

Theoretical Approach to the Application of Environmental Financial Accounting

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The awareness evolution of company's economic players about the environmental issues, leads to changes in the companies and their stakeholder's real behavior, this brings to adopt different actions protective of the environment. However, this new perspective has challenged the organizational model, the management system and the organization's competition strategic vision. Otherwise, the implementation of these actions in the sustainable development context generates significant expenses which must be accounted for governance purposes. Nevertheless, the traditional accounting has proved incapable to register flows related to depollution and pollution prevention actions

The intervention of accounting standard-setters is therefore required, such as IAS / IFRS standards. This has proved an ability to promote financial environmental accounting by determining concepts besides a modern vision of accounting information use, in order to help companies assess their environmental performance and inform investors about potential environmental risk.

Keywords: managerial innovation, financial environmental accounting, environmental expenses, accounting standards

INTRODUCTION

The adoption of sustainable development by organizations is currently seen as a mixture of some ethical values of management, in addition to what was imposed by the financial crisis, as well as the constraints imposed by the natural environment (pollution, primary resources scarcity, the decline of biodiversity, ...), the social environment (fundamental human rights, health, and safety at work, ...), and the economic environment.

This new strategic orientation of the modern organization, according to (Piré-Lechalard, 2009), is translated into fields of opportunity such as improving productivity or enhancing the organization's image. It also proves to be a solid vector of innovation, in particular through the adoption of a benefits-based approach. This new organizational positioning induces behavioral changes at all levels of the organization and automatically impacts accounting, which finds itself involved in this major evolution of consciousness, which is, definitely, the challenge of the years to come.

This involvement of accounting in environmental issues translates into the need to take the environmental aspects in the accounts (individual, consolidated) of companies (site remediation, loss of land value, clean-up costs ...) into consideration.

This article, through a descriptive research methodology, proposes to highlight the scope of environmental aspects in the management of the company, which constitutes an organizational advantage and which must be integrated into its information system in general and accounting in particular.

This work is presented in three parts. The first part consists of presenting the importance of social and environmental accounting at the managerial level since they offer competitive advantages to external stakeholders. The second part is dedicated to the evolution of social and environmental accounting, from the 1970s to the present day. Finally, the third section highlights the areas of the direct intervention of IAS/IFRS, in order to help companies achieve their sustainable development objectives and to inform stakeholders about environmental risk.

WHY AN ENVIRONMENTAL ACCOUNTING?

Sustainable Development and Managerial Innovation

The managerial literature reveals that the term innovation is interchangeably used to designate a process of change, with the end result, whose culmination is an original achievement which includes value-creating attributes; the original application is progress-bearing of discovery, an invention, or simply a concept.

According to (Piré-Lechalard, 2009, p. 284), Hamel (2008) identified four types of innovations which he presented in the form of a pyramid. Each innovation contributes to the success of the company, some forms of innovation reveal, according to the author, a superior ability in obtaining a sustainable competitive advantage. accordingly, he put at the top of his pyramid, managerial innovation is the most likely to cause a lasting breakthrough. It is different from other forms of innovation because it is based on a complex combination of resources and know-how that is particularly difficult for a competitor to identify and duplicate.

Moreover, according to Lafontaine (2003, p. 114), Godowski (2001) recommended that a management technique can be considered as managerial innovation if three conditions are met:

- a) Firstly, the technique must be a new idea, which can either be a recombination of old ideas, a scheme that alters the order of the present, or a unique formula or approach perceived as new by the individuals involved.
- b) Secondly, this technique must have a direct impact on the management style.
- c) Finally, this technique must contribute increasing the stock of knowledge available to the actors.

The study conducted by (Piré-Lechalard, 2009, pp. 285-296), confirmed that sustainable development leads to the creation of new products or services that can be the source of a confirmed competitive advantage through their social and/or environmental dimensions, or at the very least, of an often-remarkable positioning.

Environmental Accounting and Managerial Innovation

In addition, the implementation of a depollution operation within the framework of sustainable development consists in adopting either corrective- or preventive action¹, which generates expenses that correspond to flows² in the practice of the environmental management, within the global management of the company. The accounting of these flows appears to be indispensable and raises the issue of accounting innovation, which J-P Lafontaine defined as a managerial innovation with additional characteristics. These were determined by Godowski within two conditions: one is related to the field of application of the technique studied and the other to the people responsible for implementing the technique:

- a) A managerial innovation will also be an accounting innovation if it is a component of the organization's accounting information systems (AIS);

- b) And if accounting professionals (whether accountants, management controllers, financial auditors, or standard setters), perceive it as a technique that has modified or will eventually modify the content of their missions, their practices, and the scope of their responsibilities.

