

PUBLIC AND PRIVATE SECTOR ENVIRONMENTAL REPORTING: MANDATORY OR VOLUNTARY REGULATION?¹

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Abstract: The organisation's interest in producing an image of commitment towards the environment has motivated the development of new informational needs by the different stakeholders. Their satisfaction requires that the organization's traditional information systems change. This happens in both public and private organizations, in order to generate environmental information, not only for management purposes, but also for external disclosure. In this sense, the contents and display of the information produced by these systems must also adapt, receiving new information besides the traditional one [for example, the annual reports], including the ad hoc information, environmental report and/or sustainability report. The literature highlights that there is no consensual opinion among researchers about mandatory or voluntary reporting. In the private sector, the accounting regulations of environmental issues, specifically in what concerns the environmental information disclosure in the annual reports, presents a certain degree of development, with several initiatives, both national and international, concerning the approval of an environmental accounting standard. Nevertheless, in the public sector, the delay of specific accounting standards concerning environmental information has led public entities not to submit suitable information about their environmental management. The aim of this paper is to present the state of the art, both in public and private sector contexts, according to national and international legislation, in the annual reports or separately. A further objective, in addition, is to present a short reflection on the subject of mandatory and voluntary environmental disclosure.

Key words: Environmental disclosure, environmental accounting, environmental regulation, public sector *versus* private sector

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Introduction

Over the past decades we have witnessed a generalized process of awareness of the importance and necessity to achieve sustainable development, which has led to a greater social, public and institutional concern for the protection and preservation of the environment. As a result, the companies, as major polluters, began to consider the consequences of their activities on the environment and take on the responsibility of reducing the negative impacts from their activities.

The assumption of an environmental responsibility by the entities is evermore revealed in the integration of environmental variables in their management procedures, with several kinds of positioning becoming evident, in order of the importance of different variables. Thus, we now see in our society, companies that consider that environmental protection is mandatory from a legal point of view and others that consider that an environmentally friendly attitude is a source of sustainable competitive advantage, both at the level of costs level and as a differentiation strategy. As a consequence, these companies take on a proactive attitude towards sustainable development, formulating environmental strategies in the pursuit of continuous improvement in this area.

Although companies, particularly those belonging to industrial sectors, have generally been considered some of the major sources of environmental impacts, one cannot ignore the fact that public organizations also generate a significant amount of pollution (through the use of vehicles, the consumption of paper, electricity and water, etc.). In this sense, they were considered by Taylor *et al.* (1994) as "silent destroyers".

The protection and preservation of nature has become a major concern in governments' agendas, in their power and authority scopes, as well as for other social agents. The shift of values has been motivated largely by the global awareness of the consequences and effects caused by humans on the environment and by economic activities. The resulting need of governments, in cooperation with society, is to take proper actions towards profit in sustainable development.

To achieve sustainable development, it is indispensable to count on

the cooperation of all economic agents, among which stands out the fundamental role of the State to defend the interests of present and future generations. In order to reach this goal, public administration cannot remain indifferent, rather, as companies have done, must adopt a proactive attitude by implementing practical measures which, on the one hand, allow them to better manage their own environmental impact and, on the other hand, encourage and promote the adoption by other organizations of behaviours compatible with the protection and conservation of the environment (Aibar Guzmán, 2002).

The accomplishment of both objectives requires an organisational, cultural and management change in public entities, adopting the integration of values, goals and strategies towards sustainable development. Based on this, public organizations, as much as private companies, have been put under several internal and external pressures, to adopt behaviours and take actions compatible with the preservation of nature. As a response to these pressures, management practices and tools (described as "sustainable") have gradually been developed and implemented. Their main purpose is to reduce, as much as possible, the economic activities with negative impact on nature. Among these tools, the Environmental Management Systems (EMS) stands out, as well as local agenda 21 (in the case of local entities).

The implementation environmentally friendly management systems defines the need of incorporating the environmental issues into the organization's information systems, with the purpose of obtaining supporting data for environmental management, but also to disclose/publicize the actions taken by the organization when pursuing sustainable environmental development, that generates profit.

According to Frost and Toh (1998), the duty to disclose information about environmental performance is not exclusive of private companies. As a matter of fact, Burritt and Welch (1997a and b) claim that public companies, by definition, hold a broader level of environmental responsibility, than private companies. Public companies must submit information to the Government, but also to the community. They

should, therefore, publish more information on environmental aspects. Thus, the traditional accounting system of any entity, public or private, must adapt and respond to new demands and informational requirements, not only for management purposes, but also because of the different stakeholders, through the implementation of accounting practices that will allow for better interpretation and disclosure of environmental information.

The aim of this paper is to analyse the state of the art concerning environmental disclosure regulation, both in public and private sectors, and provide a reflection on the subject of mandatory or voluntary environmental disclosure. The paper is structured as follows: in section one of the paper we present an overview of the main regulatory actions related to environmental disclosure, not only in an international and European level, but also in a national context. Particularly, section two presents an overview of our country, Portugal. We reflect on the mandatory or voluntary disclosure of environmental information in the last section.

1. Environmental disclosure regulation

Because the informational system is able to perform and submit environmental information to the stakeholders, in a voluntary or mandatory manner, it must adapt its content and configuration of the elaborated data, including the new information variables in the traditional information (for example, in the annual reports), or according to *ad hoc* information, such as environmental or sustainability reports.

According to this, within the environmental information disclosed publically, it is possible to distinguish between the information that is disclosed in the annual reports according to mandatory accounting regulations, and the environmental information that is voluntarily published in these or any other documents (environmental report, sustainability report, etc.) (Fronti de García and Fernandez Cuesta, 2003). The accounting regulation of environmental issues for the private sector, specifically concerning annual reports' environmental disclosure, presents a higher degree of development than that of the public sector. Nevertheless, the slowness in creating accounting regulations on envi-

ronmental information for the public context has had the consequence of several public entities not submitting information on the performed management, and the impact of their activities on the environment. López Gordo and Rodríguez Ariza (2004:15) underlined the need for “establishing regulation on environmental accounting in the public context, as well as the implementation of information systems that allow processing efficiently the corresponding data to each of the management areas and analysing its degree of compatibility, improving planning, and implementation and follow up of the performed actions”. Therefore, in order to reduce the existing legal gap, both in the private and public context, we have witnessed, in the last few decades, an effort of the legislators to approach the treatment and disclosure of environmental issues.

1.1. International initiative

There are several international initiatives concerning the approval of environmental accounting standards or other guidelines related to environmental disclosure.

The United Nations Organization (UN), through the United Intergovernmental Working Group on International Standards of Accounting and Reporting (ISAR), started a process of stimulating the development of legislation on processing and diffusing environmental protection measures in 1989. It has been issuing several documents on different aspects of environmental accounting and disclosure, with the purpose of improving the accounting information of the several organizations and their harmonization.

The International Accounting Standards Board (IASB), even though it has not released any International Accounting Standard (IAS) dedicated exclusively to the treatment of the environmental issues, presents several IAS that report on this subject². Similarly, in the public sector

² The only specific standard on environmental issues was released in December 2004, by the International Financial Reporting Interpretations Committee (IFRIC) of the IASB, under the designation of IFRIC n.º 3 – “Emission Rights”, referring to the accounting of CO2 emission rights. However, this interpretation was removed in July of 2005, after the negative opinion of the European Financial Reporting Advisory Group (EFRAG), not being released at this time no other standard or interpretation on this subject.

context, the International Federation of Accountants (IFAC) has not published any International Public Accounting Standard (IPSA) referring to environmental issues.

Internationally, we also highlight the Global Reporting Initiative (GRI) that promotes some directives towards the elaboration of sustainability reports, with the goal of improving the quality, rigour and usage of the economic, social and environmental information published in a voluntary manner, by private, public and nonprofit entities, in all dimensions, sectors and places. This information may assume several configurations, be divulged in writing, over the Internet and be presented independently (as a separated information), or as part of the annual reports (GRI, 2006). The first guidelines were released in 2000 and revised in 2002. In 2006 the GRI released an enhanced version of the guidelines, "G3" with an updated version, G3.1 in March 2011. The G4 guidelines were released in May 2013 (Adams, 2014).

With the purpose of supporting the usage of these directives by several organizations in all sectors, the GRI has developed sector supplements, to complement the general directives with interpretations and management that bear in mind the specifics of each sector and propose a few indicative performance evaluations. In the public context, in September 2003, the GRI began the development of the sector supplement for public agencies³, in response to the need of management for the elaboration of reports, considering that the general directives were unsuitable or would not cover some specific aspects, relevant for the public sector (GRI, 2004). In March 2005, the GRI published the Sector Supplement for Public Agencies – Pilot version 1.0, meant for the "public agencies" at all governmental levels⁴, considering that the same supplement may be used by International entities (for example,

³ According to GRI "the term 'public agency' refers to any rule and policies provider entity, acting at region level, central, federal, state or locally. This does not include companies that are controlled by the State, nor companies or other entities that perform investigation and education tasks or foundations" (GRI, 2004:7).

⁴ Including ministries, federal agencies, regional government organisms (such as the European Committee), state agencies, local governments, departments, etc.

the Environmental Program of the UN). This supplement may serve as a starting point for environmental disclosure in the public sector, by providing a general model that favours the comparison between entities and organizations (GRI, 2005; CPASR, 2005 and 2006). To sum up, according to the Centre for Public Agency Sustainability Reporting (CPASR, 2006), the GRI supplement for public agencies acts upon some new information to be made known. Actually, what separates the public sector from the private one is the need to explain to all citizens the basis in which all public policies are thought and performed, according to the commitment of the public administration to sustainable development, within their jurisdiction.

