then it continues to be used and will be recorded at current value based on a test for impairment.

Depreciable asset value determination is made on each item, if this is not possible; you have to determine the recoverable amount of the cash generating unit to which the asset belongs. The value of impairments must be included in the profit and loss statement for assets recorded at historical cost, and for assets recorded at revalued amount first we must reduce the revaluation difference. If the difference of revaluation does not cover the impairment, the residue is recorded as expense.

5. Environmental expenditure included in the financial accounting

Environmental expenditures represent all the effects in the activity of protection, prevention or environmental restoration. Over time more classifications on environmental expenditure have been achieved, and at a company level we can meet the following types of environmental expenditure: pollution prevention expenses, assess and mitigate the effects of pollution expenses, remediation and environmental pollution expenses (Briciu, 2006).

Spending on prevention of pollution and environmental degradation include those types of expenditures that are made to avoid pollution on the principle that prevention is less costly (Cucui et al., 2012).

The activity and the actions of environmental protection, the transition to greening the entire human activity generates a series of expenses within entities that accumulate as expenses on preventing pollution and environmental degradation, as follows (Bobocea, 2009):
- expenditure on renewing technologies to reduce or completely eliminate pollution (investment, licenses, patents etc.);
- expenses incurred in the purchase of equipment to measure and control the processes to prevent and eliminate pollution;
- additional processing costs for raw materials for when they are consumed in production to not cause pollution or to reduce it;
- expenditure on the improvement of staff working in environmental protection;
- research expenditure on finding solutions to recover, value and store waste so they do not pollute the environment;
- expenses related to the computerization of processes to perform at their best and do not pollute etc.

- Costs of pollution and environmental assessment are those costs for pollution control and stopping infiltration of pollutants into the environment, as follows:
  - expenses with control and raw materials reception;
  - network operating expenses by monitoring and analyzing the internal environment of the company;
  - operating costs of control facilities with pollution.
- Expenses to counter the damage and environmental pollution are the costs resulting from fixing environmental deep, important and irreversible damage. This category includes:
  - fines imposed by environment control bodies;
  - restoration costs caused major and irreversible damage was caused;
  - decommissioning expenses of polluting equipment.

Another classification of environmental expenditures is provided by Viardot, so he has three types of environmental expenditure by reactive approach (solutions of reducing pollution) and proactive approach (modifies the production process to reduce the effects of pollution): expenditure on correcting past errors, operating expenses with existing environmental investments, expenses on research and development of solutions for environmental protection (Viardot, 1997).

Environmental expenditures may be of key importance, both for the enterprise and for users of accounting information, pointing the way for addressing pollution, action to reduce pollution and ecological area exposed to pollutants. Lack of a framework regarding the environmental costs makes companies integrate different financial statements. These problems are to some extent eliminated with the adoption of IAS/IFRS, which requires uniform accounting treatment for all expenses. Environmental costs are included in profit or loss, and sometimes are presented in the explanatory notes of the financial statements.

6. The accounting treatment of liabilities and environmental provisions

Liability for a debt represents a big problem especially in the environmental liability. Under IAS 37, position 10, a due debt or uncertain value is recognized as a provision. IAS 37 requires the recognition of a provision when:
- the enterprise has a present obligation generated by a previous event;
- settling a liability may require an outflow of resources embodying economic benefits;
- a reliable estimate can be made of the amount of the obligation.
IAS 37 also provides that where issues of uncertainty regarding the technology available prevent a reliable determination of the amount of the obligation, it must be presented as a contingent liability. A contingent liability is a possible obligation that arises from past events and whose existence depends on the occurrence of one or more uncertain future events that may not be entirely under the control of the entity, or an obligation that arises from certain past events but is not recognized because it is not sure that resources embodying economic benefits will be needed to settle the obligation, or the amount of obligation cannot be measured with sufficient reliability. According to IAS 37 contingent liabilities are not recognized in financial statements because they do not satisfy the conditions for recognition, their existence is confirmed by uncertain and uncontrollable events.