The author, according to his study, confirms that three key arguments permit to say that Environmental Accounting constitutes a managerial innovation:

- i. It brings together a set of new techniques because the research carried out in this sense classifies the techniques according to three criteria: the nature of the information (financial, physical, or qualitative), the use of the technique (for communication, the management or both) and its degree of originality compared to common practices;
- ii. It has a direct influence on management practices, thus intervening in each stage in the operation of environmental management systems (EMS); evaluates the costs and benefits of projects and actions, demonstrates the influence of environmental performance on the result, and the balance sheet, and identifies the cost reductions and other opportunities for improving the result, proves the future gains of long-term investments and evaluate the eco-efficiency and/or sustainability of the activity;
- iii. At the end it increases the stock of knowledge available to actors, allowing for the collection, processing, and communication of data that are ignored in traditional accounting. These new data will influence the behavior of the actors because they participate in giving meaning to the company through the used jargon, the values conveyed and the information produced.

At the end, the analysis of environmental practices in certified ISO 14001 organizations showed that only four Environmental Accounting techniques could be considered as accounting innovations: the creation of green accounts, the creation of green items in the balance sheet annex, the integration of green information in the annual report and the implementation of a green budgeting/control system.

THE BIRTH OF ENVIRONMENTAL ACCOUNTING

According to Michaud (2008), the birth of social and environmental accounting dates back to 1953 with Bowen, who questioned the exclusively economic mission of the company and assumed that it exists to meet the needs of the society; thus laying down the foundations for the social responsibility of companies. From then on, the demand for social information grew and emerged both internally and outside the company; the development of environmental accounting was summarized by the work of (Rambaud, 2015) in three periods:

The Emergence of Social Accounting

The late 1960s was characterized by politicization and democratization of the environmental issue. Actors were more interested in questions concerning their living conditions (it was indeed a question of seeking security and the protection of human health, rather than wage compromises), which was the birth of the so-called ecological economic currents, which connected economy and environmental quality. The strong growth in the 1970s gave rise to the Stop Growth report, which was the first study that highlighted the environmental dangers that this growth could cause. In addition, a new vision had provoked the prevalence of the concept of quality of life, a source of integration of elements located outside the usual institutionalized economic frameworks in private accounting. This created the need to question certain rules held to ensure the harmony of the proper functioning of the economy and companies, which gave birth to social and environmental accounting. It has the following characteristics:

- ✓ Firstly, it focuses on the social rather than the environmental aspect, to provide quantified assessments of the quality of social relations within a company. However, the indicators are divided into seven areas: employment; remuneration and ancillary charges; health and safety at work; other working conditions, such as physical working conditions, like training; professional relations; other living conditions within the company, such as contributions to the financing of the works council; and establishment committees. This leads to the extension of accounting to extra-financial issues (the social balance sheet).

- ✓ The second characteristic of Social and Environmental Accounting in the 1970s was the prevalence of experiments and normative models. The spirit of this period was characterized by the demand for the studies, before the realization of projects, of their impact on the environment, by which extra-financial accounting models would take place in non-monetary units; in parallel with other proposals that retained the classic monetary framework.

Natural Capital - A New Direction for Social Accounting

The early 1980s did not see much innovation in the field of social and environmental accounting. The end of this period was characterized by the birth of the international sustainable development agenda, followed by the publication of the 1987 Brundtland Report, considered the official starting point for sustainable development. Thanks to this text, Social and Environmental Accounting had to position itself in relation to the issue of sustainable socio-economic development.

This period was characterized by the emergence of elements for the evaluation of natural capital, namely: the total economic value: corresponds to a precise typology of the different types of (neoclassical) economic values of natural capital, including in particular the values not revealed by the market, such as the existing value³ or the Option value⁴. The capital approach to sustainable development consists of a reformulation of sustainable development in terms of the maintenance of certain capitals, starting with manufactured, human, and natural capital⁵.

