# THE FIRST IMPACT OF EU REGULATION ON NON-FINANCIAL DISCLOSURE: AN EXPLORATORY ANALYSIS IN THE OIL & GAS SECTOR

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## Abstract

Directive 2014/95, in force since 2017, is the first European step that requires companies to provide mandatory non-financial information (NFI). The regulation concerns sustainability information with the policy goal of increased accountability and comparability among European "public interest entities" on that matters. According to the framework of Regulatory Integrated Assessment (RIA), the study compares the disclosure before and after the Directive application considering the content (what) and the location of the information in companies' reports (where). Content analysis is applied to both financial and non-financial reports to create a disclosure scoring index and an overlapping one. Thus to compare the ex-ante analysis to the ex-post by a quantitative scoring system. The research contributes to the debate on the regulatory policy evaluation examining whether the ex-post assessment reveals a change in companies' reporting behaviour about non-financial information, i.e. if the regulation achieves its policy objectives of improving sustainability disclosure. Findings show differences between the ex-ante and the ex-post phase: after the enforcement of the Directive there is an increase in the degree of disclosure (what) and a reduction in the level of overlap (where), with more companies choosing "embedded" reports. These results are a preliminary step in the regulatory policy evaluation and they answer to the request of more studies on the ex-post implementation review of regulation.

**Keywords:** Non-financial Information, Regulatory Integrated Assessment, Directive 2014/95, Oil and Gas

**Authors' individual contribution:** Conceptualization – C.C. and L.R.; Literature Review – L.R.; Methodology – M.V.; Data curation – C.C. and C.T.; Writing – Original Draft – C.C. and L.R.; Writing – Review & Editing – M.V. and C.T.

## 1. INTRODUCTION

In October 2014 the European Union issued Directive 2014/95, known as the Directive on Disclosure of Non-financial Information for Large Companies and Groups (all "public interest entities" with more than 500 employees). The Directive, in force since 2017, amended the previous Directive 2013/34 that defined the Framework of the Management Commentary and required large-sized companies to draft and publish a non-financial statement (NFS) including CSR disclosure also known as sustainability disclosure. This information has to be disclosed in a structured way, either in a section of the financial report or by means of a separate report.

The framework of this study is the Regulatory Integrated Assessment (RIA), that is "as a tool that does not only improve the quality of legislation but also helps to better consider consequences of the legislation on three dimensions: the economy, environment and society" (OECD, 2012; EU, 2009).

In particular, in the sphere of accounting regulation (OECD, 2014a; Radaelli & Oliver, 2012), the study focuses on the Directive 2014/95 in order to understand if this regulation has an impact on "what" and "where" companies decide to report their non-financial information. The analysis consists of examining the choices of companies in terms of content (what) and location (where) of non-financial disclosure in the first year of application of that regulation: 2017.

These findings are then compared with the equivalent one obtained in the ex-ante phase (2014) (Carini et al., 2018). This comparison could be considered a first assessment of the impact of the Directive on the non-financial reporting systems (a preliminary post-implementation review).

According to RIA framework, the aim of the study is contributing to the debate on the regulatory policy evaluation (Radaelli, 2014) examining whether the Directive could achieve its policy objectives of improving sustainability disclosure, relating the ex-ante and the ex-post phase.

The empirical analysis has been carried out in the oil and gas sector since it is considered evolved in terms of disclosure (Dilling, 2016; Carini & Chiaf, 2015; Szczepankiewicz & Mucko, 2016). According to the IA, if the regulation could impact on this sector, it would be the same for less-informed ones.

To this end, the study proposes a research methodology that will be replicable also in other sectors and that is the same as the ex-ante analysis (Carini et al., 2018). The paper, therefore, sets out to reply to these RQs:

*RQ1*: Has there been a change in the degree of disclosure (i.e. the content) of non-financial information after the introduction of the Directive (what)?

*RQ2*: Has there been a change in the location of non-financial information in the reporting system after the introduction of the Directive (where)?

The framework of the study is described in Section 2, while the methodology developed to analyze the communicative behaviour of companies is explained in Section 3. Section 4 describes the findings. The study ends with discussion, conclusions and an overview of future achievable research areas by applying the research method adopted in this paper (Section 5).