6.1. Contingent Environmental Liabilities

EC Regulation 2001/453 provides that, when you cannot make a reliable estimate of the costs, the obligation will not be recognized, it must be treated as a contingent liability because it is not recognized in the financial statements. An environmental liability represents contingent obligation to remedy environmental degradation dependent on the occurrence of one or more future events, or the obligation to provide compensation to a third party who would suffer from such degradation. Contingent liabilities are often associated with a high degree of uncertainty. Among the factors that management should take into account when assessing contingent liability are the development of contingent liability claim at the time of approval of the financial statements, legal experts or other advisers we can call, the entity's experience in similar cases and the experience of other entities in similar circumstances (Schaltegger and Burritt, 2005).

If you cannot correctly estimate the losses generated by the different contingent liabilities, then you should record at least its minimum value (IFRS). For example, if an enterprise is informed that its area landfill does not meet legal regulations, then maybe at that time we cannot determine the costs that the company will incur to remedy this, but we need to register at least the lowest cost of remediation. When environmental damage relates to own assets or those caused by other assets used in the enterprise activity for which the enterprise didn't commit to fix, the size if the damage can be recorded in the explanatory notes of the financial statements. It is difficult to assess the environmental liability so it is agreed to submit an average estimate possible and provide detailed information in the notes on the calculation method used. In very rare cases it is not possible to estimate, so it must be stated in
the notes to the financial statements. In case of impossibility to make a provision registering a debt is a compromise, because the amount cannot be determined reliably. Firms must clearly differentiate the registration of a provision or environment liability because of the fiscal impact of accounting provisions. Tax deductibility is only possible for the amount determined reliably. If provision is not deductible, recording a debt under the pretext that the amount cannot be determined reliably it is an acceptable "emergency exit".

6.2. Environmental provisions

EC Regulation 2001/453, environmental recognizes a provision when an outflow of resources in the form of economic benefits is probable, to extinguish a present ecological obligation, which was generated from a past event and the amount required to settle the obligation is determined reliably. It is recommended setting up provisions for environmental restoration of contaminated sites, management and disposal of negative effects. EC Regulation 2001/452 proposes recognition of expenses on the restoration of polluted sites, removal of accumulated waste, disposal of fixed assets that the company is forced to bear before the activities are completed or location is closed.

Applying standard IAS 37 "Provisions, Contingent assets and eventual liabilities" provides coverage of environmental liabilities in the balance sheet provision account, and if recognition criteria are not fulfilled then they will be presented in the explanatory notes as eventual liabilities. According to IAS 37, position 10, a provision is a liability whose maturity or amount is uncertain. Provisioning based on IAS/IFRS requires that certain criteria under IAS 37, position 14 are fulfilled:

- the enterprise has a present obligation (legal or implicit) as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits to settle the obligation in question;
- the amount of the obligation can be estimated reliably.

The most important accounting standards dealing with the recognition of provisions or liabilities, regardless of their type are, IAS 37 and FAS 5. Usually a provision should be recognized in the financial statements if the events which generate obligations are, probable and the amount of the obligation can be reliably determined or reasonably estimated. An environmental liability is considered

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probable when there is a legal obligation, and the company management wishes prevention, mitigation or remediation of environmental impacts exerted by enterprise activity. Reliable or reasonable estimation of a liability or loss must take into account the following factors (Roberts and Rodriguez, 1994):

- legislation and current regulation;
- the level of involvement of regulation;
- the number and reliability of the parties involved;
- the previous legal, economic, political and scientific experience;
- the gravity of the problem;
- existent technologies and previous technological experience.

Regarding credible estimation of environmental provisions according to IAS 37 position 36-51, provisions must be recognized at the best estimate of the costs required to settle the present obligation at the financial statement date and inevitable risks and uncertainties related to events and more circumstances will be taken into account when determining the best estimate of a provision, (IFRS)\(^7\). The average amount of provisions must be reevaluated and adjusted to reflect current estimated value when preparing financial statements. They should reflect future events that may affect the amount required to settle an obligation, if there is sufficient evidence that these events will occur. If, we need several transactions to estimate a provision, the value of the obligation will be estimated taking into account all possible exits depending on their likelihood. The main feature of environmental provisions, compared to other types of provisions is the great period of time to be settled. This presents a variety of factors that may influence the amount of the allowance change. Liability reassessment can be found at a lower value than the real one, thus reducing the importance of likely exits to settle the obligation, which can have a negative impact on entities, leading in some cases to the impossibility of paying the obligations. Romanian Fiscal Code recognizes as environmental deductible provisions for closure and tracking post-closure of landfill constituted by taxpayers engaged in waste disposal law, the maximum amount set by project closure and follow post-closure of the landfill, appropriate to a share of the storage charges collected\(^8\).