Subsequently, during the 1990s, the notion of natural capital, as well as the capital approach to Sustainable Development, became established in the field of environmental economics. While the notion of capital allowed for a redefinition of Sustainable Development in more “operational” economic terms, the transition from this formulation to accounting was particularly ensured by Daniel Rubenstein, who wished to integrate the notion of natural capital directly into the company’s balance sheet, and Robert Gray, who explained that natural capital is not homogeneous but is made up of several varieties of natural “sub-capitals”, notably renewable, non-renewable and critical natural capital, the latter being defined as the part of the biosphere. Their visions were based on two very different approaches to incorporating the notion of natural capital into accounting. The former focused on a more financial and directly integrative view, while the latter focused on a conception of natural capital in physical and material terms, outside the balance sheet. These conceptual advances led to a substantial change in social and environmental accounting in the 1990s, with the transformation of the environmental report⁶ into a “sustainable development” report. These reports, which were not subject to any real official standardization, became an important issue for large companies in the 1990s. After the birth of the Environmental Management and Audit Scheme (EMAS) in 1993 at EEC⁷, the accounting profession became interested in environmental information by publishing a report on financial and environmental information. In France, the Conseil National de la Comptabilité (French National Accounting Board) proposed to isolate, in special account numbers, investments related to the environment (e.g.: depollution) or to identify which part of taxes and duties is attributable to the environment.

The Institutionalization of Social and Environmental Accounting

This institutionalization of Social and Environmental Accounting was confirmed at the beginning of the 21st century. In addition, the European Commission adopted the recommendation concerning the consideration of environmental aspects in the annual accounts and reports of companies: accounting entry, evaluation, and publication of information, by which it clarified the different accounting rules in the field of environmental information. It defines, in particular, the environmental expenses, assets, and liabilities, while providing a certain number of details concerning their accounting valuation and treatment. This desire to define environmental liabilities was already present in the international accounting standardization of the International Accounting Standards Board (IASB) through the creation of IAS 37 (International Accounting Standards), relating to provisions, contingent liabilities, and contingent assets, published in 1998. At the end of the 1990s, the IASB had taken into account environmental issues during accounting. This mobilized the IAS/IFRS (International Financial Reporting Standards).

The integration of reporting by the International Integrated Reporting Board illustrated two other major trends in Social and Environmental Accounting: the focus on the notion of capital, particularly natural capital, as well as the shift to integrative reporting linking financial and extra-financial capital, which is based on communication around six capitals (financial, manufactured, intellectual, human, social, and natural), highlighting the growing importance of natural capital as a concern for companies and users of the financial statements.

J. Richard pointed out that the European recommendation of May 30, 2001 “on the inclusion of environmental aspects in the annual accounts and annual reports of companies” defined the modalities for the accounting entry, evaluation, and publication of environmental information. In particular, it provided for the publication, in the annexes of accounts, information on the company’s environmental expenditure, if possible, by area (waste, water, soil, etc.), the expenditure capitalized, the costs incurred, and the results obtained. At the community level, recommendation 1653 of the European parliamentary assembly of 02/03/2004 entitled “Environmental accounting as a tool for sustainable development” defined environmental accounting as “a system for recording, organizing, managing and providing data and information on the environment, in physical or monetary units”. It specified that “like all accounting systems, environmental accounting provides objective data on the state of and changes in the natural heritage, the interactions between the economy and the environment, and the expenditures related to the prevention of damage to the environment, its protection, as well as the repair of the damages caused to it.

THE CONCEPTUAL FRAMEWORK OF SOCIAL AND ENVIRONMENTAL ACCOUNTING

Definition of Social and Environmental Accounting

According to FERCHICHI (2006), environmental accounting can be presented in its broadest form in three levels. Firstly, there are the international systems, which deal with the evaluation of natural capital values and which assess the state of the environment and well-being at the global level. Secondly, there is national accounting, which covers the integration of environmental components into the measurement of gross domestic product, the internalization of negative externalities, the evaluation of variations in the natural environment and the impacts of human activities, as well as the accounting of monetary and financial flows related to the use of natural resources. Finally, there is corporate environmental accounting, which is practiced at the business level. According to Environment Canada and the Ordre des comptables agréés du Québec, environmental accounting is: “...the part of accounting that, although it cannot be dissociated from financial and management accounting, deals more specifically with environmental concerns, that is, that part of the information system that allows for the collection and analysis of data, the monitoring of performance, decision making and accountability for environmental costs and risks.”

The mechanisms of the disclosure of quantitative environmental information, aim to highlight the various environmental costs of the company’s products, processes, and activities, in order to assess the impact of the company’s activity on the environment. These costs present information that must be gathered to evaluate environmental risks and in particular to estimate the cost of internalizing certain externalities, since external pressures (stakeholders) lead the company to incur these expenses, which will be found both in the balance sheet and in the income statement, as indicated in the IAS1 standard dedicated to the presentation of financial statements, including their presentation, structure and minimum provisions for content; in this case, the objective of the financial statements is to give a true and fair view of the entity’s financial position, performance and cash flows, and they must also present the environmental impacts of the company’s activities. The presentation of these elements remains optional, as there is neither a financial statement that presents environmental impacts nor a minimum disclosure requirement in annual environmental documents.