## 2. LITERATURE REVIEW

The framework of the paper is the Regulatory Impact Assessment (RIA) that is defined as a "policy tool used to examine and measure the likely benefits, costs and effects of new or existing regulation" (OECD, 2017, p. 14). The common objective of RIA is to reduce the negative-unintended effects of policy, through the analysis of the decision-making processes that lead to that regulation. In fact, "in many countries, RIA is strongly related to a 'better regulation' agenda that aims to improve the quality of regulation, reduce administrative burden and make a positive contribution to economic competitiveness" (Hertin et al., 2009). The "integrated" assessment is due to the broadening scope of this evaluation: it now covers different dimensions of sustainable development "the economy, environment and society" (OECD, 2012; EU, 2009).

More in detail RIA is related to the process dimension and the outcome of policy regulation. In this regard, the OECD suggests implementing RIA as a process (OECD, 1995; 2007). The RIA process is a rational set of policy phases that contributes to evaluating alternatives and, essentially, aims to improve the capacity of policy-makers (Keyworth & Yarrow, 2006). It consists of at least six steps:

1. Identify the problem and define policy context and objectives.
2. Identify all possible regulatory (or non-regulatory, i.e., guidelines) options.
3. Identify and measure the expected impacts (costs and benefits) of the regulation.
4. Public consultation.
5. Design regulation including enforcement, compliance, and monitoring mechanisms to evaluate the effectiveness and efficiency of the regulation.
6. Monitor regulation and reporting (Parker & Kirkpatrick, 2012; Allio, 2010).

The ex-ante assessment is made of points from 1 to 5 where the goal is to understand the need for a new regulatory tool. Instead, the ex-post analysis refers to point 6 (post-implementation review).

This last point is still little explored and the factual findings are limited. Post-implementation reviews are carried out in many countries but their number and performance are rarely measured systematically (OECD, 2014a).

On these aspects, the OECD launches an appeal to the need to institutionalize the assessment process of the regulation (OECD, 2014a; 2014b).

According to the RIA framework, firstly the study describes the analysis of the regulatory process that leads to the Directive to understand the regulation's aims and its specific requirements.

All documents published by the EU Commission on this process were studied (EC, 2011a; 2011b; 2013a; 2013b). The outcomes identify the decision-making processes in the ex-ante phase and they are summarized as the following (Carini et al., 2018):

- Problem definition: a) inadequate transparency of non-financial information (both in terms of quantity and quality information); b) lack of diversity in the board.
- Policy objectives: a) increase the number of companies reporting on sustainability issues; b) increase the quality of information; and c) enhance board diversity.
- Regulatory options. The study of the Commission Services provides the different impacts of these possible policy options: a) no policy change; b) Non-financial Statement in the Annual Report with minimum requirements on the content; c) detailed reporting (mandatory, report or explain, voluntary); and d) creation of an EU Reporting Standard.
- Analysis of the impact assessment of the regulatory policy chosen: a) expected benefit; b) estimated costs (derived from the external study); and c) other impacts (i.e., social, environmental, etc.).
- Public consultations (public consultation on disclosure of non-financial information; multi-stakeholder roundtables; the constitution of expert group; external study on the topic).
- Design of the regulation.
- The last step of the RIA will monitor and evaluate the Directive's implementation in an ex-post analysis.

The first year of implementation was 2017, and, at the time, there are no EU ex-post studies on that. Thus the present work, according to the RIA Framework, applies the ex-post assessment to clarify if the regulation could have had an impact on the behaviour of companies regarding, firstly, the content (what) and, secondly, the location (where), of the non-financial information disclosed. The findings of that are a preliminary step in the Regulatory Policy Evaluation and they could be seen as a "real impact factor"/contribution of academia to the policy process.

In the ex-ante phase (steps from 1 to 5) the regulatory process has examined the companies' behaviour on non-financial disclosure in Europe.

The policy objectives (step 1) were asking firms to disclose non-financial information, including Corporate Social Responsibility (CSR) disclosure, in order to clearly explain the actual impact of business on society and on medium–long term global development. Thus, the regulation will lead firms to think about their behaviour and it may inspire a change in the direction of a more sustainable way of doing things.

