Mandatory environmental disclosures by companies complying with IAS/IFRS: The case of France, Germany and the UK

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ABSTRACT

This study investigates whether the adoption of a single set of accounting standards, such as IFRS, guarantees harmonization of accounting practices within a country and across countries, or whether differences in reporting practices persist because of dissimilarities in reporting habits and institutional settings. To this end, we investigate whether the level of environmental disclosure under IFRS is related to the size of the reporting firm, which has been shown to be a major determinant of voluntary environmental information, and the strength of legal and regulatory constraints on environmental disclosures in the country where the firm is domiciled. Results indicate that environmental disclosures imposed by IFRS increase with firm size, just like voluntary environmental disclosures. This suggests that application of IFRS is affected by the reporting practices that prevailed prior to IFRS adoption. Results also indicate that firms domiciled in countries with constraining environmental disclosure regulations (i.e. France and the UK) report more on environmental issues than do firms domiciled in countries with weakly constraining regulations (i.e. Germany). This suggests that national regulations strongly impact IFRS reporting. Taken as a whole, our results support the view that IFRS are not applied consistently across firms or across countries, notably because of persistence of reporting traditions and discrepancies in national legal requirements.

Key words: environmental disclosure; environmental accounting regulations; International Accounting Standards/International Financial Reporting Standards (IAS/IFRS); France; Germany; UK.

1. Introduction

The accelerated process of globalization, increased financial market interdependence and high capital mobility have all contributed to increased awareness of the necessity for a common set of accounting standards. In light of this, IAS/IFRS were adopted to enhance financial statement comparability across firms. However, opportunities and motivations for the existence of financial reporting differences remain due to flexibility provided by accounting standards and because of differences in reporting traditions and national legal, taxation and financing systems.

To determine whether reporting habits and national characteristics affect environmental information reported by firms complying with IAS/IFRS, we started by analyzing all IAS/IFRS standards and IFRIC interpretations to identify the environmental reporting constraints imposed by IAS/IFRS. This analysis allowed us to create a grid aimed at calculating a score to quantify the environmental information available in financial statements. In a second step, we analyzed the regulatory environmental framework prevailing in France, Germany and the UK, the three countries under study, to determine the magnitude of non-accounting information requirements imposed by the environmental regulations of each country. In a last step, we used regression techniques to determine whether environmental disclosure scores differ depending on the country where the reporting firm is domiciled (i.e. a proxy for the strength of national regulations) and the size of the reporting firm (i.e. a proxy for its reporting habits concerning environmental disclosures).

The remainder of the paper is divided into four parts. The next part introduces the background of the study: the literature review, the environmental regulatory framework of the three countries under study, and the hypotheses. The third part explains the research design: the creation of our environmental information grid, the sample, and the empirical models used to test the hypotheses. The fourth part discusses the results. The last one draws interpretations and conclusions.

2. Background and hypothesis development

As suggested by Ball et al. (2003), Ball (2006), Nobes (2006), Bradshaw and Miller (2008), Holthausen (2009), and Kvall and Nobes (2010), the adoption of a single set of accounting standards does not systematically ensure comparability of financial statements. The suggested reasons for persistent differences in financial reporting notably include differences in national regulations and in reporting traditions. Therefore, compliance with IAS/IFRS environmental requirements may differ across countries because of differences in the national regulations on environmental disclosures, and across firms because of differences in the pre-IFRS reporting practices concerning voluntary environmental information.

This section reviews the literature on environmental disclosure to emphasize the factors that determine firm propensity to disclose environmental information voluntarily, since these factors may affect compliance with IFRS environmental requirements. The section also analyzes the environmental regulatory framework of the three countries under study, i.e. the UK, France and Germany, since their regulations may influence compliance with IFRS.

2.1. The literature on the determinants of environmental disclosure

While there are numerous studies devoted to voluntary disclosure of environmental information, much less attention has been paid to environmental disclosure requirements set by accounting standards in general and IFRS in particular. Branco and Rodrigues (2007) analyze the state of the literature on corporate and environmental reporting from diverse methodological and theoretical standpoints. Baker and Barbu (2007) identify over 200 articles, from the 1960s to 2005 (i.e. the year of IFRS implementation in Europe), related to international accounting harmonization. These two literature reviews suggest that to date no study has linked environmental reporting to the process of international accounting convergence.

Until the late 1980s, there was no great need for environmental disclosure (Milne and Chan, 1999; Solomon and Solomon, 2006). Investors started attaching importance to environmental information from the 1990s (Epstein and Freedman, 1994; Goodwin et al., 1996; Deegan and Rankin, 1997; De Villiers and Van Staden, 2010). Corporate environmental information then became the topic of considerable research that was notably aimed at investigating the factors

affecting environmental disclosure. This research has provided unambiguous results regarding the positive impact of both firm size and exposure to environmental risk on disclosures. Patten (1992) in the US, Gray et al. (1995) in the UK, Hackston and Milne (1996) in New Zealand, Deegan and Gordon (1996) in Australia, Richardson and Welker (2001) in Canada, Cormier and Magnan (2003, 2005) in France and in Germany, Gao et al. (2005) in Hong Kong, Liu and Anbumozhi (2009) in China have all shown a positive relationship between firm size and corporate environmental disclosure. Gamble et al. (1999), Deegan and Gordon (1996), Frost and Wilmhurst (2000), Gray et al. (2001), Freedman and Jaggi (2005), Gao et al. (2005), and Liu and Anbumozhi (2009) have found evidence indicating that environmental disclosures are industry-specific: environmentally-sensitive companies are more likely to release environmental information than are less sensitive ones. Finally, research recognizes that environmental disclosures are country specific. They depend on the legal, social, financial, cultural and political contexts in which the company operates (Adams et al., 1998; Adams et al., 2000). By positing that environmental disclosure helps firms alleviate political and social pressure related to environmental issues (which increases with firm size and with exposure to environmental risk), the stakeholder theory and the legitimacy theory provide arguments for the positive association of environmental disclosure with firm size and environmental sensitivity.