Alongside the efforts of GRI at the International level, we must also highlight the work carried out by the International Standard Organization (ISO), specifically by publishing a standard on the series 14000, referring to environmental management: the ISO 14063:2006- "Environmental Management: Environmental Communication – Guidelines and Examples". This rule provides some guidance on how to report the information of environmental management, developed by all kinds of organizations, public or private. The ISO 14063 is not limited to establishing the contents or sort of environmental information for release, but also plans on a set of methods and configurations of disclosure (Block, 2004). Even though it is an international initiative, it does not conflict with GRI, since the ISO standard refers exclusively to the production of an environmental report, while the directives of GRI are broader, referring to the inclusion of information in a single document (sustainability report) concerning the social, economic and environmental dimensions in an organization's performance. In this line of thinking, Scott (2001) considers that the guidance of GRI, corresponding to the environmental effects, may be taken as a reference for the ISO standard.

In this sense, Block (2002) considers that the publishing of this standard has set a thrust towards the voluntary external disclosure of environmental information. In the opinion of Briggs (2005), the ISO 14063 standard is a complement for other voluntary disclosure pro-

grammes, such as the guidance of Global Reporting Initiative (GRI) or Environmental Protection Agency (EPA), setting a global framework on communicating, involving the stakeholders in matters that interest not only the informing organization, but also the entire community. In this line of thinking, Scott (2001), by comparison to the GRI guidelines, considers that the ISO 14063 is centred on: (a) the communication of environmental information, generally, and not only the production of information for external usage; (b) the environmental issues, exclusively, not considering other social and sustainability aspects; and (c) the process of communication and not only in the contents of the information.

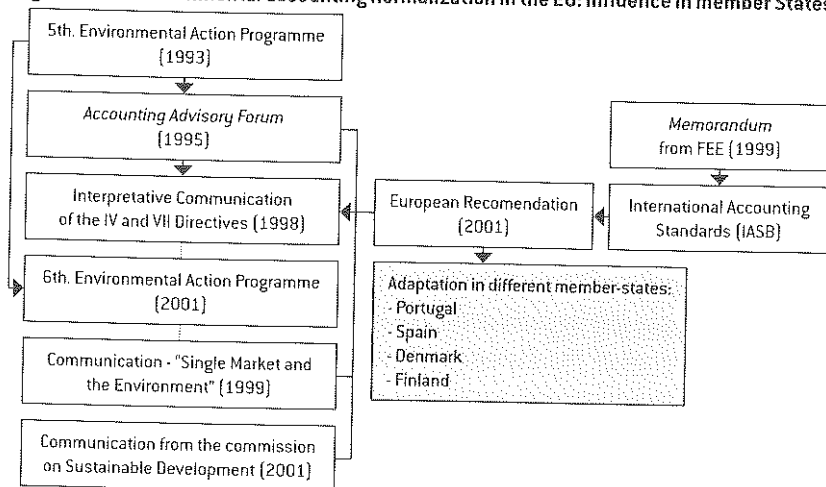
1.2. European Initiatives

The process of environmental accounting normalization in the EU began in the 1990's, through the release of several documents, resulting from the previous, the 5th Environmental Action Programme (1993) – “Towards a sustainable development”; the document of the Accounting Advisory Forum (AAF, 1995) entitled “Environmental Issues in Financial Reporting”; the Interpretative Communication of the European Commission (1998) on certain articles of the IV and VII Directives to include environmental information in the financial statements and consider the implications of this subject on the measurement rules; the 6th Environmental Action Programme (2001) – “Environment 2010: our future, our choice” and finally, the Recommendation of the European Commission (EC, 2001), referring to the recognition, measurement and disclosure of environmental information in the annual accounts and annual reports of European companies, embraced by the IV and VII Directives, as well as banks, other financial institutions and insurance entities.

This recommendation directly follows up the document of AAF and the Interpretive Communication, by fitting in the EU's strategy concerning accounting harmonization, considering the different standards from the IASB that refer to environmental issues (such as IAS 37, 38 and 39). This recommendation considered by the Directive 2003/51/CE of the European Parliament and Council, of July 18th of 2003 (applicable

since 2005), changes the IV and VII Directives, in the sense that annual reports of the EU's societies include not only the financial statements of a company, but also the environmental issues. Even though the European recommendation is not mandatory, it considered the establishment at national levels of accounting standards, so that the member States could pick up the guidelines contained in that document. In this sense, different countries such as Denmark, Finland, France, Spain and Portugal have introduced in their accounting legislation some elements of the European recommendation (KPMG and UNEP, 2006; Criado-Jiménez *at. al.*, 2008). This recommendation is, therefore, the main impulse in the normalization process of environmental accounting within the European member States. Figure 1 shows the schematic evolution of the accounting normalization process in the EU, and its influence on accounting normalization of the member States.

Figure 1. The environmental accounting normalization in the EU: influence in member States



Source: Monteiro (2006:179), adapted

Concerning the accounting of CO₂ emission rights, this matter lacks accounting regulation in Europe up until now, as much as in the other continents. Nevertheless, the European greenhouse gases emissions

trading scheme predicted, in the Directive 2003/87/CE of October 13th, plans to establish an accounting to apply to emission rights, which has taken some member States (such as Portugal, Spain, Belgium, France and the United Kingdom) to issue applicable accounting standards, in their geographic contexts, on this subject.

In the public context, at the European level and over the last few decades, some efforts were made to regulate the disclosure of environmental information by some public organizations. Therefore, with the goal of ensuring a larger transparency of environmental information disclosure, the European Commission published the European Directive 90/313/CEE of Council, on July 7th 1990, concerning the public access to information on the environment, in the possession of public entities. This Directive was revoked by the Directive 2003/4/CE of the European Parliament and Council, on January 28th of 2003, which establishes the right to access environmental information obtained by any governmental or public entity, assures that this information is available and accessible to the public, through electronic technologies, meaning, the Internet.

As a result, it is necessary that the public administration prepares and discloses environmental information, creating a new role in the accounting information system in these entities, in the sense that they can facilitate the disclosure of environmental information and make it clearly understandable to others. However, we highlight that the European recommendation (EC, 2001) does not include public entities. Concerning these entities, the first concrete initiatives at the European level to promote the introduction of environmental accounting belong to the Parliament of the European Council through the Recommendation 1653 "Environmental accounting as a sustainable development tool", published in the year of 2004. It was built on the information by the Environment, Agriculture and Territorial Issues Commission, which considers important for member States of the EU to get familiar with the term Environmental Accounting and to start (or continue) applying it at all levels of Administration, particularly at the local level. This document underlines the importance of introducing Environmental

Accounting at all levels of the Government (national, regional and local), presenting a general framework for environmental accounting at the European level, reflecting the several standards and international agreements, by collecting some experience in national environmental accounting, as well as the environmental accounting initiatives developed locally. Within these initiatives, we highlight the Italian Project CLEAR; which is the first Italian project for environmental accounting applied to local authorities (Giovannelli, 2003).

In the 14th plenary meeting of the European Congress on Local and Regional Powers of the European Council, held on June 1st 2007, the Recommendation 220 was approved (2007), entitled "Environmental Accounting for a responsible public action", in which the Council of ministers is asked to prepare a recommendation to the EU member States, towards a full introduction of Environmental Accounting, at the several government levels: local, regional and national (CPL, 2007b). This recommendation is based on the information CPL (14) 5REP of the European Congress on Local and Regional Powers, where management tools are described, which contributes to the improvement of local environmental policies and some definitions on environmental accounting are submitted. This recommendation sets some ways for public entities to install environmental accounting systems, suitable for their needs. In the attachments, the document refers to European environmental public policies and registers a set of environmental accounting tools, used by local administrations, mentioning the main trades used. In this sense, in that same meeting of European Congress on Local and Regional Powers, the European Council also approved the Resolution 240 (2007) (CPL, 2007c).

In our opinion, these are important initiatives, even at an embryonic stage. Both recommendations of the European Council are extremely complete documents, submitting a background for environmental accounting tools, usable by the local European entities.

1.3. National initiatives

At the national level, according to Burritt (1999), the different Govern-

ments of each country followed different paths of accounting and auditing and still many countries do not have a standard on the elaboration and disclosure of environmental information. As for the regulation of the environmental and sustainability information matters, of an accounting nature or not, we underline the efforts of several Anglo-Saxon countries and of the EU (in the public sectors, Australia and the United Kingdom are clearly ahead).

The United States of America was the first country to develop accounting legislation on environmental issues, through the Statement of Financial Accounting Standards (SFAS), nº 5 - "Accounting for Contingencies" (1975) issued by the Financial Accounting Standards Board (FASB). This standard submitted guidance for companies on the disclosure of contingent liabilities, including the obligations of environmental nature. A year later, the FASB issues the FASB Issue Interpretation (FIN) nº 14 - "Reasonable Estimation of the amount of loss", setting additional information in relation to the contingent losses (Wright and Anderson, 1998; Stanko *et al.*, 2006). The increase of environmental legislation in the United States has led the accounting regulatory bodies to develop more specific rules for environmental issues, among which we highlight the deliver of the Emerging Issues Task Force (EITF), focusing deeply on the recognition and treatment of environmental aspects (Larrinaga *et al.*, 2002). Also in the US, we highlight the role of the Securities and Exchange Commission (SEC) that has issued specific and mandatory environmental standards for companies that are listed in the stock market (Fronti de García *et al.*, 1999; Vélez Elorza and Rodríguez Escobar, 1999). In June 1993, the SEC issued the Staff Accounting Bulletin (SAB) - number 92, about the accounting of environmental provisions and its inclusion in the balance sheet (Wright and Anderson, 1998; Alciatore *et al.*, 2004; Stanko *et al.*, 2006). Furthermore, this organism pays particular attention to the extent of environmental information recollected in the Management Discussion and Analysis and in the "10-K" information (a document that addresses financial information of mandatory presentation by

stock market listed companies). Finally, we should note that the American Institute of Certified Public Accountants (AICPA), issued the Statement of Position (SOP) 96-1: "Environmental remediation liabilities", which submits guidance on the future interventions in relation to the environment (Alciatore *et al.*, 2004; Stanko *et al.*, 2006).