According to Baker et al. (2015), this study considers CSR as a tool to understand "whether reports accurately represent organizational activities".

Since 1980 many surveys have been dealing with the comprehensiveness of the Sustainability Reporting (SR) (Montecchia et al., 2016) besides the various initiatives promoted at the international level to define non-mandatory standards on CSR subjects. Some examples are given below (Szczepankiewicz & Mucko, 2016): IFAC Sustainability Framework 2.0; ESG Framework and KPIs for ESG; SustainAbility Global Reporters Program; AccountAbility's AA1000 Standards; ISO 26000 Guidance on social responsibility; IRCSA Framework for Integrated Reporting; Guidelines of Global Reporting Initiative (GRI) Standards; and The International Framework Integrated Reporting of International Integrated Reporting Council (IIRC).

In the literature, academics have analyzed the content of the sustainability disclosure (what) under several points of analysis and using different research methods (i.e. disclosure index, KPI, quality, content analysis), as:

- the level of detail of the CSR information and the determinants of disclosure (Gamerschlag et al., 2010; Roca & Searcy, 2012);
- the most emphasized areas of interest (i.e., environmental, social, diversity) and space set aside for the main variables (Idowu & Towler, 2004);
- the visual content of the SR, in terms of images and photos (visual communication) (Rämö, 2001);
- the compliance of the SR with the previously mentioned guidelines (Boiral, 2013) or compliance with specific national legislation i.e., the French instance (Chauvey et al., 2015; Cho et al., 2015);
- the quality of the disclosed information and of the SR (Habek & Wolniak, 2016; Sethi et al., 2017);
- the relationship between the availability of data on CSR and firms' CSR reputation (Hughey & Sulkowski, 2012).

Nevertheless, according to Shabana, Buchholtz, and Carroll (2016), a new research area that has to be developed is the analysis of the role and influence of the government (in that case, the European Union) on institutionalization of the sustainability disclosure, consisting of the evaluation of whether the formal coercive pressure (DiMaggio & Powell, 1983) modifies, and how, the attitude of companies towards the SR. Additionally, Hahn and Kühnen (2013) indicate the role of the regulation on sustainability matters as a future research area to be examined in depth. Furthermore, Sulkowski and Waddock (2014) state that there will be benefits for firms from CSR requiring reporting throughout regulation and materiality. Finally, Habek et al. (2016), in their analysis on the quality of SRs in some European countries, come to the conclusion that where the national legislation imposes the legal obligation of sustainability disclosure, this will improve the quality of the SR. Also, other few studies describe the same findings of the positive impact of regulation on CSR disclosure (Jackson et al., 2019; Kinderman, 2019; Ioannou & Serafeim, 2017; Wang et al., 2018). Thus, the regulation on sustainability matters is a key feature for future research.

Then the Regulatory Policy Evaluation for the Directive 2014/95 on CSR disclosure could improve this area of research within the ex-post analysis.

With regard to the location of the information (where), there are various instruments available to communicate the sustainability information. In the literature, scholars initially studied the non-financial information stated in the financial reports (FR) (Gray et al., 1995; Sobhani et al., 2012). Subsequently, research focused on stand-alone SRs and, finally, attention was directed to the integrated financial statements and the relations between the reporting systems (financial reports and sustainability reports) (Carini & Chiaf, 2015; Sobhani et al., 2012; Patten, 2013).

Nowadays the communication of environmental and social information occurs not only through the SRs, but also through media channels, social media, and web sites (Montecchia et al., 2016). Nevertheless, for the purposes of this research, due to the requirements of the Directive, the focus of the analysis is the written report (financial and sustainability reports). The written reports are indeed the preferred instrument of the stakeholders (Kim et al., 2015). This is because, being formal tools, they are characterized by higher accuracy in their preparation and they are the result of accountability systems which very often envisage recourse to national or international standards and are, therefore, considered more reliable. A large number of them are then submitted to external auditing.