2.2. Regulatory environmental frameworks in the UK, France and Germany

In several countries, various regulations impose corporate reporting requirements on environmental issues. This section explores the regulations on mandatory environmental reporting for publicly-listed companies in the UK, Germany and in France.

In the UK, the Companies Act of 1985 forced all listed companies to publish an annual operating and financial review (OFR) that had to include information on significant corporate environmental impacts. These disclosure requirements were extended to large non-listed companies by the Companies Act of 2006, which imposes disclosure of key environmental performance indicators in the Business Review section of annual reports. However, the Companies Act gives managers considerable discretion in the information to be disclosed, which potentially undermines the integrity of the reported information (Williamson and Lynch-Wood, 2008).

In France, the regulation entitled "Nouvelles Régulations Economiques" (New Economic Regulations) was enforced in 2002. This regulation states that all listed companies have to provide information on the environmental impact of their operations in their annual reports. The legal obligation concerns reportingthere are no specific requirements as to the type of information to be released. The Second Grenelle Act of 2009, applicable from 2011, extends environmental reporting to any polluting activity initiated by companies with more than 500 employees. The mandatory disclosures cover both financial and non-financial information, and refer to the environmental impact of a company's operations (air, water, emissions, energy, materials), as well as to the firm's commitment to environmental protection, remediation and limitation of adverse consequences of economic activities on the natural environment.

In Germany, there is no specific regulation on environmental disclosure. However, the National Institute for Standard-Setting (Deutche Institut Fur Normierung) issued in 1997 a memo entitled "Leitfaden für Umweltberichte" (Guidelines for Environmental Reports to the Public). This guide, later repealed, established the minimum amount of information to be included in corporate environmental reports.

Table 1 synthesizes the main characteristics of the environmental disclosure regulations in the three countries under study. While France and the UK have promulgated regulations on environmental information that apply to listed and large non-listed companies, Germany has disclosure guidelines only that are, however, applicable to all entities, irrespective of their size. Moreover, while environmental information is mandatory as an integral part of annual reports in France and the UK, the German guidelines recommend release of separate environmental reports.

*****Insert Table 1*****

If environmental disclosures are more regulated in France and the UK than in Germany, there are nevertheless significant differences between the two countries. The French standard-setters have provided a comprehensive list of environmental information to be disclosed by target companies. Conversely, British managers have large discretion when selecting information to be included in the business review section of annual reports. Furthermore, it is

worth noting that there is no obligation for audits of environmental information in any of the countries under study.

2.3. Hypotheses

As suggested by Nobes (2006), national accounting traditions are likely to continue influencing financial reporting behaviour despite the generalized adoption of IAS/IFRS, notably because of cross-country differences in national regulations and legal systems. Firms in countries with constraining regulations regarding environmental disclosure can therefore be expected to comply more closely with environmental requirements of IFRS than firms domiciled in countries with less constraining regulations. Furthermore, financial reporting can also be influenced by the voluntary disclosure practices that prevailed in a given country prior to IFRS adoption. As suggested earlier, empirical research provides clear evidence on the positive impact of firm size on the magnitude of voluntary environmental disclosure. Larger firms, with long traditions of providing extensive information on environmental issues, are likely to comply more closely with environmental IAS/IFRS requirements than are smaller firms.

In conformity with the idea that, thanks to the flexibility offered by IAS/IFRS, companies tend to pursue their previous reporting practices because of inertia, we propose the following null hypothesis:

H1. *Ceteris paribus*, compliance with the environmental requirements of IAS/IFRS is not positively related to firm size.

Our previous analysis indicates that Germany is the country with the least constraining regulation on environmental disclosures. Therefore, in conformity with the idea that IAS/IFRS compliance depends on the regulatory environment of reporting firms, we state the following null hypothesis:

H2. *Ceteris paribus*, compliance with the environmental requirements of IAS/IFRS is not stronger in countries with constraining regulations on environmental disclosure, i.e. the UK and France, than in countries with less constraining regulations, i.e. Germany.

3. Research design

This section presents the creation of our environmental information grid, the sample, and the empirical models used to test our hypotheses.

3.1. Measurement of the IAS/IFRS disclosure index

To determine whether substantial differences persist in environmental reporting practices, our research links environmental disclosures, that became mandatory following the adoption of IAS/IFRS, to the environmental regulation in the country where the firm is domiciled and to factors that have been shown to determine voluntary environmental disclosures. This requires use of a disclosure index aimed at quantifying the environmental information. To build this index, we analyzed all IAS-IFRS standards and IFRIC interpretations to identify instruments or information for the recognition, measurement and disclosure of environmental issues. This identification helped us create a grid of environmental information that was used to analyze the 2007 financial statements of 114 German, French and UK companies and quantify their mandatory environmental disclosures complying with IAS/IFRS.

Our analysis of IAS/IFRS shows that no international standard is exclusively dedicated to environmental information, but environmental issues are mentioned in several standards and interpretations. They deal directly or indirectly with the recognition, measurement and disclosure of environmental expenses, assets, and liabilities. These standards and interpretations are analyzed in the Appendix.