Canada was the second country to legislate the accounting of environmental issues, the work by the Ontario and Quebec Securities Commission being the most important, because similarly to the SEC, it legislated the inclusion of environmental information in annual reports of the companies (public and private) that were listed in the stock market. So, the Canadian Institute of Chartered Accountants (CICA) developed a profound and systematic work in terms of financial environmental accounting, evaluating the information needs of the different stakeholders that were interested in knowing the environmental impact of the companies' activities, as well as the rules that would regulate the production and diffusing of environmental information to respond to those needs. This way, in 1993, CICA issued the regulation "Environmental Cost and Liabilities", establishing the accounting recognition and the disclosure of the future expenditures on removal and restoration of sites (environmental provisions) (Li and McConomy, 1999).

Norway was the first European country to introduce environmental information on the annual report, through the Enterprise Act of 1989, which required the environmental disclosure in the annual reports of all companies involved in significant pollution businesses (Kolk, 1999; Nyquist, 2003b; Hibbit and Collison, 2004).

Spain is also one of the pioneer countries in the EU, in terms of environmental accounting regulations (Criado Jiménez *et al.*, 2008), with the approval of the 1998 Royal Decree 437/1998, of March 20th, concerning the adaptation of the General Accounting Plan to companies of the electrical sector, which made it mandatory for all Spanish companies to present the environmental information in the annual report. Afterwards, this obligation was specifically legislated, through adaptations of the General Accounting Plan, to all concessionary builders

of freeways, tunnels, bridges, water suppliers and cleaners, wine industries and sporting anonymous societies. Thus, Spanish companies were required to acknowledge assets, expenditures, contingencies and provisions of environmental nature and to include environmental information in the Notes (Llull Gilet, 2001; Archel Domench *et al.*, 2002). Finally, as a result of the European recommendation (EC, 2001), the *Instituto de Contabilidad y Auditoria de Cuentas* (ICAC) published the Resolution of March 25th of 2002, approving the rules for recognition, measurement and disclosure of the environmental aspects in the annual reports of all kind of organizations, with or without profiting purposes, including therefore, the public entities. In this way, the ICAC Resolution (2002) broadens the context of the enforcement of the European recommendation, which, despite the fact that it includes all companies, financial and insurance entities, it did not mention the public entities. The ICAC Resolution respects the content of the preceding standard (Royal Decree 437/1998), simply including some modifications. The goal of approving this resolution was the conceptual delimitation of the environmental accounting, not established by the Royal Decree, as well as the need to issue an accounting standard, exclusive and independent, as a response to the European recommendation on the accounting treatment of environmental issues (Jurado Martin *et al.*, 2004 and 2005). Thus, Spain became the pioneer member State to have adopted the European recommendation (Moneva *et al.*, 2002). The ICAC (Institute of Accounting and Auditing, the Spanish accounting regulator) has also established the 2006 ICAC resolution on the accounting and disclosure of Greenhouse Gases Emissions Allowances. In November 2007, the new General Accounting Plan (PGC) was published for all companies, except for those subject to the relevant EU Directives. In Sweden, since 1989, all companies that require environmental licenses are required to present to the local authorities an environmental report. In relation to the annual report, since 1990, changes have been made to the Swedish accounting legislation so as to introduce the disclosure of environmental information (Hibbit and Collison,

2004]. As a consequence, since 1999, all companies that require environmental licences have to disclose information about the environmental impacts of their activities in the management report (Kolk, 1999; Nyquist, 2003a-b; Sinclair and Walton, 2003; KPMG and UNEP, 2006).

In Denmark, since 1996, the Danish Environmental Protection Act requires companies to publish environmental information in the format of Environmental Report ("Green accounts") that should be submitted to local and governmental entities (Bebbington, 1999, Nyquist, 2003b). This legislation was revised in 2001 and 2002 to follow new international developments in environmental accounting and disclosure. Therefore, in accordance with the European recommendation, the Danish Financial Statement Act (section 99) demanded, since 2002, listed companies, public companies and other companies that exceed a certain limit to disclose environmental information in the management report (Hibbit and Collison, 2004; KPMG and UNEP, 2006). Nevertheless, managers may choose to exclude environmental information if they do not consider it to be of importance.

In Holland, even though environmental information has been required, since 1999, from all major companies in industrial sectors with negative impacts on the environment, in 2003 it was recommended to include information on social, environmental and ethical matters in the management report (Hibbit and Collison, 2004).

In France, as a consequence of the European recommendation, specific requirements were introduced in 2002, to listed companies, regarding the disclosure of social and environmental information (Nouvelles Régulations Économiques – NRE- 20/02/02). These companies are obliged to diffuse the social and environmental consequences of their actions in their management report, (Antheume, 2003; Dhooge, 2004; KPMG and UNEP, 2006).

In Finland, the requirements for the disclosure of environmental information in the annual report was established in 2003, with the publication of a national accounting standard, according to the European recommendation (PriceWaterhouseCoopers, PWC, 2004; KPMG and UNEP, 2006).

In the United Kingdom, in accordance with the Directive 2003/51/CE, which established the modernization of the IV and VII Directives, the Accounting Standards Board (ASB) published the standard "Operating and Financial Review" (OFR), in 2005, which establishes the elaboration of a mandatory information for listed companies in the British stock market. According to this standard, a clearer and more complete version should be submitted to the several users, allowing them to know and understand the adopted strategies, as well as evaluating the organization capacity to implement them successfully. This document (OFR) should also include information that affects the social implications of the company's performance, containing environmental issues information (García Suárez, 2005). Even though it was initially predicted that the obligation of presenting the OFR would be implemented in April 2006, the British government disregarded this requirement. However, in November 2006, the Companies Bill was approved (Companies act 2006) and for the first time the government strengthened the requirements in the legislation on social and environmental reporting. In this sense, Directors of UK companies now have to report the impacts of their operations on the community and the environment

On the other hand, the update of the version of the Global Reporting Initiative (GRI), referring to the directives for the elaboration of Sustainability Report, has encouraged the increase of social and environmental disclosure by British companies (Brady and MacDonald, 2006). Therefore, to facilitate this kind of disclosure, the Department for Environment Food and Rural Affairs published in 2006 a series of guidelines in the document - "Environmental Key Performance Indicators (KPIs) – Reporting Guidelines for UK Business".

In the public sector, in the UK case, the work developed by the Chartered Institute of Public Finance and Accounting (CIPFA) stands out because of the draft entitled "Advancing Sustainability Accounting and Reporting: an Agenda for Public Service Organisations" (CIPFA, 2004), in which the need for new developments in Environmental Accounting and disclosure of information in the public services is stated.

Furthermore, the CIPFA and the Forum for the Future joined efforts to elaborate the conceptual framework called "Sustainability: a Reporting Framework for the Public Services" (CIPFA, 2006), presented at the Annual Conference of CIPFA in 2006, where the basic principles and tools are provided to perform sustainability reports that are coherent and comparable between all public services. It also underlines the way in which public organizations may measure their performances in terms of sustainability and how they can collect and diffuse that information. On its own, the Forum for the Future published a document that holds some indications concerning the referred standard. It indicates that, as far as local entities are concerned, the standard provides a benchmarking analysis, as a way to promote the continuous improvement and exchange of best practices, being a conceptual framework for local entities to improve their environmental performance.

The development of such a standard required the association of the Forum for the Future with a network of about thirty pilot local entities [Future's Local Authority Partnership Scheme – LAPS], since its elaboration is based on the experience of those entities in achieving a sustainable and functional organization, in which the sustainability is integrated in the organization's culture, converting it into one of the priorities of the organization and into an important part of its governmental agenda.

Another distinguished initiative is the British Agency for the Environment (UK Environmental Agency) which, since 1997, bears the responsibility for the development of its own system of Environmental Accounting with the purpose of integrating the system in its financial administration and including the information generated in the results reports (Lagarón Comba, 2003). Therefore, in the first place, the agency intended to evaluate the efficiency of the Environmental accounting system in its own organization, so that it can advise others on the promotion and generalisation of its usage.

By passing the Directive 2003/51/CE into national law, Austria requires, as of January 2005, the inclusion of non-financial information (such as social and environmental) in annual reports as indicators, for

instance (Frey, 2006).

Nowadays, there are countries without a specific standard on the environmental accounting and disclosure of environmental issues. In Europe, we have the cases of Germany, Belgium and Italy. Germany has shown explicitly their lack of interest in the development of specific rules for environmental information because they consider that the general legislation already covers that subject (Mikol, 2005). In the Belgian case, although there is no specific national standard on the disclosure of environmental issues in annual reports, there are regional laws that demand to certain companies the elaboration of the environmental report (Hibbit and Collison, 2004). Much the same, in Italy there are recommendations by the *Fondazione Eni Enrico Mattei* (FEEM) for the elaboration of environmental reports (Pramanik, 2000). However, in the public context, in Italy several initiatives from the Senate carried out some law projects in the context of environmental accounting applied to local entities. Therefore, in 2001 a decree law project on environmental accounting was presented, along with other decree law projects for the State, regions and local entities. After that, in 2003, a new law decree project on environmental accounting was presented, which delegated on the government the definition of the characteristics of the document on Environmental Accounting. Finally, in 2006, the *Gruppi Assembleari de la Región de Emilia-Romagna* presented a law project which promoted the environmental accounting and green purchase policy with the aim of achieving the sustainable development through the public management local reform.

Outside Europe, in countries like Japan, India, Jordan, Kenya, Thailand and South Africa, there is no specific standard on the environmental accounting and disclosure issues, presently (Pramanik, 2000; Suárez Kimura, 2001; Jahamani, 2003; Sahay, 2004; Caliyurt and Crowther, 2004; Muema and Achoki, 2005; Kuasirikun, 2005; KPMG, 2008). Other countries such as Brazil and Korea started to include the environmental issues in their accounting normalization agenda. In this sense, in Brazil the Brazilian technical standard BTC 15 – “Social and

environmental nature information” was approved in 2004, which establishes procedures for the disclosure of social and environmental information, from more sources than accounting (Eugénio, 2006). The Korean Stock Market Commission issued a rule that recommends the inclusion of environmental information in the financial states in 1996 (Pramanik, 2000).