In this context of different reporting systems (FR and SR) and with a proliferation of different documents (some enterprises have a separate report, others provide an embedded one), the risk is that the communication may not be transparent and clear, i.e. the decoupling of non-significant information, thus reducing the clarity of the documents for users, above all external ones, and making the comparability of information more complicated.

In fact, the Directive under examination underlines that the objectives of the regulatory intervention, as regards the location of the information, focus on the accessibility of the non-financial information to the external users (i.e., an easy way) and it promotes accounting harmonization on sustainability topics.

The research, starting from the state-of-the-art of where firms disclose sustainability information in the ex-ante phase, aims to verify if, in the ex-post period (2017), the behaviour of companies about where they decide to put non-financial information has changed or not.

Regarding the regulatory options (step 2), the European context was characterized by different situations among member states. As a matter of fact, in most European countries there were no legal SR requirements, whereas other countries had introduced some disclosure requirements regarding sustainability in their national legislation; some examples were France, UK, Sweden, and Denmark, where a regulatory sustainability disclosure obligation existed.

In this European scenario, the purpose of the Directive 2014/95 is to harmonize the sustainability reporting system at European level, both in terms of information to be disclosed (what) and how it must be arranged (where).

The early stage of the Directive 2014/95 was the Modernization Directive of 2003 (FEA, 2016) but, according to a survey conducted by the Federation of European Accountants in 2008, this early regulation did not improve the sustainability disclosure in financial reports (FEA, 2008) because it was perceived as a "non-coercive" rule. Thus, in the Directive 2014/95, the regulatory choice was to require as mandatory the disclosure of non-financial information for "public interest entities" that have a minimum number of 500 employees.

Moreover, among the regulatory options in the RIA process, the policy choice was to required a non-financial statement with a minimum level of content (what) because "the undertakings affected will be required to disclose information on several non-financial matters, to the extent necessary for an understanding of the undertaking's development, performance and position, and of the impact of its activities" (EU, 2014). The minimum level of non-financial information should concern the following matters or topics:

- environmental;
- social and employee;
- respect for human rights;
- anti-corruption and bribery;
- diversity;
- business model.

For each one of the topics companies shall provide:

a) the description of the policies, including due diligence processes, implemented;

b) the outcomes of these policies;

c) the risks relating to those matters and how the company manages those risks; and

d) the non-financial key performance indicators are relevant to the particular business. For any information envisaged by the Directive, the principle is "comply or explain".

Finally, the concept of materiality is the basis of non-financial disclosure, which means "A company should focus on providing the breadth and depth of information that will help stakeholders understand its development, performance, position and the impact of its activities. The non-financial statement is also expected to be concise, and avoid immaterial information" (EU, 2014; EC, 2017).

Regarding the location of information (where), the Directive entails the non-financial statement to be included in the management report. However, this claim is not final because the Directive also makes it possible to use a separate report. The Directive allows two reporting systems to be maintained (FR and SR), with a reference in the management report to the publication of the SR. On this point, the Guidelines clarify that this approach is based on the connectivity of information.

According to the RIA framework, the study focuses on the ex-post analysis to evaluate if the regulation has changed the companies' behaviour on what and where they communicate non-financial information.

## 3. RESEARCH METHOD

### 3.1. The methodology applied

First of all, we analyzed different documents and studies with the purpose of defining the information requested by the Directive. In this way, we identified the theoretical reference framework that European firms have to observe in the field of non-financial disclosure.

At the first stage, we took into consideration The EU Directive 2014/95 and the specific requirements in terms of disclosure (what) and location of the information (where). Owing to the low level of specification of the EU Directive, we had to analyze other studies and international guidelines. More in detail, the GRI G4 Guidelines (FEA, 2016; 2008) and the IPIECA/API (EU, 2014) were considered. These guidelines are recognized by the EU Legislator as important references for compliance with the Directive and are used in other studies (EC, 2017; Carini & Chiaf, 2015). Furthermore, the guidelines are also widely diffused by extractive petroleum companies for the sustainability report. Finally, previous research on the extractive petroleum companies (PricewaterhouseCoopers, 2002; Quagli & Teodori, 2005; SEC, 2005; CSA, 2006; Carini, 2009; WICI, 2017) was analyzed with the purpose of qualifying the information on the business model required by the EU Directive (Paragraph 2.2, letter f).