***** Insert Table 2 *****

Our disclosure index includes the 12 disclosure items listed in Table 2. The information relative to each item is divided into a monetary and a descriptive component that is coded as disclosed or not disclosed. For each firm in the sample, based on these 12 items, we computed an unweighted compliance score for both monetary and descriptive information. The compliance score corresponds to the number of mandatory disclosures actually provided by a firm. The maximum possible score for each component is 12, with a total possible combined score of 24.

Since all firms are not identically implicated in environmental matters, in addition to the overall score based on the 12 items described in Table 2, we also calculated a restricted score based on 4 items only (environmental tangible assets, environmental provisions, environmental expenses and environmental contingent liabilities) assuming that, regarding these items, most firms have descriptive or monetary information to provide.

3.2. Sample

The sample consists of large German, French and UK listed companies included in the Stoxx 600, that are potentially concerned with environmental issues. We selected large companies because they are exposed to greater stakeholder pressure. They are therefore expected to be more thorough in satisfying their disclosure requirements than are smaller companies. We can therefore easily assume that small firms exhibit the same (or larger) differences in IFRS environmental reporting as (than) large ones. The reverse is not necessarily true. The three countries were selected because of their traditions in environmental protection. Moreover, the UK, France and Germany are the largest European economies with their contribution to the European Union's budget amounting to approximately 48 percent. At the same time, these three countries are the largest polluters in the EU. They account for a cumulative 43 percent of total EU-27 greenhouse gas emissions (EEA, 2010). Finally, the companies under study belong to the five super-sectors within the Dow Jones and Stoxx classification that are expected to be the most exposed to environmental issues. These sectors are basic materials, technology, healthcare, industrials, cyclical consumer goods and services. There are 35 German companies, 41 French ones, and 117 British firms in the Stoxx 600 that belong to the selected super-sectors. We randomly selected 38 British companies to obtain a sample for the UK of the same size as for Germany and France. The sample is described in Table 3.

***** Insert Table 3 *****

3.3. Empirical models

To determine whether national environmental disclosure regulations and firm size affect corporate compliance with IAS/IFRS environmental requirements, we first estimate the following model:

$$DISC = \alpha_0 + \alpha_1 LnTA + \alpha_2 EE + \alpha_3 FR + \alpha_4 GER + \varepsilon \quad <1>$$

where DISC = IAS/IFRS disclosure environmental disclosure index
LnTA = natural logarithm of total assets
EE = dummy variable equal to 1 if the firm is environmentally sensitive
FR = dummy variable equal to 1 if the firm is French
GER = dummy variable equal to 1 if the firm is German

The dummy variable characterizing environmentally sensitive firms (EE) aims to control firm exposure to environmental issues. All things being equal, environmentally sensitive firms are likely to report more environmental information than those that are less environmentally sensitive. To split the sampled firms between those that operate in environmentally sensitive industries and those that do not, we used the same criteria as Degan and Gordon (1996), Richardson and Welker (2001) and Cho and Patten (2007). Firms with strong environmental exposure are those with a primary SIC code of 10XX (metal mining), 12XX (coal and lignite mining), 13XX (oil exploration), 26XX (paper), 28XX (chemical and allied products), 29XX (petroleum refining), 32XX (glass), 33XX (metals), 45XX (air transportation). Our sample comprises 33 environmentally sensitive firms and 81 environmentally non-sensitive ones.

According to hypothesis H1, IAS/IFRS compliant environmental disclosure should not increase with firm size. Therefore, the null hypothesis H1 will be rejected if α_1 is negative. According to hypothesis H2, German firms are not expected to provide less environmental information than British ones. Therefore, the null hypothesis H2 will be rejected if α_4 is negative. As German firms are also not expected to provide less environmental information than French ones, the null hypothesis H2 will be rejected if $(\alpha_3-\alpha_4)$ is positive. Finally, because of the positive impact of environmental exposure on environmental disclosure, α_2 is expected to be negative.

Since compliance with IAS/IFRS environmental disclosures is of primary importance for firms strongly exposed to environmental issues, we also estimate the following model:

$$DISC = \beta_0 + \beta_1 LnTA + \beta_2 FR + \beta_3 GER + \beta_4 EExFR + \beta_5 EExGER + \beta_6 EExUK + \varepsilon \quad <2>$$

where EExFR, EExGER, EExUK are interaction dummy variables that equal 1 if the firm is environmentally sensitive and respectively French, German and British. The other variables are the same as in the previous model.

β_0, β_2 and β_3 capture differences in environmental disclosure for environmentally non-sensitive firms. β_4, β_5 and β_6 capture differences in environmental disclosure for environmentally sensitive firms. Since environmentally non-sensitive firms are not expected to report environmental information intensively, β_0, β_2 and β_3 are not expected to differ significantly. In contrast, regarding environmentally sensitive companies, the null hypothesis H2 will be rejected if (β_4-β_5) is positive since French firms are not expected to disclose more IFRS compliant environmental information than German firms. In the same way, British firms being not expected to disclose more than German ones, H2 will be rejected if (β_5-β_6) is negative. The null hypothesis H1 will be rejected if disclosure scores increase with firm size, i.e. if β_1 is positive.

4. Results

Table 4 provides a breakdown of environmental disclosure scores per item and per country for both descriptive and monetary information. The sum of disclosure scores is higher for French and British firms than for German ones, 79 and 72 vs. 50. The sum of disclosure scores for descriptive information is much higher than the one for monetary information, 128 vs. 73. It is worth noting that environmental matters are primarily reported through provisions and, to a lesser extent, through contingent assets-liabilities and environmental expenses. In contrast, the information related to intangibles other than exploration of mineral resources, wastes, and environmental fines and taxes are extremely rare.