In Australia a requirement of environmental nature was introduced in 1999 in the Companies Law Review Act, to demand that companies, both public and private, included information about the compliance of the in force environmental legislation in the management report (Burrill, 2002; Cowan and Gadenne, 2005). The Corporations Act 2001 involves the Australian companies that are listed in the stock market, and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999) covers the public entities universe. According to this document, from June 2000, the Australian public entities are obliged to include in their annual reports information about their environmental performances and their contribution for the goal of achieving sustainable development. Specially, the guidelines included in section 516 of the EPBC Act 1999 established that the annual report of the entities involved in this regulation must include information on these items:

- the development of activities and compliance of the legislation, according to sustainable development principles,
- the results (if there are any) that contributed to the goal of sustainable development,
- the environmental effects of the organization’s activities on the environment,
- the action that the organization has taken to minimize the environmental impacts of their activities and the mechanisms (if there are any) used to review and implement other actions to improve the efficiency of the environmental performance.

On the other hand, some states in Australia have developed their own legislation rules and guidelines towards the elaboration of environmen-

tal report. This way, the State of New Wales of the South published the Local Government Act 1993, which requires local entities to disclose environmental information in their annual reports, normally in a specific section of the state of the environment (McElroy *et al.*, 2005). According to this standard, within the first five months of each year, the organization must prepare a report, establishing their goals and reporting the environmental performance results from the previous year. Specifically, according to section 428 of the Local Government Act 1993, the annual report must contain the following information:

- A copy of the financial report and auditing of the Council;
- The comparison between the actual performance of the City Council, regarding the main developed activities in that year (within the management plan) and the performance forecast for those same activities (also contained in the management plan), along with a declaration that marks the differences (if any) between the forecast and reality;
- A report of the state of the environment in the city's council geographic area, in which the following elements are mentioned: earth, air, water, biodiversity, residue, noise, etc. Furthermore, the information must contain a particular reference to each of the following environmental aspects: environmental management plans, special council projects concerning the environment and environmental impacts of the City council activities.
- A report on the conditions of the public construction sites (including public constructions, water and public roads, sanitation and drainage, etc.) controlled by that entity, along with an estimate of the required amount to complete those works and the annual expenditures of maintenance;
- A summary of the expenses or income amounts by the councils over the year, as a result of judicial processes against or in favour (paid expenses or importance's received by judicial sentences or by other means) and a summary of the state that each judicial process in course or their results (when the cases are closed).

Also in the State of New South Wales, the Environmental Protection Au-

thority (EPA) published several information with the goal of improving the environmental performance of the public sector, particularly in the area of environmental disclosure (among which Frost and Seamer (2002), highlighting the information designated as "Corporate Environmental Reporting: Why and How"). In this information, the EPA of the State of New South Wales establishes a biannual recording of the environmental performance data and the emission of a state report on the environment (NSW EPA, 1997). According to Frost and Seamer (2002) these initiatives constitute an inspiration for the development of environmental management processes, suitable for the public entities, as well as the disclosure of environmental information in their annual reports.

On the other hand, the Australian Bureau of Statistics carries out an annual enquiry to investigate the expenditures on protection of the environment and natural resources management, whose results are presented at the Parliament and at the OECD. To respond to the information requirements of this enquiry, the local authorities must formulate a Statement of Green Cash Flows in which the traditional regular cash flows classification is replaced by an environmental classification from the National System of Integrated Economic and Environmental Accountings (SEEA). According to Miley and Read (2000), the elaboration of this state has the additional advantage of offering the entities useful environmental accounting information when making decisions of environmental management nature, by helping to associate the financial and environmental data. Further, the local entities that produce the Statement of Green Cash Flows, in accordance with the environmental classification of the Australian Bureau of Statistics, not only take a first step to improve environmental management, but may also obtain more funding from the State (given that they may receive funding from the State to face their environmental responsibilities).

For Miley and Read (2000) the following step in the development of the environmental accounting information would be an elaboration of a Green Profit and Loss Statement and a Green Balance Sheet. Finally, these authors consider the State of the Environment Report (produced

by some Australian entities) and the Statement of Green Cash Flows are mutually complementary since, for each division, they allow for a correlation of the financial and non-financial information⁵.

Concerning voluntary environmental disclosure, in March 2000, the Australian government published a conceptual framework to be used by both private companies and public entities. In its introduction, it states that the environmental disclosure constitutes a voluntary communication for the stakeholders of the information corresponding to a certain period of time, generally the economic period, referring to an organization's environmental performance. This document states that the Australian organizations are increasingly choosing the voluntary disclosure of environmental information, as a response to the stakeholders' expectations, using for this effect, a separated document and entities' website or including the information as part of the annual report (Commonwealth of Australia, 2000). In this subject, Burritt (2002) highlights the existence of significant differences between mandatory and voluntary disclosure of environmental information, as the first one is based on a conceptual framework, created bearing in mind the interests of a larger set of stakeholders (for instance, employees, providers and managers).

Finally, in 1992 Frost and Toh (1998) and Frost and Seamer (2002) got a lot of attention with the publication on the Commonwealth's Joint Committee of Public Accountings (JCPA) of the information "Social responsibilities of Commonwealth Statutory Authorities and Government Business Enterprises", which underlined the importance of environmental management and accounting for Australian public entities. This information brings out the need for public entities to diffuse information on the actions performed on their environmental responsibilities. On the other hand, it recommended public entities to include in their

⁵ For example, the Statement of Cash Flows may reveal that there has been more expenditures on the maintenance of a park, even though the Statement of Environment Report refers that the park is deteriorated, indicating that deterioration as inevitable, and therefore, indicating that the money isn't being well spent.

annual reports a financial statement that reflects these performances, underlining the best practices and mentioning the activities with the biggest environmental impact, and results achieved. Finally, it recommended that the companies' statutes and local governments engaged in environmental planning actions, established supervising, auditing and disclosing measures for the main impacts on the environment.

2. Portuguese environmental disclosure regulation

Concerning our country, Portugal, the European recommendation (EC, 2001) may be considered as the major driving force of the environmental accounting regulation in Portugal. The nonexistence of a specific accounting regulation for the environmental issues has led the Accounting Normalization Commission ("*Comissão de normalização contabilística*") to ensure that the disposed in the EU recommendation was applied at the national level. In this context, the Accounting Standard (AS) number 29 – Environmental Issues was approved on June the 5th 2002. In spite of the fact that it was initially intended to come into force for financial years beginning in or after January 2003, the Accounting Standard (AS) 29 was ratified by the Portuguese Government and passed into law on June 25th 2004. Accordingly, the Secretary of State established that the Accounting Standard 29 is mandatory for all Portuguese companies which are subjected to the national Accounting Plan from January 2006. Another important step in Portuguese accounting regulation considering the environment was the approval on May, 25th 2006, of the Technical Interpretation Number 4 – Greenhouse Gas emission rights: the accounting of emission licences. In the absence of an accounting reference on this subject, Portugal, in accordance with other member States of the EU, issued this interpretation applicable to the companies that include the national Accounting Plan. However, following the accounting normalization process in the EU, in January 2010, a new Accounting Standards System (SNC) entered into force. This reform of the Portuguese accounting system brought the Portuguese accounting standards - the Financial Reporting and Accounting Standards (NCRF) - closer to the International Account-

ting Standards (IAS) and International Financial Reporting Standards (IFRS). As far as environmental issues are concerned, the NCRF 26- Environmental issues was published, and it replaced AS 29 and Technical Interpretation n.º 4, but with identical contents.

NCRF 26 is applicable to the environmental information that is presented in the annual report (individual or consolidated) and in the management report of all Portuguese companies (from the private sector) which are subjected to the new Accounting Standards System. Therefore, contrarily to what happens with the ICAC resolution in Spain, the NCRF 26 does not apply to financial or insurance entities, or to public organisations, since the accounting normalization is not a competence of the Accounting Normalization Commission.

Nowadays, in Portugal, public organizations must act according to the lines established in the Public Official Accounting Plan or in the sector plans from the Public Official Accounting Plan (applicable to specific sectors in the Public Administration, such as education, local councils, etc.), which do not refer to the environmental issues. However, Brusca Alijarde (2003) considers that public accounting should also embrace this new perspective and adds that the citizens demand transparency not only in economical management, but also in the environmental management carried out by public entities, and the annual reports should be used to fulfil this need for information.

Until now, the Accounting Normalization Commission of the Public Administration has not issued any accounting standard concerning the environmental information, and the entities that disclose any environmental information on their accounting documents, do so voluntarily. As a consequence, in our opinion, the Portuguese accounting standard (from the private sector) should also be adopted by the Portuguese Accounting Normalization Commission of the Public Administration, making the required adaptations for our public organizations, in particular to the city councils, natural parks, etc. In our opinion, what was established in NCRF 26 may be a framework for public entities that voluntarily wish to disclose environmental information.

The regulatory disclosure requirements set by the NCRF 26 cover a range of environmental issues (environmental investments, expenses, provisions and contingent liabilities, etc.), presenting their definitions as well as the criteria for their recognition, valuation and disclosure in financial statements. Table 1 summarizes the NCRF 26's main requirements.

Table 1. Environmental Disclosure Areas in the Portuguese Accounting Standard

Balance Sheet	"Environmental provisions"
Notes	<p>In a note with the denomination "Environmental subject information", the following information should be included:</p> <ul style="list-style-type: none"> - A description of valuation criteria adopted by the company - The existence of public incentives related with environmental performance and their accounting treatment - Detailed information about environmental provisions and contingencies - Current and past years' capital and operating expenditures for pollution control or abatement. Whenever possible and relevant, the expenditures should be discriminated by environmental areas, according to following classification: (a) atmospheric emissions (protection of the air and climate); (b) residual fluids management; (c) residue management; (d) soil and underground water protection; (e) decrease of noise and vibrations; (f) nature protection. - The company's environmental compliance status and the existence of expenses for fines by non-compliance of environmental legislation and compensations
Management Report	<p>Disclosures about:</p> <ul style="list-style-type: none"> - The company's concern for the environment (environmental policies, programs and management systems adopted by the company) - Current and past years' expenditures and investments for pollution control or abatement (the firm's processes, facilities or product innovations relative to reduction of environmental degradation). Preferably, this information to be expressed by indicators - The existence of a separate environmental report elaborated in order to disclose additional environmental information.