To study the contents of the reports (what) we used a disclosure-scoring system (Robb et al., 2001; Vanstraelen et al., 2003). This technique is considered a partial form (Beattie et al., 2004) of content analysis (Kassarjian, 1977; Krippendorff, 2013).

More in detail, the research method consisted of various phases (Robb et al., 2001; Bendotti et al., 2013):

1) We analyzed the EU Directive 2014/95 and the previous studies and official documents mentioned above.

2) In the light of the findings of the previous study phase, we identified the information categories and sub-categories.

3) We constructed the disclosure-scoring sheet and defined the rules for identification of the individual variables related to categories and sub-categories.

4) Subsequently; two researchers applied the investigation technique on the same sample of financial reports, considering the sustainability section and the corporate governance section, and the SR, by highlighting any differences in the findings. In this pre-analysis phase, with the purpose of making the behaviour of the researchers as similar as possible, some amendments had to be made to the basic scheme, and only after achieving 90% identity between the results did we actually start to analyze the report, which represents the fifth phase of our research method.

5) More in detail we analyzed the reports and applied the detailed rules defined in the pre-analysis phase, by attributing the score 0/1 to each variable and considering all equally important in terms of disclosure, in order to achieve "non-weighted"

medium disclosure indices, unlike the methods adopted by many other authors (Botosan, 1977). However, our choice, used also by other academics (Cooke, 1989), was justified considering that: firstly, the establishment of "weighted" indices would have introduced subjective additional elements in the analysis; besides, at present, there seems to be no generally accepted classification to report the most important information disclosed by the firms. The sentence represents the Code Unit for classifying the variables. In the last phase.

6) We identified the data and processed the results with the creation of a disclosure index and an overlapping index, with the scope of measuring the level of information and the level of overlap between the financial report and the sustainability report. In accordance with previous studies (Carini et al., 2018; Carini & Chiaf, 2015) the disclosure index is calculated for the financial report and for the sustainability report:

*Disclosure index*

$$\frac{\sum_{i=1}^{n} \frac{x_i}{X}}{N} \tag{1}$$

where: $x_i$ = is the $x$ variables disclosed in the report by the $i$ company (financial report or sustainability report); $X$ = is the maximum number of variables (in our case 148); and $n$ = is the company analyzed; $N$ = is the number of companies selected.

*Overlapping index*

$$\frac{\sum_{i=1}^{n} \frac{y_i}{x_i}}{N} \tag{2}$$

where: $y_i$ = is the variables disclosed jointly in the financial report and in the sustainability report by the $i$ company (financial report or sustainability report); $x_i$ = is the $x$ variables disclosed in the reports by the $i$ company (financial report or sustainability report); $n$ = is the company analyzed; $N$ = is the number of companies selected.

The information categories are established by the Directive (Table 1): 1) environmental (24 variables); 2) employee (28 variables); 3) social (nine variables); 4) human rights (six variables); 5) anti-corruption and bribery (nine variables); 6) diversity (three variables); and 7) business model (69 variables). Categories from 1 to 5 are subdivided into the following four sub-categories: a) policy pursued; b) outcome; c) risks; and d) non-financial key performance indicators, whereas category No. 6 is subdivided into the three sub-categories required by the Directive: a) policy pursued; b) outcome; and c) background. The business model has no sub-categories.

The total individual variables used for the analysis of financial reports and sustainability reports (Carini & Chiaf, 2015) amount to a total of 148 (see Appendix 1 and Appendix 2 for examples).

Several studies on the disclosure indices are based on the general rules of content analysis. With reference to these indices, the main question is to estimate the relations between quantity and quality of the disclosure. Indeed, some authors affirm "although important, assessment of the quality of the information is very difficult" (Botosan, 1977). In our research, we shall not investigate the disclosure quality (Diamond & Verrecchia, 1991) but the level of disclosure (Marston & Shrives, 1991), by taking into consideration both the completeness of company information (what) and the location of information (where), by underlining the overlapping level between the two reports examined. In particular, the completeness is measured by the presence of the variables in the reports analyzed, the overlap is measured by the joint presence of the same information in both FR and SR.