*****Insert Table 4*****

Table 5 presents a breakdown of the sampled firms by the number of environmental items covered. It is worth noting that most of the sampled firms do not report IAS/IFRS compliant environmental information. Half of the firms do not report any environmental information at all. 66 percent of French firms, 54 percent of German firms and 55 percent of UK firms do

not report descriptive information. 54 percent of French firms, 43 percent of German firms and 50 percent of UK firms do not report monetary information. German firms are those that report the highest number of descriptive information: 45.8 percent of them provide more than one type of narrative information compared with 34.1 percent for French firms and 44.7 percent for UK firms. However, French and UK firms are those that provide the highest amount of monetary information. 23.6 percent of UK firms and 19.5 percent of French firms give more than 3 types of narrative information, versus 2.9 percent of German firms. Not surprisingly, the 81 environmentally non-sensitive firms are those that disclose the least: 69 percent of these firms do not report any descriptive information, 62 percent do not report monetary data. Environmentally sensitive firms disclose more: 67 percent report at least one descriptive item, 72 percent provide monetary data.

*****Insert Table 5*****

Table 6 displays the mean, median and standard deviation of total scores (panel A), descriptive scores (panel B), and monetary scores (panel C). The mean and median scores of firms weakly exposed to environmental issues are low, and they do not differ between countries. Their overall scores, based on 12 items, are not significantly larger than their restricted scores, based on 4 items, suggesting that these firms provide only the most usual environmental information. Environmentally sensitive firms exhibit higher overall scores than non-sensitive ones. Furthermore, the mean and median overall scores of environmentally sensitive French and British firms are significantly larger than those of German firms. However, the differences in the overall scores come primarily from the monetary scores, which are much higher than the descriptive ones. The mean overall monetary scores of French and British sensitive firms (respectively 3.00 and 3.11) are 2.2 and 2.29 times larger than that of the German firms (1.36). The mean overall descriptive scores of French and British sensitive firms (respectively 1.70 and 1.33) are only 1.6 and 1.2 times larger than that of German firms (1.07). Regarding the restricted scores of environmentally sensitive firms, differences are less clear. The mean restricted monetary scores of French and British sensitive firms (respectively 1.70 and 1.89) are 1.5 and 1.65 times larger than that of German firms (1.14). The mean restricted descriptive scores of French and British sensitive firms (respectively 1.20 and 1.00) are only 1.3 and 1.1 times larger than that of German firms (0.93).

*****Insert Table 6*****

Table 7 presents the results of model <1> for the overall and restricted scores related to monetary and descriptive information. As expected, α_2 is always statistically positive, suggesting that environmentally sensitive firms systematically disclose more IFRS compliant environmental information than non-sensitive ones. Since α_1 is statistically positive for monetary disclosures only, hypothesis H1 is rejected for monetary disclosure scores, but not for descriptive ones. This suggests that larger firms report more environmental IAS/IFRS compliant monetary information than smaller ones. As our model controls for environmental sensitivity, and as there is no reason to believe that larger sampled firms are systematically more exposed to environmental issues than smaller ones, this implies that all firms do not comply with IAS/IFRS identically regarding environmental matters. Since firm size is a major determinant of voluntary environmental disclosures, compliance with the environmental requirements of IAS/IFRS is likely influenced by the reporting firms' tradition regarding environmental disclosures. In the same way, hypothesis H2 is rejected for monetary disclosures only. German firms disclose less environmental IAS/IFRS compliant monetary information than British firms: α_4 is statistically negative for monetary disclosure models. German firms also disclose less monetary information than French ones: (α_3-α_4) is statistically positive for monetary disclosure models. On the other hand, as expected, French firms provide as much environmental monetary accounting information as British firms, since α_3 is statistically significant. These results show that, concerning environmental issues, compliance with IAS/IFRS is higher for French and British firms than for German ones, probably because of the differences in the environmental disclosure regulations applied in the countries.

*****Insert table 7*****

Table 8 presents the results of model <2>. These results help discriminate disclosures of environmentally sensitive firms from those of environmentally non-sensitive ones. They show that differences in mandatory environmental reporting come from environmentally sensitive firms. β_2, β_3 and (β_2-β_3) do not differ statistically from zero, suggesting that British, German and French non-environmentally sensitive firms exhibit the same overall and restricted disclosure scores for both monetary and descriptive information. β_4, β_5 and β_6 are all statistically positive, suggesting that environmentally sensitive firms report more IAS/IFRS

compliant environmental information than non-environmentally sensitive ones, regardless of the country where they are domiciled. Finally, the model using the overall monetary scores as the dependent variable shows that (β_4-β_5) is statistically positive and (β_5-β_6) is statistically negative. This implies that environmentally sensitive French firms disclose more monetary information, and environmentally sensitive British firms disclose less monetary information, than their German counterparts. The same result does not hold for descriptive disclosures and restricted scores, since (β_4-β_5) and (β_5-β_6) do not statistically differ from zero the other models. H2 is therefore rejected for the overall monetary scores only. On the other hand, since β_1 is systematically positive at the 10 percent level, H1 is rejected for the overall and restricted monetary scores related to both descriptive and monetary information. This confirms that compliance with IAS/IFRS environmental disclosure requirements increases systematically with firm size.