Source: Monteiro and Guzmán (2010), adapted

As observed in Table 1, the categories of expenditures in protection of the environment are related with several areas of the environment, matching what is proposed by Eurostat and OECD in the Recollection

European System for the Collection of Economic Information on the Environment (SERIEE). They also match the environmental expenditures classification, defined according to the economic aggregates presented by the National Statistics Institute (INE), which produces the Portuguese data. Therefore, the majority of the environmental categories referred are equal or equivalent between both classifications (see Table 2), with differences only in their terminology and not in their contents. Nevertheless, the three last categories of the economical classification of SERIEE and NSI are not stated in the classification of the Portuguese standard. In our opinion, they could be included in the same residual category of "others".

Table 2. Classification of environmental categories, according to the Portuguese standard and the SERIEE/NSI classifications

Classification on environmental categories	
Portuguese standard	SERIEE/NSI
Atmospheric emissions (protection of the air and climate)	Protection of ambient air and climate
Waste water management and water protection	Waste water management and water protection
Solid waste management	Solid waste management
Soil and underground water protection	Protection of soil and groundwater
Decrease of noise and vibration	Protection against noise and vibration
Nature protection	Protection of biodiversity and habitat
	Protection against radiation
	Research and development
	Other environment protection activities

Source: Ribeiro [2007]

In Portugal the public entities should submit information for the elaboration of national accounting according to the European System of National and Regional Accounting (ESNRA) and the aggregated macroeconomics of NSI. We believe that the introduction of environmental categories classification in public entities, both in their budget and cost accounting, would not only provide more reliable information, but

would also improve the decision making on the environmental management policies and environmental disclosure.

3. Environmental disclosure: voluntary or mandatory?

In response to the growing pressures relative to environmental concerns, companies have begun to change their behaviour seeking to reduce their impacts on the environment and, consequently, have tended to voluntarily disclose more information about their environmental performance. As Moneva and Llena (2000) pointed out the stakeholder theory recognises that there are a wide range of agents which demand information concerning the impact of companies' activities on the environment. To the extent that firms recognize the legitimacy of their stakeholders' requests, they tend to voluntarily report more on environmental information in order to meet them. Alternatively, the legitimacy theory suggests that the corporate environmental reporting is a function of the intensity of political and social pressures which companies are faced with regarding their environmental performance (Cho and Patten, 2007). In this sense, Larrinaga *et al.* (2002) and Criado-Jiménez *et al.* (2008) state that empirical research has shown that, in some cases, voluntary environmental reporting has been used by companies as a means to obtain legitimacy reflecting a desirable view of their environmental performance. In this sense, many authors have pointed out that the most appropriate approach is to make environmental reporting compulsory (Bebbington, 1999; Mobus, 2005; Criado-Jiménez *et al.*, 2008).

According to Gallhofer and Haslam (1996), a major part of academics share the opinion of the companies managers that, on the subject of the treatment and disclosure of environmental information, the legislation of voluntary nature should be abandoned in favour of a mandatory disclosure. As a matter a fact, because the environmental threats must be addressed with prudence, the academics defend that the trend of a voluntary regulation should be abandoned, giving way to an interventionist regulation. Therefore, it is up to the regulatory entities, professional as well as governmental, to reduce the legislative

gap as far as environmental accounting goes, whether by the elaboration of accounting measures exclusively for environmental purposes or through the inclusion of environmental subjects in the existing accounting norms. This would serve the purpose of profiting from the improvement of quality, reliability and comparison of environmental data, presented in the accounting information.

We have witnessed an effort of several entities, national and international, to regulate the environmental accounting issues, as a way to reduce the heterogeneity and improve the reliability of the published information. In fact, Larrinaga *et al.* (2002) indicate that this process of regulation may lead to a gap between the national environmental information for mandatory environmental information (generally different among different countries) and the voluntary environmental disclosure. The participation of authorities or professionals from different countries may contribute for a reduction of that gap. In this sense, these authors support that environmental information should not be completely regulated, as the establishment of minimal disclosure requirements would allow for progress and would encourage the entities to develop an environmental and more reliable disclosure⁶. In this same line of thinking, Holland and Foo (2003) consider it is preferable to establish a voluntary environmental disclosure which favours the transparency of the information⁷, reflecting the real environmental performance of the company, instead of a model that pressures companies to diffuse environmental information, as a result of legal imposition.

Burritt (2002) considers that the mandatory environmental report is confined to a *supply push* approach, that is, the process of information production follows a social-political orientation. Meanwhile, the volun-

⁶ Making the environmental disclosure mandatory doesn't seem to be essential towards the goal of a better diffusion, since there is some empirical evidence that point in that direction [Larrinaga *et al.*, 2002; Ruiz Albert, 2003; Llana *et al.*, 2007].

⁷ Even though the literature considers the voluntary environmental disclosure is used by companies as a legitimating strategy, as a way to present itself before the community as socially and environmentally responsible [Gray *et al.*, 1995; Archel Domench and Lizarrago Dallo, 2001; Antheaume, 2001; Deegan *et al.*, 2002; Criado-Jimenez *et al.*, 2008].

tary environmental report follows a *demand pull* orientation, that is, it recognizes the need to supply useful information to the *stakeholders*. In this context, we share the author's opinion, where it is stated that, in its essence, the success of an environmental disclosure system is led by the offer and demand (*supply push and demand pull*), in an interchange process and continuous improvement. Thus, following the author's opinion, we are sure that, on the one hand, it is important to establish a regulation for environmental disclosure that allows for environmental information in order to enrich the rendering of accounts [and, in this way to meet social and legal pressures]; on the other hand, the report should not only consist of the mere fulfilment of legal requirements, but also have in consideration the search for environmental information by *stakeholders*.

The opinion of the researchers on this matter is not consensual. The literature highlights some incentives, advantages and arguments in favour, associated to voluntary or mandatory regulation of environmental disclosure, as well as disadvantages and arguments against [Solomon and Lewis, 2002; Burritt, 2002; CIPFA, 2004; KPMG and UNEP, 2006; Frost, 2007; Lamprinidi and Kubo, 2008; Ramdhony *et al.*, 2010], that we summarized in Table 3.

Table 3. Positive and negative aspects of the voluntary and mandatory regulation

	Positive Aspects	Negative aspects
Voluntary Regulation	<ul style="list-style-type: none"> • It allows a greater flexibility of the organizations in the environmental information disclosure. • The sustainability report is in an embryonic phase and increasing evolution, therefore it requires maturity for its regulation. • voluntary framework can be used to prepare possible future environmental accounting regulation • It allows the entity to provide more important information (and non conditional to legal requirements) for those who are going to emit a judgment on the organization and/or make a decision on the same one. • the voluntary report about organization' environmental management and performance can improve organizations and community and stakeholders relationships 	<ul style="list-style-type: none"> • It does not provide comparable information. • It can encourage the exclusive information disclosure of positive character. • As a single objective, you can have the improvement of the image or of the organization's reputation, and its legitimation in society.
Mandatory Regulation	<ul style="list-style-type: none"> • It allows the setting of minimum requirements for disclosure and, as such, some standardization, leading to the reduction of information asymmetries. • It's easier to compare. • It adds credibility to the disclosed information. • It promotes the change for one more a culture opened to the sustainability • The existence of complete and detailed regulation contributes for the fight against the possible disbelief in the environmental information emitted by the organizations. • It prevents privileged information to certain stakeholders. 	<ul style="list-style-type: none"> • The regulation is the enemy of innovation and, by itself, is no guarantee of compliance. • You can put in risk the efficiency information and add costs when requiring information for the sector. • It does not consider the organization's specificities (type, size, capacities, environment, etc.). • Inflexibility to change and complexity. • Knowledge gap between regulators and industry

In our opinion, despite the fact that all positive and negative aspects above could be applied to the environmental report of any organization, public or private, we should highlight that the organizations from public and private sector not only aim at different objectives but they also have specific characteristics, being some aspects more visible in one organization than in another. For instance, the environmental voluntary reporting in public sector can improve local government and community relationships, facilitate the public participation and a stakeholder dialogue process for the continual improvement of the information usefulness.

4. The need to revitalize the environmental accounting and disclosure in the public sector

Although this is a new practice in the field of public administration, there is growing interest in the disclosure of information relating to environmental performance and initiatives developed in favour of sustainability of these entities (CPASR, 2005).

In this sense, the GRI (2004) states as an incentive for public entities to disclose environmental information that helps them to strengthen commitment to the environment and show progress, while allowing them to integrate sustainability in their operations and to serve as a model for others, providing further public participation in government through dialogue with stakeholders to establish during the preparation of reports. Also, the GRI (2004) identified some of the benefits obtained by public administrations that already have initiated the practice of environmental disclosure, among which they highlight: the improvement of the operative efficiency, the increase of environmental and social awareness, the approach between the public and private sectors (since a common basis would be how both sectors understand sustainability as a shared responsibility), the increase of intra-governmental cooperation and the improvement of the public image.

According to the Centre for Public Agency Sustainability Reporting - CPASR (2006), the reasons that have motivated environmental information disclosure in the private sector can also be applied to the

public sector. However, despite the increasing interest showed by public administrations on environmental information disclosure, Burritt (2002) draws our attention to the fact that the lack of detailed guidelines for the elaboration of such information hampers its comparability and, consequently, environmental performance evaluation.

On the other hand, given the relative paucity of rules that establish mandatory disclosure of environmental information in the financial statements of public administrations, there is a possibility that it is handled according to the objectives the organization aims to achieve and when between those goals is the desire to improve the social image of the entity, the tendency will be to (deliberately) highlight the positive aspects of the environmental performance, ignoring the negative⁸ (Moneva, 1996).