**Table 1.** The disclosure model

| *Categories* | *Subcategories* | *N. var.* | *Guidelines* |
|---|---|---|---|
| **Environmental** | | **24** | GRI G4 EN 1 - 34 |
| | Policy pursued | 3 | |
| | Outcome | 5 | |
| | Risks | 4 | |
| | Non-financial KPI | 12 | |
| **Employee** | | **28** | GRI G4LA 1 – 1; 1GRI G4LA 13-16 |
| | Policy pursued | 10 | |
| | Outcome | 6 | |
| | Risks | 5 | |
| | Non-financial KPI | 7 | |
| **Social** | | **9** | GRI G4SO 1 -2; GRI G4 SO 9 - 11 |
| | Policy pursued | 1 | |
| | Outcome | 6 | |
| | Risks | 1 | |
| | Non-financial KPI | 1 | |
| **Human Rights** | | **6** | GRI G4 HR 1 - 12 |
| | Policy pursued | 2 | |
| | Outcome | 1 | |
| | Risks | 2 | |
| | Non-financial KPI | 1 | |
| **Anti-corruption and bribery** | | **9** | GRI G4 SO 3- 8 |
| | Policy pursued | 2 | |
| | Outcome | 1 | |
| | Risks | 5 | |
| | Non-financial KPI | 1 | |
| **Diversity** | | **3** | GRI G4 LA 12 |
| | Policy pursued | 1 | |
| | Outcome | 1 | |
| | Background | 1 | |
| **Business model** | | **69** | Literature review |
| **Total** | | 148 | |

### 3.2. Research sample and documents analysed

Oil and gas companies have been considered because of their special focus to the financial and sustainability disclosures.

According to some authors (Shabana et al., 2016): "Member firms in industries with higher environmental impact would be more scrutinized by the general public. To be responsive to such challenges, they would be more likely to utilize sustainability report as a tool to manage their legitimacy challenges". Thus, these companies, owing to the relevant social and environmental externalities they generate, publish sustainability reports, voluntarily and in addition to the financial report. For these reasons, the oil and gas sector will have a great deal of information on sustainability disclosure (Hughey & Sulkowski, 2012).

In addition, the oil and gas companies, are frequently under the lens of the bodies having powers in accounting regulation (SEC, 2005; AICPA, 1994) and, as these companies are active in different geographical areas, are subject to different national disclosure regulations.

It follows that the sector enables us to test the requirements of the Directive in terms of completeness and overlapping, with the purpose of applying the IA framework in a context that could be considered mature on the level of communication (Dilling, 2016).

We considered only one sector in coherence with the concept of materiality, as also stated in the Guidelines: "Similar issues are likely to be material to companies operating in the same sector, or sharing supply chains" or "It may, therefore, be appropriate to directly compare relevant non-financial disclosures among companies in the same sector".

We carried out an exploratory study on the European extractive petroleum companies listed in the DJSTOXX 600 Europe index from 30 January 2019. DJSTOXX 600 Europe refers to the largest listed oil companies and ensures wide territorial coverage with specific reference to the European context. The index, therefore, ensures objectivity in the comparison of results. Finally, this index has already been used in previous studies (Carini & Chiaf, 2015). For the purpose of our research, the companies must have the financial and sustainable report published both in 2014 and 2017 (Table 2). The only company excluded is the Polish PGNiG owing to the unavailable reports in 2014.

**Table 2.** The companies analyzed

| ***Companies*** | ***Country*** |
|---|---|
| BP | GB |
| ENI | Italy |
| Galp Energia | PT |
| Lundin Petroleum | SE |
| OMV | AT |
| Repsol YPF | ES |
| Royal Dutch Shell | GB |
| Statoil | NO |
| Total | FR |
| Tullow Oil | GB |

The analysis was made in 2014 (Carini et al., 2018) and 2017 FR and SR published on the companies' web sites. We considered the year 2014 because it is the publication year of the Directive (before the national transposition) and in coherence with the IA framework this allows application of an ex-ante impact assessment of the Directive. The year 2017 was instead selected because the laws, regulations and administrative provisions of the individual Member States, which contain the Directive, apply from 1 January 2017 or, however, during the year 2017. The reports published in 2017 are the first to suffer the effects of the new Directive, thus an ex-post impact assessment is possible. To assure homogeneity, we have checked that all the SRs have been drawn up according to the same guidelines (GRI G4).