*****Insert table 8*****

5. Conclusion

In a context where environmental reporting is a major challenge for accounting practice and research, this study analyzes whether companies complying with IFRS apply IFRS environmental requirements consistently. Analysis of the international accounting standards and interpretations shows that there is no international standard exclusively dedicated to environmental issues. However, several standards have explicit or implicit provisions related to the recognition, measurement and reporting of environmental expenses, assets and liabilities. Our analysis of the mandatory environmental information of companies applying IAS/IFRS shows that: (1) half of the firms do not report any environmental information at all; (2) environmentally sensitive firms exhibit higher overall disclosure scores than non-sensitive ones, and this difference comes primarily from the monetary information; (3) larger firms report more environmental information than smaller ones; (4) German firms disclose less environmental monetary information than British and French ones. This could be explained by the fact that while France and the UK have opted for a regulated framework of

environmental information, mostly for listed and large non-listed companies, Germany has provided disclosure guidelines only.

These results show that, regarding environmental issues, compliance with IFRS depends on the reporting firm's environmental disclosure tradition, insofar as firm size is a relevant proxy for this tradition. The results also show that compliance with IFRS depends on national regulatory constraints concerning environmental disclosures. Taken as whole, our results suggest that IAS/IFRS are applied differently from one firm to another and from one country to another. The adoption of similar accounting standards is therefore not a sufficient condition to guarantee full convergence of accounting practices and full comparability of accounting information across firms and countries. Full convergence and full comparability are driven by factors other than accounting standards only. Incentives and enforcement are both necessary to reach this outcome. Indeed, even if the accounting standards in force are the same in the three countries under study, monitoring, enforcement, and market incentives differ greatly.

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Appendix: List of standards (IAS/IFRS) or interpretations (IFRIC) related to environmental issues

Standards

- IAS 1 *Presentation of Financial Statements* prescribes the basis for presentation of general purpose financial statements. Their objective is to provide information about the financial position, financial performance, and cash flows of an entity that is useful to a wide range of users in making economic decisions. For this reason, financial statements provide information about an entity, including environmental assets, environmental liabilities and environmental expenses. At the same time, IAS 1 contains several remarks on additional information and reports issued by companies, to provide their stakeholders with a comprehensive view of their environmental and social impacts. Entities are encouraged to produce such reports, whenever managers consider that they are useful in shaping the external users' opinions and actions.
- IAS 2 *Inventories* is relevant whenever highly polluting industries, such as mining, recognize their waste as assets with a residual value. This standard requires such waste to be recognized as inventories only if additional costs were to be incurred to convert the waste products into marketable goods.
- IAS 8 *Accounting policies, changes in accounting estimates and errors* prescribes the criteria for selecting and changing accounting policies, together with the accounting treatment and disclosure of changes in accounting policies, changes in accounting estimates and corrections of errors. The standard doesn't contain a direct mention of environmental elements but these prescriptions are applied, for example, when the company changes the estimates of environmental provisions or it corrects material errors in accounting of environmental costs and liabilities.
- IAS 10 *Events after the Balance Sheet Date* describes the steps to be taken by any entity when disclosing relevant events occurring after the balance sheet date. Such events, which may carry an environmental impact, should be described in concert with the causes that had generated them before year-end.
- IAS 12 *Income taxes* prescribes the accounting treatment for income taxes. The general principle of this standard is that deferred tax liabilities and assets should be recognized, with some exceptions, for the taxable/deductible temporary differences. For example, when the carrying amount of an evironmental asset is bigger than its tax base, results include a taxable temporary difference and a deferred tax liability.
- IAS 16 *Property, plant and equipment* indicates that some fixed assets may be acquired for safety or environmental reasons. The acquisition of such elements, even in the absence of future economic benefits, may be necessary for the uncompromised use of other operating fixed assets. In this case, it is clear that the acquisition of environmental assets is outside the scope of the general definition of an asset. This derogation is based on the fact that future economic benefits may be compromised in the absence of certain environmental assets, even though the latter are only accessories to the main operation. As an example, the Standard presents the case of a chemical plant which is forced to introduce new substance manipulation processes to conform to current legal obligations; the operational improvements are capitalized as environmental assets, since the firm would not be able to produce and sell its

chemicals without these processes. IAS 16 also requires the incorporation of future dismantling and decommissioning costs into the value of the fixed asset. These costs are estimated at the beginning of the asset's useful life, and are assimilated to a provision in compliance with IAS 37. Future expenses with dismantling and site restoration may also be derived as a consequence of the continuous use of an asset whose environmental impact is not negligible. However, PriceWaterhouseCoopers (2004) considers that, whenever environmental degradation is outside the industrial parameters for the use of a certain asset, the supplementary expenses should be incurred immediately.

- IAS 20 *Accounting for Government Grants* contains an implicit reference to the initial distribution of emission rights and their recognition in the financial statements.
- IAS 32, IAS 39, IFRS 7 and IFRS 9 on *financial instruments* are linked to the present and future risks emerging in such cases as hedge accounting, the measurement of environmental derivatives, and the treatment of other financial elements occurring as a result of environmental impacts.
- IAS 36 *Impairment of Assets* can be applied whenever a company's environmental assets are suffering impairment, either as consequence of a contamination, physical accident, loss of contractual rights or depletion of mineral resources.
- IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* presents several details on the recognition and measurement of provisions and contingent liabilities and contingent assets. A provision is a liability whose value and date of payment are uncertain and which is recognized whenever: (a) the company has a current obligation (e.g. of an environmental nature) from a past event; (b) an outflow of future economic benefits is to be expected in this circumstance; and (c) a good estimate can be provided for this obligation. Unlike ordinary liabilities, the standard defines a constructive obligation as an uncertain liability imposing the recognition of a provision. For example, a company conducts its extractive operations in a country with no environmental legislation. However, the company has published its environmental policy, which states that any remediation expenses arising from polluting activities will be supported by the firm. In case such incidents occur, the company has a constructive obligation and an implicit provision for the best estimate of these future expenses. However, the standard does not provide any details on the type and magnitude of an event that is deemed to trigger a constructive obligation. A contingent liability is: (a) a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity; or (b) a present obligation that arises from past events but is not recognized because: (i) it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or (ii) the amount of the obligation cannot be measured with sufficient reliability. For example, when a lawsuit or other legal measure has been taken against the company, environmental cleanup and protection responsibility generate a contingent liability if the monetary impact of new regulations or penalties on the company is uncertain. An entity should not recognize contingent liabilities in the financial statements but should disclose them, unless the possibility of an outflow of economic resources is remote.