In this context, in our opinion, there are different actors who can play an important role in advocating environmental disclosure and accounting in the public sector, as happened in the private sector: regulatory entities, researchers and accountants must develop a concerted work towards the continuous improvement of environmental disclosure.

Thus, the regulatory entities must increase the public environmental accounting regulation: (a) providing accounting standards exclusively dedicated to the environmental issues, and/or (b) including environmental matters in the accounting standards already in force. Both solutions could improve the quality, transparency and comparability of environmental information. According to Burritt (2002), in the absence of a conceptual framework for public mandatory environmental information disclosure, the best practices used by those entities that do it voluntarily should be investigated, following the example of Aus-

⁸ Even in the case of mandatory environmental information there is an empirical evidence in private sector about the trend of the companies to sub minister positive information, that is, information that reflects a behaviour as with the protection and conservation of the environment (for example, on the expenses and environmental investments made), whereas they are reticent to disclose negative information or related to activities that do not contemplate the principles of conservation of the environment as, for example, information related to the obligations and environmental responsibilities (Jurado Martin *et al.*, 2004).

tralia. To Lamprinidi and Kubo (2008), one of the key factors in increasing the uptake of sustainability reporting in the public sector would be updating the Sector Supplement for Public Agencies to bring it in line with the latest version of the GRI Guidelines.

Researchers have a diffusing and promoting role both on theoretical and empirical environmental accounting developments, aimed to achieve scientific advances made in the private sector. The increased interest from researchers in public environmental accounting could be mirrored on the environmental accounting practices in public entities. In response to this, academics must provide insights for building adequate accounting tools which lead professional accountants to both the environmental reporting and the decision-making processes, in the scope of the public sector. In this sense, according to Lewis (2008:330) "the accountancy profession has a clear opportunity to play a leading role in developing and establishing these new approaches". A report from the Accounting for Accounting for Sustainability Group by the Prince of Wales (2004) stated that it is important for accountants to be aware of sustainability issues in their work. In fact, the accountancy profession has an important role in defining and delivering the means by which sustainable development is measured and in influencing how governments report on such issues.

The Association of Chartered Certified Accountants' guide about the role of accountants in sustainability (ACCA, 2008), while mainly private-sector focused, is also relevant for government and public sector accountants. The International Federation of Accountants (IFAC) has developed a framework to support accountants in integrating sustainability considerations into their organisations' work and financial reporting structures (IFAC, 2010). Again, this focuses on the private sector but does provide another demonstration of how accountancy skills and frameworks can be relevant to sustainability reporting. Skills in ensuring accuracy, verifiability and reliability will be relevant contributions to this area.

In this sense, ACCA (2010) pointed out some areas where accountants can make a contribution to sustainable development and government

sustainability reporting: budget and strategy development; audit; performance measurement, monitoring and management; accountability and governance and standards setting. Accountants are well prepared to understand the regulatory and voluntary reporting environment in which businesses and governments operate, to manage risk, to develop efficient frameworks to measure financial and non-financial information and to provide clear and reliable sustainability information. Sustainability reporting is a field which raises challenging issues for the accounting profession: sustainability reporting involves a deeper understanding of the interdependence of social, environmental and economic issues; it calls for long-term and future-focused accounting practices; and it requires accountants to work alongside other professionals.

Conclusion

As in the case of private companies, the accounting information system of public entities can play a key role as a conducive and strengthening vehicle of organizational, cultural and management changes [derived from the assumption of an environmental responsibility] through the provision of important and opportune information related to the different aspects of the environmental dimension of their performance.

Currently, new needs and demanded information are being planned, referring to the disclosure of environmental information to external stakeholders, to which the accounting systems should adapt and respond in order to improve the reliability of that information.

The literature highlights that there is no consensual opinion among researchers about mandatory or voluntary reporting (Larrinaga *et al.*, 2002; Solomon and Lewis, 2002; Burritt, 2002; CIPFA, 2004; Holland and Foo, 2003; Mobus, 2005; KPMG and UNEP, 2006; Criado-Jiménez *et al.*, 2008). In our opinion, it is important to establish regulation about environmental disclosure, which will allow for the provision of environmental information to respond to social and legal pressures. However, the environmental disclosure should not be limited the fulfilment of legal requirements, but must also consider the stakeholder's demand for environmental information.

The international panorama of environmental disclosure is characterized by a diversity of voluntary or mandatory standards/guidelines, which are predominant in the private sector. At the European level, only a few countries such as Portugal, Spain, France, Denmark and Finland included in their regulations some elements of the European recommendation.

Before the lack of accounting regulations that establish requirements for the environmental disclosure in the annual reports of the public entities, the environmental information published has been mainly voluntary. Consequently, it would be primordial to promote public environmental accounting legislation, not only with the goal of revitalizing the environmental disclosure in the public sector, but also to set an example for the private sector. In countries such as the United Kingdom and Australia, the public sector presents a bigger development of environmental disclosure legislation than in other countries.

The environmental disclosure process and its regulation would improve if the stakeholders could express their opinions and if these were included in this process. In this sense, according to the research carried out by Tilt (1994) and Deegan and Gordon (1996), it appears to be of interest to get empirical evidence on the stakeholders' potential influence on the social and environmental disclosure and analyse its importance for the different stakeholders (and their eventual expectations), as well as to know which environmental aspects are considered to be of larger or smaller interest to disclose.

Finally, we consider the environmental disclosure harmonization to require a concerted effort of the regulatory entities, the accounting and auditing professionals, as well as researchers with the aim of getting better solutions to elaborate and present environmental information, and to ensure a bigger transparency and comparability. Effectively, we share the opinion of Solomon and Lewis (2002) that the environmental disclosure regulation should be accompanied by an educational strategy, which should imply corporate management, the stakeholders and professionals associations.

REFERENCES

- ACCOUNTING ADVISORY FORUM (1995), Environmental issues in Financial Reporting, versão francesa, Considerações ecológicas et comptabilité, Document du Forum Consultif de la Comptabilité, XV/6004/94-FR, Orig: EN Rev. 4, Décembre
- ACCOUNTING FOR SUSTAINABILITY GROUP convened by HRH The Prince of Wales (2004) *Realising Aspirations or, Using Value for Money to Make the Public Sector More Sustainable*. The Prince of Wales. Available from: <http://www.princeofwales.gov.uk/speeches/asp.html>, Accessed on the 15th of March 2007
- ADAMS, C., MUIR, S., HOQUE, Z. (2014). Measurement of sustainability performance in the public sector. *Sustainability Accounting, Management and Policy Journal*, 5 (1), 46 - 67
- ASSOCIATION OF CHARTERED CERTIFIED ACCOUNTANTS (ACCA) (2009), *Sustainability and the Accountant*, Available from: <http://uk.accaglobal.com/uk/members/publications/gbs/>, accessed on the 15th March 2011.
- ASSOCIATION OF CHARTERED CERTIFIED ACCOUNTANTS (ACCA) (2010) *Sustainability reporting matters. What are national governments doing about it?*, Available from: http://www.accaglobal.com/general/activities/library/sustainability/reporting_pubs, accessed on the 15th March 2011
- AIBAR GUZMÁN, Cristina (2002), "A resposta das entidades públicas ó desafío do desenvolvemento sostible: o papel dos indicadores de xestión ambiental", *Revista Galega de Economía*, Vol. 11, n.º 2, pp. 9-20
- ALCIATORE, Mimi; DEE, Carol Callaway; EASTON, Peter (2004), "Changes in environmental regulation and reporting: the case of the petroleum industry from 1989 to 1998", *Journal of Accounting and Public Policy*, Vol. 23, pp. 295-304
- ANTHEAUME, Nicolas (2001), "La diffusion volontaire d'informations environnementales: le cas de la Cogema", 22ème Congrès de l'Association Française de Comptabilité, Université de Metz, 17-19 Mai, <http://www.afc-cca.com/docs/congres/congres2001/>
- ANTHEAUME, Nicolas (2003), "Le rapport environnement/développement durable. Pourquoi publier et que publier?", *Revue Française de Comptabilité*, n.º 356, Juin, pp.27-31
- ARCHEL DOMENCH, Pablo; AZCONA CIRIZA, Esperanza; SASTRE CENTENO, Manolo (2002), "La divulgación medioambiental en España: actitudes ante la misma", X Encuentro de Profesores Universitarios de Contabilidad – Compostela 2002: El camino de la Contabilidad, Santiago de Compostela, 30 de Mayo a 1 de Junio
- ARCHEL DOMENCH, Pablo; LIZARRAGA DALLO (2001), "Algunos determinantes de la información medioambiental divulgada por las empresas españolas cotizadas", *Revista de Contabilidad*, Vol. 4, n.º 7, Enero-Junio, pp. 139-153
- ARNAU, Philippe (2003), "L'information environnementale: un enjeu à moyen terme pour toutes les entreprises", *Revue Française de Comptabilité*, n.º 356, Juin, pp. 32-34
- ASSEMBLÉE PARLEMENTAIRE DU CONSEIL DE L'EUROPE (2004), "Comptabilité environnementale en tant qu'instrument pour le développement durable", Recommendation 1653 (2004)
- BEBBINGTON, J. (1999), "Compulsory environmental reporting in Denmark: an evaluation", *Social & Environmental Accounting Journal*, Vol. 19, n.º 2, pp. 2-4.
- BLOCK, Marilyn R. (2002), "Developing a new ISO 14001 Reporting Standard", *Quality Progress*, December, pp. 76-87
- BRADY, Arlo; MACDONALD, Mott (2006), "Goodbye OFR, welcome G3", *Corporate Responsibility Management*, Vol. 2, n.º 4, February/March, p. 10
- BRIGGS, Susan L. K. (2005), "Environmental communication standard on the horizon", *Quality Progress*, Vol. 38, n.º 8, August, pp. 85-87