Environmental Expenses Recognized in the Accounts of Companies

These costs are related to, among other things:

- The elimination of waste and efforts to limit the amount of waste;
- The fight against soil, surface water, and groundwater pollution

- Preservation of air quality and climate;
- The reduction of noise emissions;
- Protection of biodiversity and the landscape.

Tangible Assets

It is necessary to distinguish between expenditures that have a nature of investments and those which have a nature of expenses. On this point, (SÉGURET, 2008), revealed that the opinion of the CNC's Urgent Issues Committee (2005) had clearly defined the environmental expenses that can be recognized as assets. These expenses must meet three (cumulative) conditions; they must be:

- Incurred either for personal safety or environmental safety reasons;
- Imposed by legal obligations;
- In addition, their non-implementation would lead to the cessation of the company's activity (or even its installation).

These expenses are considered as assets because they are likely to bring a future economic benefit to the company. As presented in IAS 16 Property, Plant and Equipment: The standard states that the cost of a property item, plant, and equipment should be recognized as an asset if it is probable that future economic benefits associated with the item will flow to the entity and if the cost of the asset can be reliably evaluated. As for the environmental protection elements acquired for the proper functioning of other fixed assets, they can be recognized as assets, even in the absence of direct future economic benefits, because they are considered accessories to the main asset, which allow the company to comply with current legal obligations and to be competitive in the market.

Intangible Assets

On the other hand, the management of the reduction of greenhouse gas emissions is carried out based on emission quotas, inspired by the theory of green patents. Its acquisition must be accounted for under intangible assets as recommended by IAS 38 Intangible Assets, which defines it, according to (C.Maillet-Baudrier, 2007), as an identifiable non-monetary asset without physical substance. An asset is a resource: a) controlled by the enterprise as a result of past events; and b) from which future economic benefits are expected to flow to the enterprise. However, it specifies the treatment of environmental assets such as development costs or greenhouse gas emission rights, received free of charge or acquired on the market.

Inventories

On the other hand, it is necessary to take into account the activity of certain companies, for which so-called 'environmental' expenses are difficult to distinguish from current operating expenses (waste treatment, water management, etc.). However, the activity of depollution produces residues, which should be stored, as recommended by IAS 2 Inventories; according to (Elena M. Barbu, 2011), it is particularly used in highly polluting industries (e.g. in mining) to recognize waste as assets with a residual value. The standard requires the waste to be recognized as inventory only if additional expenses would have to be incurred for the conversion of superfluous products into marketable goods.

Environmental Liabilities

Provisions

Future environmental expenses should be recorded as liabilities as indicated by standard IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" on the provisions for the costs of dismantling or removing assets and restoring sites. The standard is particularly likely to affect the behavior of companies insofar as it requires that a quantified estimate of "any present legal or constructive obligation as a result of a past event be recorded as a liability in the balance sheet, should it be probable that an outflow of resources will be required to settle the obligation, and should the amount of the obligation can be reliably estimated".

Calculation of the Environmental Provision

In Appendix C, the standard describes eleven events that are subject to the recognition of provisions, four of which concern environmental expenses or risks: land decontamination; oil drilling; obligations related to the implementation of environmental infrastructures; and obligations to maintain or improve productive equipment. However, the standard requires companies to identify all their environmental obligations, to measure them, and to recognize them as liabilities. The environmental obligation may be either legal or contractual in origin (when the company has a legal obligation to anticipate, reduce or repair environmental damage), or implicit - that is, arising from the company's practices or policies that lead it to make decisions, expected by third parties, to recognize these liabilities. The standard also requires a description of the nature and justification of the amounts provided for; all of which must be certified by an auditor.

Other Elements of Environmental Financial Accounting

IAS 8 Retrospective Restatements

According to (A. Kaddouri, 2009), this consists in correcting the recognition, measurement, and disclosure of the amount of items in the financial statements as if an error in a prior period had never occurred. It, therefore, addresses the accounting treatment relating to changes in accounting policies, changes in accounting estimates, and corrections of errors. All these aspects can also apply to environmental items. For example, changes in accounting estimates may occur for the following items: provisions for the dismantling of pollution control equipment, provisions for the rehabilitation of mining industry costs, and provisions for other environmental costs (air pollution, noise pollution, toxic gases, and waste).

IAS 10 Events After the Balance Sheet Date

It consists of the adjustment of the company's financial statements for events that are either favorable or unfavorable, which occurred between the end of the closing period and the date on which the financial statements are authorized for issue. Some of these events may have an environmental impact and must be described, specifying the causes that produced them. In this case, there are two types of events:

- ✓ those that help to confirm circumstances that existed at the balance sheet date
- ✓ those that indicate circumstances that arose after the balance sheet date.