- IAS 38 *Intangible Assets* is linked to the recognition and measurement of environmental assets such as development expenses or emission rights, either received as a subsidy or acquired from the market.
- IAS 41 *Agriculture* is a specialized standard with no mention of environmental elements, but targeting a sector with a highly sensitive environmental profile. This standard introduced fair value accounting for all biological assets. The fair value measurements may imply monetizing the environmental contribution of biological assets. For example, the development of markets in forest carbon credits will impact forest valuation and hence financial reporting.
- IFRS 3 *Business combinations* specify the financial reporting by an entity when it undertakes a business combination. It provides that identifiable assets and liabilities acquired in a business combination should be evaluated at their fair value. Consequently, all environmental liabilities assumed in business combinations (such as environmental liabilities associated with the retirement of tangible long-lived assets) must be measured at their acquisition-date fair value.
- IFRS 6 *Exploration for and Evaluation of Mineral Resources* is linked to extractive activities, which are widely acknowledged as environmentally-sensitive. The standard is a guide to the recognition of exploration expenses, including the recognition of mineral resources as assets. It also imposes the recognition of any dismantling and relocation obligations as a result of the exploration of mineral resources.
- IFRS 8 *Operating segments* establishes certain disclosure elements to be provided in the annual reports of large companies. Diversified firms sometimes own an operating segment having a clear connection with environmental services and environmental protection, such as clean energy, urban services, decontamination services, recycling, green technologies, etc.

Interpretations

- IFRIC 1 *Changes in Existing Decommissioning, Restoration and Similar Liabilities* presents several details on the recognition and measurement of liabilities generated by decommissioning and dismantling activities, such as the closure of a chemical plant, the restoration of sites after extractive activities or the removal of heavy equipment.
- IFRIC 3 *Emission Rights* provides that a cap-and-trade scheme gives rise to three elements: an asset for the allowances held, a government grant for the value of the allowances at the date of receipt, and a liability for the obligation to deliver allowances equal to emissions that have been made. Due to the pressure exerted by the business community and the disapproval from the European Commission, IASB decided to withdraw IFRIC 3 in 2005. Considering that no new interpretation has been issued, the recognition of emission quotas has remained a controversial problem. Adopting the methods applicable under US GAAP is a viable solution, as IAS 8 allows use of accounting policies from other standard-setters if no specific international standard exists.
- IFRIC *5 Rights to Interests Arising from Decommissioning, Restoration and Environmental Funds* discusses the integration into the accounting process of all these rights. The purpose of decommissioning, restoration and environmental rehabilitation funds is to segregate assets to fund some or all of the costs of plant decommissioning (such as a nuclear plant) or certain equipment (such as cars), or in undertaking

environmental rehabilitation (such as rectifying pollution of water or restoring mined land).

- IFRIC 6 *Liabilities Arising from Participating in a Specific Market – Waste Electrical and Electronic Equipment* clarifies when certain producers of electrical goods are required to recognize a liability under IAS 37 for the cost of waste management relating to the decommissioning of waste electrical and electronic equipment supplied to private households.

Table 1: Environmental regulation in the UK, France and Germany

	UK	**France**	**Germany**
Legal framework	Environmental Protection Act (1990) Environment Act (1995) Companies Act (1985) Companies Act (2006)	Nouvelles Régulations Economiques **(**2001) Grenelle 1 Act (2008) Grenelle 2 Act (2009)	Guidelines for environmental reports for the public (1997) – now repealed
Target firms	Listed and large non-listed companies	Listed companies and firms with more than 500 employees	All companies
Minimum information requirements	- Environmental matters (including the impact on the environment); - To the extent necessary for an understanding of the development, performance or position of the company, the review must include, where appropriate, analysis using key performance indicators including information relating to environmental matters.	- Environmental aspects (consumption and emissions): water, raw materials, energy, greenhouse gas emission, toxic waste; - Preventive measures for environmental protection; - Certification and implementation of dedicated management systems; - Legal compliance and anticipation of legal changes; - Expenses incurred for environmental remediation measures; - The existence of specialized internal services for environmental assessment; - The recognition of provisions for risks and charges; - The rules imposed to subsidiaries overseas, regarding all the above elements; - The centralized coordination of these requirements at board level.	- Basic information block: a description of the organization's activities, a presentation of the organization's environmental policy and program, a description of the organization's environmental management system; - Presentation of significant environmental figures; - Assessment of all significant environmental issues; -Declaration of formal requirements.
Disclosure document	Annual report	Annual report	Specific environmental report
Target audience	Shareholders, investors, lenders	All stakeholders	All stakeholders
Verification / audit requirements	The auditors must state in their report on the company's annual accounts whether the information given in the directors' report is consistent with those accounts.	The present requirements do not include a specific certification of environmental information, other than that usually provided by the financial auditors of the firm.	Providing specialized assurance for environmental reports is not required, but is recommended.