- BRUSCA ALIJARDE, Isabel (2003), "Gestión medioambiental y Desarrollo Sostenible en las entidades locales: implicaciones en el área contable y de auditoría", *Auditoria Pública*, n.º 28, Enero, pp. 42-51
- BURRITT, R. (1999), "Thinking local: towards an environmental standard", *Australian CPA*, Vol. 69, n.º 3, April, pp 57-59
- BURRITT, R. (2002), "Environmental reporting in Australia: current practices and issues for the future", *Business Strategy and the Environment*, Vol. 11, n.º 6, pp. 391-406
- BURRITT, R.; WELCH, Stephen (1997a), "Australian Commonwealth entities: an analysis of their environmental disclosures", *ABACUS*, Vol. 33, n.º 1, pp. 1-19
- BURRITT, R.; WELCH, Stephen (1997b), 'Accountability for environmental performance of the Australian Commonwealth' *Accounting, Auditing and Accountability Journal*, Vol. 10, pp.532-552
- CALIYURT, Kiyemet Tunca; CROWTHER, David (2004), "The problems of environmental accounting in Turkey", 27th European Accounting Association (EEA) Annual Conference, Prague, Czech Republic, 1-3 April
- CENTRE FOR PUBLIC AGENCY SUSTAINABILITY REPORTING (CPASR) (2005), Research Report – Sustainability reporting: International uptake, forms and practice, November, <http://www.publicagencyreporting.org>
- CENTRE FOR PUBLIC AGENCY SUSTAINABILITY REPORTING (CPASR) (2006), ICLEI: *Local Governments for Sustainability World Congress 2006, Briefing paper on Sustainability reporting*, Melbourne, January, www.publicagencyreporting.org
- CHARTERED INSTITUTE OF PUBLIC FINANCE AND ACCOUNTANCY (CIPFA) (2004), *Discussion Paper – Advancing Sustainability Accounting and Reporting: an Agenda for Public Service Organisations*, London
- CHARTERED INSTITUTE OF PUBLIC FINANCE AND ACCOUNTANCY (CIPFA) (2006), *Sustainability: A Reporting Framework for the Public Services*, London
- CHO, C.; PATTEN, D. (2007), "The role environmental disclosures as tools of legitimacy: A research note", *Accounting, Organizations and Society*, Vol. 32, pp. 639-647.
- COMISSÃO DE NORMALIZAÇÃO CONTABILÍSTICA (2002), Directriz Contabilística n.º 29 – Matérias ambientais, 5 de Junho
- COMISSÃO DE NORMALIZAÇÃO CONTABILÍSTICA (2006), Interpretação Técnica n.º 4 – Direitos de emissão de gases com efeito de estufa: contabilização das licenças de emissão, Publicada no Diário da República- II Série, 25 de Maio de 2006 -Despacho n.º 11 384/2006 (2ª série)
- COMISSÃO DE NORMALIZAÇÃO CONTABILÍSTICA (2011), Norma Contabilística e de Relato Financeiro (NCRF) 26: Matérias ambientais, Aviso n.º 15655/09, de 7 de Setembro
- COMMONWEALTH OF AUSTRALIA (2000), *A Framework for Public Environmental Reporting: An Australian Approach (PER)*, Published by Environment Australia, March
- COMMONWEALTH PUBLIC SECTOR (1999), *Environment Protection and Biodiversity Conservation Act (EPBC Act)*, Act No. 91 of 1999
- CONGRES DES POUVOIRS LOCAUX ET REGIONAUX DU CONSEIL DE L'EUROPE (CPL) (2007a), "La comptabilité environnementale pour une action publique locale responsable", 14e session pléniere CPL(14)5rep, 21 mai 2007, Simon James, Royaume-Uni, [L, GILD]
- CONGRES DES POUVOIRS LOCAUX ET REGIONAUX DU CONSEIL DE L'EUROPE (2007b), "La comptabilité environnementale pour une action publique locale responsable", 14e session pléniere – Congrès des pouvoirs locaux et régionaux du Conseil de l'Europe, - Recommandation 220 (2007), Strasbourg, 30 mai - 1er juin 2007
- CONGRES DES POUVOIRS LOCAUX ET REGIONAUX DU CONSEIL DE L'EUROPE (2007c), "La comp-

- tabilité environnementale pour une action publique locale responsable", 14e session plénière – Congrès des pouvoirs locaux et régionaux du Conseil de l'Europe, - Résolution 240 [2007], Strasbourg, 30 mai - 1er juin 2007
- COWAN, Stacey; GADENNE, David (2005), "Australian corporate environmental reporting: a comparative analysis of disclosure practices across voluntary and mandatory disclosure systems", *Journal of Accounting & Organizational Change*, Vol. 1, n.º 2, pp. 165-179
- CRIADO-JIMÉNEZ, I.; FERNÁNDEZ-CHULIÁN, M.; HUSILLOS-CARQUÉS, F. and LARRINAGA-GONZÁLEZ, C. (2008), "Compliance with Mandatory Environmental Reporting in Financial Statements: The Case of Spain (2001–2003)", *Journal of Business Ethics*, Vol. 79, n.º 3, pp. 245-262.
- DEEGAN, Craig; GORDON, B. (1996), "A study of the environmental disclosures practices of Australian corporations", *Accounting and Business Research*, Vol. 26, n.º 3, pp. 187-199
- DEEGAN, Craig; RANKIN, Michaela; TOBIN, John (2002), "An examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory", *Accounting, Auditing & Accountability Journal*, Vol. 15, n.º 3, pp. 312-343
- DHOOGHE, Lucien (2004), "Beyond voluntarism: social disclosure and France's nouvelles réglementations économiques", *The Arizona Journal of International and Comparative Law Online*, Vol. 21, n.º 2, pp. 441-491
- EUGÉNIO, Teresa Pereira (2006), "Divulgação Social e Ambiental - Evolução e Teoria da Legitimidade", XI Congresso Internacional de Contabilidade e Auditoria – Novos desafios da Contabilidade e Auditoria, Ética, Independência e Pensamento Crítico, 16-18 Novembro
- EUROPEAN COMMISSION (2001): Commission Recommendation of 30 May on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies (2001/453/EC)
- FINANCIAL ACCOUNTING STANDARDS BOARD (FASB) (1975), Statement of Financial Accounting (SFAS) n.º 5, Accounting for contingencies
- FREY, Brigitte (2006), "The disclosure requirements of the EU-Modernisation Directive for the annual report", Proceedings of the International Conference on Environmental Management and Innovation, Vienna, 28-29 April, pp. 42-44
- FRONTI DE GARCÍA, L.; GRANADA ABARZUZA, M. C.; GARCIA FRONTI, I. M. (1999), "Información sobre la gestión medioambiental de las empresas", VI Congreso Internacional de Custos - Custos e Estrategia Empresarial, Universidade do Minho, Braga, 15 a 17 de Setembro
- FRONTI DE GARCÍA, Luisa; FERNÁNDEZ CUESTA, Carmen (2003), "Los sistemas de gestión ambiental normalizados (ISO, EMAS) y sus costos. Análisis Profesional", Paraguay, n.º 12, Diciembre, pp. 61-78
- FROST, G.; SEAMER, M. (2002), "Adoption of environmental reporting and management practices: an analysis of New South Wales public sector entities", *Financial Accountability Management*, Vol. 18, n.º 2, pp. 103-127
- FROST, G.; TOH, D. (1998), "A study of environmental accounting within the New South Wales public sector", *Accounting Research Journal*, Vol. 11, n.º 2, pp. 400-410
- FROST, G.R. (2007), "The introduction of mandatory environmental reporting guidelines: Australian evidence", *ABACUS*, Vol. 43, n.º 2, pp. 190-216.
- GALLHOFER, S.; HASLAN, J. (1996), "The direction of green accounting policy: Critical reflections", Critical Perspectives on Accounting Symposium, New York, April, Available from <http://panopticon.csustan.edu/cpa96/papers.htm>, accessed on the 15th of March 2007
- GARCÍA SUÁREZ, José Luis (2005), "Operating and Financial Review: en busca de la relevancia perdida", Revista AECA, n.º 72, Especial XIII Congreso AECA, Septiembre, pp. 24-28

- GIOVANELLI, Fausto (2003), "La comptabilité environnementale comme instrument de développement durable", in *Comptabilité environnementale, International newsletter du programme CLEAR*, numéro special, septembre, pp.5
- GLOBAL REPORTING INICIATIVE (GRI) (2004), *Public Agency Sustainability Reporting*, Amsterdam, Available from <http://www.globalreporting.org>, accessed on the 15th of March 2007
- GLOBAL REPORTING INICIATIVE (GRI) (2005), *Sector Supplement for Public Agencies. Pilot Version 1.0*, March, Amsterdam, Available from <http://www.globalreporting.org>, accessed on the 15th of March 2007
- GLOBAL REPORTING INICIATIVE (GRI) (2006), *Sustainability Reporting Guidelines Version 3.*, October, <http://www.globalreporting.org>
- GRAY, Rob; KOUHY, Reza; LAVERS, Simon (1995), "Methodological themes. Constructing a research database of social and environmental by UK companies", *Accounting, Auditing & Accountability Journal*, Vol. 8, n.º 2, pp. 78-101
- HIBBITT, Chris; COLLISON, David (2004), "Corporate environmental disclosure and reporting developments in Europe", *Social and Environmental Accounting*, Vol. 21, n.º 1, pp. 1-10
- HOLLAND, Leigh; FOO, Yee Boon (2003), "Differences in environmental reporting practices in the UK and the US: the legal and regulatory context", *The British Accounting Review*, Vol. 35, pp. 1-18
- INTERNATIONAL FEDERATION OF ACCOUNTANTS (IFAC) (2010), *Sustainability Framework*, Available from <http://web.ifac.org/sustainability-framework/overview>, accessed on 15th March 2011.
- INSTITUTO DE CONTABILIDAD Y AUDITORÍA DE CUENTAS (ICAC) (2002), Resolución de 25 de marzo de 2002 del Instituto de Contabilidad y Auditoría de Cuentas, por la que se aprueban normas para el reconocimiento, valoración, e información de los aspectos medioambientales en las cuentas anuales, BOE n.º 81 de 4 de Abril de 2002, pp. 231-234
- INTERNATIONAL STANDARDS ORGANISATION, ISO 14063 (2006), ISO 14063:2006 – Environmental management – Environmental communication – Guidelines and examples
- JAHAMANI, Yousef F. (2003), "Green accounting in developing countries: the case of U.A.E and Jordan", *Managerial Finance*, Vol. 29, n.º 8, pp. 37-45
- JURADO MARTIN, José; MARTIN ZAMORA, M. Pilar; DOMINGUEZ CASADO, José (2004), "Información medioambiental en las cuentas anuales: estudio de un caso", XI Encuentro de Profesores Universitarios de Contabilidad: La Contabilidad sin fronteras, Granada, 3 a 4 de Junio
- JURADO MARTIN, José; MARTIN ZAMORA, M. Pilar; DOMINGUEZ CASADO, José (2005), "La utilidad de los indicadores medioambientales de contenido económico", I Conferência Luso Espanhola de Gestão e Contabilidade Ambiental (GECAMB), Leiria (Portugal), 5 - 6 Maio
- KOLK, A. (1999), "Evaluating corporate environmental reporting", *Business Strategy and the Environment*, Vol. 8, n.º 4, Jul/Aug, pp. 225-237
- KPMG & UNEP (2006), *Carrots and Sticks For Starters – Current trends and approaches in Voluntary and Mandatory Standards for Sustainability Reporting*, KPMG's Global Sustainability Services and United Nations Environment Programme (UNEP), available from http://www.unep.iep.org/outreach/reporting/public_sector.htm, accessed on the 15th of March 2007
- KPMG (2008), *International Survey of Corporate Responsibility Reporting 2008*, KPMG Global Sustainability Services and University van Amsterdam
- KUASIRIKUN, Nongnooch (2005), "Attitudes to the development and implementation of social and environmental accounting in Thailand", *Critical Perspectives on Accounting*, Vol 16, n.º 8, pp. 1035-1057
- LAMPINIDI, S.; KUBO, N. (2008) "Debate: The Global Reporting Initiative and Public Agencies", *Public Money & Management*, Vol. 28, n.º 6. pp. 326–9.