IAS 20 Accounting for Government Grants

This standard contains an implicit reference to the initial distribution of greenhouse gas emission rights and their identification in the financial statements.

Concerning the Treatment of Financial Resources

According to (Elena M. Barbu, 2011, p. 25), IAS 32 "Financial Instruments: Presentation", IAS 39 "Instruments: Recognition and Measurement", IFRS 7 "Financial Instruments: Disclosures" and IFRS 9 "Financial Instruments" (IFRS 9 is a proposed replacement for IAS 39) can be used to disclose present and future risks associated with environmental derivatives and the treatment of other financial items as a result of environmental impacts. Also, these standards specify whether an environmental financial asset should be measured at amortized cost or fair value, depending on how the entity manages its financial instruments and the characteristics of the cash flows associated with the financial assets.

IAS 36 Impairment of Assets

This standard guarantees that an entity sees into it that its assets are carried at a value that does not exceed their recoverable amount. This standard can be used to write down the value of a company's environmental assets following a contamination incident, a physical accident, a termination of contracts, or the depletion of mineral resources.

IAS 41 Agriculture

Is an industry standard, it defines a biological asset as a living being with a value under which it is recognizable (animal or plant). Therefore, it applies to the accounting of biological assets (live plants or animals), agricultural products at the time of harvest, as well as agricultural public subsidies. The enterprise must disclose information about the nature of its activities for each group of biological assets and non-financial estimates or valuations of volume. The standard does not specify any environmental disclosures, but given the sensitivity of the use of these items from an environmental perspective, additional disclosure may be required.

IFRS 3 Business Combinations

A business combination is the bringing together of separate entities or businesses into a single reporting entity. This standard explains that the assets and liabilities acquired in a business combination shall be measured at their fair value, which may consider the environmental impact of these items.

IFRS 6 Accounting for Mining Industries

This standard addresses extractive activities, which are widely recognized as environmentally sensitive. The standard guides the capitalization of exploration and evaluation expenditures for mineral resources. It also provides criteria for the recognition of decommissioning and relocation obligations following the exploration of mineral resources.

IFRS 8 Operating Segments

This specifies material items to be disclosed in the annual reports of major groups. Diversified companies may have an operating segment that is directly related to environmental protection, such as renewable energy, urban services, decontamination services, green technologies, recycling, etc.

CONCLUSION

This article reveals, in the end, that Environmental Accounting is a managerial innovation, because it gathers a set of new techniques, which exert a direct influence on the management practices, and because it intervenes, at each stage of the functioning of the environmental management system (EMS), by evaluating the costs and the gains to evaluate the eco-efficiency and/or the sustainability of the activity, to demonstrate the influence of the environmental performance on the result and the balance sheet which would allow it to prove the future investment gains in the long term. It also increases the stock of knowledge available to the actors. To this end, it is interested in the collection, processing, and disclosure of data which traditional accounting does not take into consideration.

The birth of environmental accounting was brought to light with the establishment of the social balance sheet, in the 1970s, which revealed the working conditions of the staff. The appearance of the concept of sustainable development, at the end of the 1980s, revealed the notion of natural capital, in order to consider it in all actions. This was followed by the introduction of an extra-financial balance sheet, in the 1990s, by which the company presented its environmental situation with respect to the protection of natural capital, also known as the environmental balance sheet or the eco-balance sheet. The institutionalization of environmental accounting was the platform from which its conceptual framework will be established to answer the question of traditional financial accounting, concerning the consideration of environmental aspects in the accounts (individual and consolidated), in the years 2000. This new vision would deal with the collection of data related to environmental actions, treaties, communiqués and produce information, which facilitates the evaluation of environmental performance, in order to help companies achieve their objectives of sustainable development, to better evaluate the environmental performance and to inform stakeholders about the environmental risk.

ENDNOTES

1. Corrective action consists of installing filters or a depollution station downstream of the installation. The preventive action consists in buying machines equipped with filters and depollution equipment at the beginning of the installation.
2. The flows correspond to the monetary-, physical- and legal flows.
3. It is defined as the willingness to pay for the direct or indirect use of the environmental good.
4. Value granted to the conservation of an asset for future use.
5. Pearce defined it as a stock of natural assets serving economic functions.
6. Born in the late 1980s from a need to justify the activities of highly polluting sectors such as the chemical industry.
7. At the beginning it was voluntarily adopted by the industrial companies then, followed by any company having an environmental impact.

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