Table 2: Scoring sheet of environmental information related to IAS-IFRS

Items	**IAS/IFRS with direct influence on items**	**Monetary information**	**Descriptive information**
1. Intangible assets with exploration of mineral resources	IFRS 6, IAS 36		
2. Emission rights assets	IAS 38, IAS 36 IFRIC 3		
3. Concessions, licenses, trademarks and similar items	IAS 38, IAS 36		
4. Other intangible assets	IAS 38, IAS 36		
5. Tangible assets*	IAS 16, IAS 36		
6. Tangible assets with exploration of mineral resources	IFRS 6, IAS 36		
7. Inventories (waste)	IAS 2		
8. Environmental provisions (Provision for dismantling, removal of assets and the site restoration, Provision for CO2 emissions, Provision for insurance, environmental litigates, etc.) *	IAS 37 IFRIC 5 IFRIC 6 IFRIC 1 IFRIC 3		
9. Emission rights governmental grant	IAS 20, IFRIC 3[(1)]		
10. Fines and taxes for environmental purposes	IAS 37		
11. Other environmental expenses*	IAS 8, IAS 38, IFRS 6		
12. Contingent liabilities and assets*	IAS 37		

Notes to Table 2:

The overall disclosure index (overall score) is based on the 12 items listed in the table. The restricted score is based on the 4 items marked with an asterisk (*).

Table 3: Sample description

	France	Germany	United Kingdom	Total per industry
Basic Materials (BM)	6	10	8	24
Technology (Tech)	3	4	4	11
Healthcare (Health)	3	6	3	12
Industrials (Indus)	18	8	13	39
Cyclical Consumer Goods and Services (CCGS)	11	7	10	28
Total per country	41	35	38	114

Table 4: Number of firms providing environmental information in compliance with IAS/IFRS

Items	**Germany**	**France**	**UK**	**Descriptive**	**Monetary**	**Total**
1. Intangible Assets with exploration of mineral resources	0	3	4	6	1	7
2. Emission rights assets	2	9	2	9	4	13
3. Concessions, licenses, trademarks and similar items	2	1	0	1	2	3
4. Other intangible assets	1	0	0	1	0	1
5. Tangible assets	0	4	6	7	3	10
6. Tangible Assets with exploration of mineral resources	1	4	8	8	5	13
7. Inventories (waste)	0	1	1	2	0	2
8. Environmental provisions	35	23	35	49	44	93
9. Emission rights governmental grant	0	8	0	6	2	8
10. Fines and taxes for environmental purposes	0	1	2	3	0	3
11. Other environmental expenses	4	14	6	16	8	24
12. Contingent liabilities and assets	5	11	8	20	4	24
Total	50	79	72	128	73	201

Table 5: Breakdown of sampled firms by number of environmental items covered

Panel A: Descriptive information

Breakdown of firms by number of items					
# of items	France	Germany	UK	Environmentally non-sensitive firms	Environmentally sensitive firms
6	1	0	0	0	1
5	0	0	0	0	0
4	2	1	0	1	2
3	0	0	0	0	0
2	3	2	7	2	10
1	8	13	10	22	9
0	27	19	21	56	11
Total	41	35	38	81	33
Proportion of firms by number of items					
# of items	France	Germany	UK	Environmentally non-sensitive firms	Environmentally sensitive firms
3 to 6	0.073	0.029	0.000	0.012	0.091
1 to 2	0.268	0.429	0.447	0.296	0.576
0	0.659	0.543	0.553	0.691	0.333

Panel B: Monetary information

Breakdown of firms by number of items					
# of items	France	Germany	UK	Environmentally non-sensitive firms	Environmentally sensitive firms
7	1	0	0	0	1
6	0	1	1	0	2
5	4	0	1	1	4
4	0	0	2	0	2
3	3	0	5	4	4
2	4	4	4	7	5
1	7	15	6	19	9
0	22	15	19	50	6
Total	41	35	38	81	33
Proportion of firms by number of items					
# of items	France	Germany	UK	Environmentally non-sensitive firms	Environmentally sensitive firms
6 to 7	0.024	0.029	0.026	0.000	0.091
3 to 5	0.171	0.000	0.211	0.062	0.303
1 to 2	0.268	0.543	0.263	0.321	0.424
0	0.537	0.429	0.500	0.617	0.182

Table 6: Descriptive statistics of disclosure scores

Panel A: All disclosures						
	Sensitive firms (73) - Overall score (max = 12)			***Sensitive firms (73) - Restricted score (max = 4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	4.70	2.43	4.44	2.90	2.07	2.89
Median	4.00	2.00	5.00	3.00	2.00	3.00
Standard deviation	4.24	2.44	3.35	2.56	1.54	1.54
	Non-sensitive firms (41) - Overall (max =12)			***Non-sensitive firms (41) - Restricted (max =4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	1.03	0.76	1.00	0.74	0.71	0.93
Median	0.00	0.00	0.00	0.00	0.00	0.00
Standard deviation	1.87	1.09	1.54	1.15	1.01	1.38
Panel B: Monetary disclosures						
	Sensitive firms (73) - Overall score (max = 12)			***Sensitive firms (73) - Restricted (max = 4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	3.00	1.36	3.11	1.70	1.14	1.89
Median	3.00	1.00	3.00	2.00	1.00	2.00
Standard deviation	2.49	1.44	1.76	1.42	0.77	1.05
	Non-sensitive firms (41) - Overall (max =12)			***Non-sensitive firms (41) - Restricted (max =4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	0.68	0.48	0.57	0.48	0.43	0.54
Median	0.00	0.00	0.00	0.00	0.00	0.00
Standard deviation	1.14	0.68	0.92	0.72	6.00	0.84
Panel C: Descriptive disclosures						
	Sensitive firms (73) - Overall score (max = 12)			***Sensitive firms (73) - Restricted (max = 4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	1.70	1.07	1.33	1.20	0.93	1.00
Median	2.00	1.00	2.00	1.00	1.00	1.00
Standard deviation	2.00	1.07	0.87	0.23	0.83	0.71
	Non-sensitive firms (41) - Overall (max =12)			***Non-sensitive firms (41) - Restricted (max =4)***		
	France	Germany	United Kingdom	France	Germany	United Kingdom
Mean	0.35	0.29	0.43	0.26	0.29	0.39
Median	0.00	0.00	0.00	0.00	0.00	0.00
Standard deviation	0.80	0.46	0.63	0.51	0.46	0.57