## 4. FINDINGS

The comparison between the results of 2017 (ex-post phase) and those of 2014 (ex-ante phase), detailed in our previous paper (Carini et al., 2018), reveals an overall increase of non-financial information and a reduction of the overlap (Table 3 and 4).

The first observation concerns the decision taken by four companies to draw up a single report (embedded report) with financial and non-financial information, instead of two separate reports (financial and sustainability) but they are not Integrated Report as stated by IIRC.

A first consequence is that the companies that opted for the preparation of a single report gained a greater degree of completeness of non-financial information compared to that have two reports. The most relevant differences between these two approaches regard the following matters: employee, especially for risks and non-financial KPIs, anti-corruption and bribery, especially for outcome, and diversity, where the embedded approach reaches a full disclosure for policy and outcome. The single report approach, in all the above categories, has a higher level of disclosure.

Thus, these specific matters (employee and anti-corruption) are relevant for both the financial and sustainability reporting (i.e. employee in FR 0.52 vs. SR 0.55; anti-corruption in FR 0.37 vs. SR 0.57) compared to other categories where there is more distance between FR and SR. That shows that when this kind of information is disclosed one-time, in an embedded report, the overall level of clearness and completeness is higher.

However, even companies that have chosen to separate non-financial information by distinguishing it in the two reports have improved the degree of completeness of information after the enforcement of the Directive.

As in 2014, also in 2017, the first five categories (Environmental, Employee, Social and Human Right, Anti-corruption), in the two reports approach, are better analyzed in the sustainability report, while the theme of diversity and the description of the business model are well present in the financial report.

Going deeply in the comparison between 2014 and 2017, the first result is that environmental, employee, social and diversity categories show a higher level of completeness compared to 2014, instead, human rights category reveals a decrease in the disclosure. The anti-corruption and bribery are substantially the same in the two reports approach, higher in the embedded one.

The environmental disclosure is the main theme for oil and gas firms, since years, so the impact of the new Directive is not particularly high, because yet the 2014 level was good (2014: 0.38 vs. 2017: 0.48). Nevertheless the full compliance for the policy sub-theme in the SR (1.00) is a key point that explains that the environmental strategy of firms is seen as a goal for sustainable development (materiality concept). Another interesting finding is the cut of overlap in this category (2014: 0.39 vs. 2017: 0.21) that revealing a more structured reporting process, also according to Directive's guidelines.