\(^8\) 2015 Fiscal Code, available on-line at: [http://static.anaf.ro/static/10/Anaf/Cod_fiscal_norme_2015.htm#a22](http://static.anaf.ro/static/10/Anaf/Cod_fiscal_norme_2015.htm#a22)
7. The relevance and importance of integrating environment in the company's financial decision

Since the moment of recognizing environmental issues it was took into consideration the necessity and importance of environmental integration in the financial system and decision-making of each enterprise. Therefore environmental accounting through its two forms, environmental financial accounting and management accounting environment, is a key element to answering these concerns.

Environmental management accounting is a set of principles and methods that provide essential information for specific environmental management activities. Among the benefits of implementing environmental accounting, IFAC presents the following, (IFA, 2005):

- promoting environmental protection in accordance with environmental standards and compliance with environmental policies self-imposed by the entity through: planning and implementing investment pollution control, investigation and search of substitutes for toxic materials, reporting of emissions and waste towards the regulatory body;
- supports reducing costs and environmental impact through efficient use of energy and resources: accurate tracking of energy flows, water, materials and waste, evaluation of the benefits arising from investing in eco-effective activities;
- supporting the assessment and implementation of effective environmental programs to sustain long-term strategic position of the entity: designing green products and services, estimating costs by changing domestic regulations;
- helps management to identify and record hidden environmental expenses.

Environmental accounting management provides comprehensive reasons for incorporating environmental and health aspects to the decision-making process. Recognizing external environmental costs in accounting supports organizations in an effort to maximize performance. On the long run this objective is achieved if the level of internalization of external expenses is correlated with reality.

Although environmental accounting management focuses specifically on the internal decision-making process, information on certain quantitative data are often made public. The collection of physical data that is to be shown to the public, often is not called environmental accounting management nor accounting, because experts in such physical flow of information are more of employees from the departments of purchasing, production, environment and less from accounting. Environment managers consider very useful implementing a system of accounting for the environment, as a useful tool to justify the environment projects within the enterprise.
Environmental information provided by environmental financial accounting is important to a wide category of users, such as investors, creditors, staff, suppliers, customers, government, or other third parties interested in it. The need for information on environmental issues within an enterprise differs between each user, as follows:

- for Investors the most important environmental information is reflected by through financial indicators on environmental investment, environmental reserves, environmental fines and penalties;
- for the employees of the enterprise relevant are non-financial information on health and safety at work, pollution and environmental policy adopted by the enterprise;
- environmental authorities also consider relevant the information on environmental pollution, health and safety, environmental impact, environmental objectives and reporting environmental information submitted by national enterprises;
- local communities and environmental organizations are, concerned mostly by non-financial information on environmental performance, environmental objectives and environmental reporting.

Environmental accounting system can be implemented in any entity, but the benefits that can be obtained may vary considerably depending on their specific conditions (Bennett et al., 2003). Factors that influence the most adopting environmental accounting are the price of the materials entering the manufacturing process, the regulations and their implementation, as well as the stability of the economic environment.

8. Conclusions

Environmental accounting is more than a simple calculation method and representation of environmental costs; it is a system of planning and management of environmental performance, which should reflect the company's management style and commitment to environmental leadership. As we reported the company may have a different orientation with respect to environmental issues, but we anticipate that leadership style and behavior of entrepreneurs can have a positive impact on the added value of enterprises in relation to the environment. We must understand that proactive commitment, planned and quantified can become profitable. Eventually all businesses dealing with environmental issues will have to answer by taking into account these challenges and constraints.

Environmental accounting is an essential element for assessing, identifying, analyzing and recording the impact of economic activity on the environment and uses this information into financial decision-making process of the company.

For this study we tried to present the relevance of environmental integration in the financial system and the company's decision. As a general conclusion, we consider
environmental accounting a fundamental tool for providing relevant information for decision making within the company but also for the publication and disclosure of such information and statements within annual reports and statements of enterprises.

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