- LARAGÓN COMBA, Manuel (2003), "Acerca de la contabilización de los aspectos medioambientales de las empresas: un ejemplo para el sector público", *Auditoría Pública*, n.º 28, Enero, pp. 52-59
- LARRINAGA, C.; CARRASCO, F.; CORREA, C.; LLENA, F.; MONEVA, J. M. (2002), "Accountability and accounting regulation: the case of Spanish environmental disclosure standard", *The European Accounting Review*, Vol. 11, n.º 4, pp. 723-740.
- LEWIS, Thomas (2008), "Debate: Public Sector Sustainability Reporting—Implications for Accountants", *Public Money & Management*, pp.329-331, DOI: 10.1111/j.1467-9302.2008.00664.x
- LI, Yue; MCCONOMY, Bruce (1999), "An empirical examination of factors affecting the timing of environmental accounting standard adoption and the impact on corporate valuation", *Journal of Accounting, Auditing & Finance*, Vol. 14, n.º 3 (New series), Summer, pp. 279-313
- LLENA, F.; MONEVA, J. M. and HERNANDEZ, B. (2007), "Environmental disclosures and compulsory accounting standards: the case of Spanish annual reports", *Business Strategy and the Environment*, VOL. 16, n.º 1, pp. 50-63
- LLULL GILET, Antoni (2001), "Pasos hacia una información contable medioambiental obligatoria", *Partida Doble*, Año XI, n.º 125, Septiembre, pp. 70-72
- LÓPEZ GORDO, Mª Gloria; RODRÍGUEZ ARIZA, Lázaro (2004), "Información financiera para la gestión de espacios naturales protegidos. El caso español", X Congreso de Contabilidade: Relato Financeiro e Responsabilidade Social, 24-26 Novembro, Estérel
- McELROY, Julie.; BISMAN, Jaine.; MATHEWS, Reg (2005), "Environmental accounting in NSW local government", 7th Asian-Pacific Conference on International Accounting Issues, 20 - 23 November, Wellington, New Zealand
- MIKOL, Alain (2005), "La pratique européenne des informations environnementales en 2004", *Revue Française de Comptabilité*, n.º 373, Janvier, p. 19
- MILEY, Frances; READ, Andrew (2000), "Environmental reporting: thinking local", *Australian CPA*, Vol.70, n.º3, pp.40-42
- MOBUS, J. (2005), "Mandatory environmental disclosure in a legitimacy theory context", *Accounting, Auditing & Accountability Journal*, Vol. 18, n.º 4, pp. 492-517
- MONEVA, J.; LLENA, F. (2000), "Environmental disclosures in the annual reports of large companies in Spain", *The European Accounting Review*, Vol. 9, n.º 1, pp. 7-29.
- MONEVA, José M. (1996), "Información financiera medioambiental: su regulación internacional", *Partida Doble*, n.º 66, Abril, pp. 46-51
- MONEVA, José M.; FERNÁNDEZ CUESTA, C.; LARRINAGA, C. (2002), "La normativa contable española sobre información financiera medioambiental", *Técnica Contable*, n.º 648, Diciembre, pp. 949-961
- MONTEIRO, Sónia Mª da Silva (2006), *El Medio Ambiente como factor Clave en la Definición de las Estrategias Empresariales y sus Implicaciones en la Gestión y el Sistema de Información Contable*. Una perspectiva del caso Portugués. Tesis Doctoral, Universidad de Santiago de Compostela, Facultad de Ciencias Económicas y Empresariales, Abril
- MONTEIRO, S.; GUZMÁN, Beatriz Aibar (2010b), "The influence of the Portuguese environmental accounting standard on the environmental disclosures in the annual reports of large companies operating in Portugal: a first view (2002-2004)", *Management of Environmental Quality: An International Journal*, Vol. 21, n.º 4, pp. 414-435.
- MUEMA, Phillip; ACHOKI, George O. (2005), "The practice of corporate environmental accounting in Kenya", 5th Conference on Social and Environmental Accounting Research, Barcelona, 14 - 16 de September

- NEW SOUTH WALES ENVIRONMENTAL PROTECTION AUTHORITY (NSW EPA) (1997), *Corporate Environmental Reporting: Why and How* (NSW EPA, Chatswood)
- NYQUIST, S. (2003a), "Environmental information in annual reports: a survey of Swedish accountants", *Managerial Auditing Journal*, Vol. 18, n.º 8, pp. 682-691
- NYQUIST, S. (2003b), "The legislation of environmental disclosures in three Nordic countries – a comparison", *Business Strategy and the Environment*, n.º 12, pp. 12-25
- PRAMANIK, Alok Kumar (2000), "Environmental Accounting and Reporting: An Analytical Study in Global Perspective", Third Biennial International Accounting Research Conference International Association for Accounting Education and Research (IAAER) jointly with Japanese Association for International Accounting Studies (JAIAS), Kobe, Japan, 5-7 October
- PRICEWATERHOUSECOOPERS (PWC) (2004), *Implementation in Member States of the Commission Recommendation on Treatment of Environmental Issues in Companies' Financial Reports*, PriceWaterhouseCoopers, October
- RAMDHONY, D., PADACHI, K. e GIROFFLE, L. (2010), "Environmental Reporting in Mauritian Listed Companies", International Research Symposium in Service Management, ISSN 1694-0938, in <http://www.uom.ac.mu/sites/irssm/papers/Ramdhony,%20Padachi%20&%20Giroffle%20ff%201.pdf>
- RIBEIRO, Verónica Paula Lima (2007), *La Gestión Medioambiental en las Entidades Públicas Locales Portuguesas. Una Perspectiva Contable*, Tesis Doctoral, Universidad de Santiago de Compostela, Facultad de Ciencias Económicas y Empresariales, Diciembre
- RUIZ ALBERT, Ignacio (2003), "La responsabilidades medioambientales: su tratamiento en la Recomendación de la Comunidad Europea", *Partida Doble*, n.º 148, Octubre, pp. 46-57
- SAHAY, A. (2004), "Environmental reporting by Indian corporations", *Corporate Social Responsibility and Environmental Management*, Vol. 11, n.º 1, March, pp. 12-22
- SCOTT, Paul (2001), "ISO backs environmental reporting", *International Environmental Systems Update*, Vol. 8, n.º 5, November, pp. 20-21
- SINCLAIR, Penny; WALTON, Júlia (2003), "Environmental reporting within the forest and paper industry", *Business Strategy and the Environment*, Vol. 12, pp. 326-337
- SOLOMAN, Aris; LEWIS, Linda (2002), "Incentives and disincentives for corporate environmental disclosure", *Business Strategy and the Environment*, Vol. 11, pp. 154-169
- STANKO, Brian B.; BROGAN, Erin; ALEXANDER, Erin; CHAY, J. Choy-Mee (2006), "Environmental accounting", *Business and Economic Review*, Vol. 52, n.º 3, April-June, pp. 21-27
- SUÁREZ KIMURA (2001), Elsa Beatriz, "El efecto de la gestión económica del ente sobre el medio ambiente", *Contabilidad y Auditoría*, n.º 14, Año 7, Diciembre, pp. 97-117
- TAYLOR, Bernard; HUTCHINSON, Colin; POLLACK, Suzanne; TAPPER, Richard (1994), *The Environmental Management Handbook*, Pitman Publishing
- TILT, Carol Ann (1994), "The influence of external pressure groups on corporate social disclosure: Some empirical evidence", *Accounting, Auditing & Accountability Journal*, Vol. 7, n.º 4, pp. 47-72
- VÉLEZ ELORZA, Mª Fernanda; RODRIGUEZ ESCOBAR, Tomás (1999), "La inclusión del factor medioambiental en el sistema de información contable", VI Congreso Internacional de Custos - Custos e Estrategia Empresarial, Universidade do Minho, 15 a 17 de Setembro
- WRIGHT, Charlotte; ANDERSON, Wilton T. (1998), "Environmental accounting in the oil and gas industry", *Petroleum Accounting and Financial Management Journal*, Vol. 17, n.º 2, Summer, pp. 30-49