Table 7: Regression results on the determinants of IFRS environmental disclosures

$$DISC = \alpha_0 + \alpha_1 LnTA + \alpha_2 EE + \alpha_3 FR + \alpha_4 GER + \varepsilon$$

	Overall score		Restricted score	
	Monetary disclosures	Descriptive disclosures	Monetary disclosures	Descriptive disclosures
α_0	-2.663 (-1.795) *0.08*	-0.767 (-0.730) *0.47*	-1.236 (-1.295) *0.20*	-0.717 (-0.952) *0.34*
α_1	0.225 (2.318) *0.03*	0.077 (1.127) *0.26*	0.122 (0.950) *0.05*	0.071 (1.451) *0.15*
α_2	1.739 (6.277) *0.00*	0.967 (4.93) *0.00*	1.009 (5.656) *0.00*	0.695 (4.94) *0.00*
α_3	-0.146 (-0.475) *0.64*	-0.035 (-0.17) *0.87*	-0.193 (-0.976) *0.33*	-0.117 (-0.748) *0.45*
α_4	-0.839 (-2.622) *0.01*	-0.271 (-1.197) *0.24*	-0.420 (-2.040) *0.04*	-1.172 (-0.41) *0.29*
α_3-α_4	0.693 (5.262) *0.03*	0.236 (1.224) *0.27*	0.227 (1.366) *0.24*	0.055 (0.13) *0.72*
adjusted R2 F	0.308 (13.48) *0.00*	0.181 (7.16) *0.00*	0.252 (10.43) *0.000*	0.190 (7.56) *0.00*

Notes to Table 7: DISC is the disclosure score. LnTA is the natural logarithm of total assets. EE is a dummy variable that equals 1 if the firm is environmentally exposed, 0 otherwise. FR and GER stand for France and Germany respectively. T or F statistics are in parentheses. P-values are in italics.

Table 8: Regression results on the determinants of IFRS environmental disclosures conditional to environmental exposure

$$DISC = \beta_0 + \beta_1 LnTA + \beta_2 FR + \beta_3 GER + \beta_4 EEXFR + \beta_5 EEXGER + \beta_6 EEXUK + \varepsilon$$

	Overall score		Restricted score	
	Monetary disclosures	Descriptive disclosures	Monetary disclosures	Descriptive disclosures
β_0	-2.294 (-1.494) *0.14*	-1.070 (-0.968) *0.33*	-1.143 (-1.134) *0.26*	-1.029 (1.301) *0.20*
β_1	0.195 (1.889) *0.06*	0.102 (1.377) *0.17*	0.114 (1.6870) *0.095*	0.097 (1.819) *0.07*
β_2	-0.178 (-0.487) *0.63*	-0.222 (-0.845) *0.40*	-0.218 (-0.91) *0.36*	-0.276 (-1.464) *0.14*
β_3	-0.387 (-0.967) *0.34*	-0.295 (-1.026) *0.31*	-0.278 (-1.059) *0.29*	-0.252 (-1.222) *0.22*
β_4	2.363 (-5.080) *0.00*	1.3671 (4.081) *0.00*	1.240 (4.062) *0.00*	0.962 (4.01) *0.00*
β_5	0.910 (2.062) *0.04*	0.801 (2.522) *0.01*	0.731 (2.5256) *0.01*	0.657 (2.890) *0.00*
β_6	*2.212* (3.950) *0.00*	*0.687* (1.776) *0.08*	*1.109* (3.145) *0.02*	*0.4000* (1.445) *0.15*
β_2-β_3	*0.209* (0.332) *0.56*	*0.073* (0.081) *0.78*	*0.060* (0.065) *0.78*	*-0.024* (0.017) *0.89*
β_4-β_5	*1.458* (5.55) *0.02*	*0.566* (1.512) *0.22*	*0.509)* *(1.458* 0.22	*0.305* (0.852) *0.36*
β_4-β_6	*0.156* (0.111) *0.76*	*0.680* (1.729) *0.19*	*0.131* (-0.084) *0.78*	*0.562* (2.314) *0.13*
β_5-β_6	*-1.302* (3.000) *0.08*	*0.114* (0.05) *0.82*	*-0.378* (-0.682) *0.41*	*0.257* (0.498) *0.48*
adjusted R2 F	0.332 (16.79) *0.00*	0.182 (5.15) *0.00*	0.249 (7.19) *0.000*	0.193 (5.45) *0.00*

Notes to table 8: DISC is the disclosure score. LnTA is the natural logarithm of total assets. EE is a dummy variable that equals 1 if the firm is environmentally exposed, 0 otherwise. FR and GER stand for France and Germany respectively. T or F statistics are in parentheses. P-values are in italics.