**Table 3.** Ex-ante phase results

| *Categories* / *Sub-categories* | *Completeness* *2014 Financial Report* | | *Completeness* *2014 Sustainability Report* | | *Overlap (2014)* | |
|---|---|---|---|---|---|---|
| | *Mean* | *Std. Dev.* | *Mean* | *Std. Dev.* | *Mean* | *Std. Dev.* |
| **Environmental** | **0:33** | **0:13** | **0:48** | **0:14** | **0:39** | **0:12** |
| Policy pursued | 0:53 | 0:32 | 00.83 | 0:24 | 00.63 | 0:32 |
| Outcome | 0:12 | 0:14 | 0:32 | 0:21 | 0:40 | 0:14 |
| Risks | 00.70 | 0:23 | 0:50 | 0:31 | 0:36 | 0:24 |
| Non-financial KPI | 0:23 | 0:18 | 0:44 | 0:16 | 0:33 | 0:17 |
| **Employee** | **0:42** | **0:10** | **0:48** | **0:11** | **0:39** | **0:04** |
| Policy pursued | 0:44 | 0:13 | 0:55 | 0:12 | 0:48 | 0:07 |
| Outcome | 0:32 | 0:23 | 0:45 | 0:14 | 0:32 | 0:14 |
| Risks | 0:52 | 0:19 | 0:34 | 0:16 | 0:23 | 0:16 |
| Non-financial KPI | 0:41 | 0:13 | 0:51 | 0:02 | 0:44 | 0:12 |
| **Social** | **0:19** | **0:16** | **0:52** | **0:16** | **0:21** | **0:15** |
| Policy pursued | 0:10 | 0:32 | 0:20 | 0:42 | - | - |
| Outcome | 0:27 | 0:22 | 00.75 | 0:23 | 0:32 | 0:22 |
| Risks | - | - | - | - | - | - |
| Non-financial KPI | - | - | - | - | - | - |
| **Human Rights** | **0:38** | **0:18** | **0:55** | **0:19** | **0:41** | **0:12** |
| Policy pursued | 00.70 | 0:35 | 00.95 | 0:16 | 00.74 | 0:35 |
| Outcome | 0:30 | 0:48 | 0:10 | 0:32 | 0:33 | 0:58 |
| Risks | - | - | 0:20 | 0:35 | - | - |
| Non-financial KPI | 00.60 | 0:52 | 00.90 | 0:32 | 00.67 | 0:50 |
| **Anti-corruption and bribery** | **0:37** | **0:20** | **0:53** | **0:11** | **0:43** | **0:18** |
| Policy pursued | 0:25 | 0:26 | 0:55 | 0:16 | 0:25 | 0:26 |
| Outcome | 0:30 | 0:48 | 1:00 | 0:52 | 0:29 | 0:49 |
| Risks | 0:46 | 0:27 | 0:54 | 0:13 | 0:51 | 0:23 |
| Non-financial KPI | 0:20 | 0:42 | 0:40 | 0:52 | 0:50 | 0:58 |
| **Diversity** | **0:57** | **0:22** | **0:13** | **0:17** | **0:36** | **0:17** |
| Policy pursued | 0:30 | 0:48 | 0:20 | 0:42 | 00.67 | 0:58 |
| Outcome | 0:50 | 0:53 | 0:20 | 0:42 | 0:40 | 0:55 |
| Background | 00.90 | 0:32 | - | - | - | - |
| **Business model** | **0:48** | **0:09** | **0:16** | **0:06** | **0:16** | **0:04** |
| **Total** | **0:39** | **0:10** | **0:41** | **0:08** | **0:34** | **0:07** |

*Source: Carini et al., 2018.*

*The employee category* is better disclosed in 2017, both in FR than in SR, with a relevant increasing number for embedded report. The behavior of firms reveals an orientation towards more information on outcome and risks. In the embedded approach risks and non-financial KPIs obtained a result of 0.70 compared to 0.52 (FR) and 0.34 (SR) in 2014.

**Table 4.** Ex-post phase results

| *Categories* / *Sub-categories* | *Completeness* *2017 Financial Report* | | *Completeness* *2017 Sustainability Report* | | *Completeness* *2017 Embedded Report* | | *Overlap (2017)** | |
|---|---|---|---|---|---|---|---|---|
| | *Mean* | *Std. Dev.* | *Mean* | *Std. Dev.* | *Mean* | *Std. Dev.* | *Mean* | *Std. Dev.* |
| **Environmental** | **0:41** | **0:19** | **0:58** | **0:11** | **0:57** | **0:11** | **0:21** | **0:12** |
| Policy pursued | 00.61 | 0:14 | 01.00 | - | 00.83 | 0:33 | 0:37 | 0:14 |
| Outcome | 0:30 | 0:28 | 0:50 | 0:28 | 0:40 | 0:37 | 0:13 | 0:22 |
| Risks | 00.71 | 0:37 | 00.63 | 0:21 | 00.69 | 0:13 | 0:30 | 0:32 |
| Non-financial KPI | 0:31 | 0:19 | 0:50 | 0:09 | 0:54 | 0:05 | 0:17 | 0:14 |
| **Employee** | **0,52** | **0,17** | **0,55** | **0,10** | **0,65** | **0,13** | **0,25** | **0,11** |
| Policy pursued | 0,48 | 0,29 | 0,60 | 0,17 | 0,63 | 0,17 | 0,27 | 0,23 |
| Outcome | 0,69 | 0,29 | 0,58 | 0,29 | 0,58 | 0,35 | 0,28 | 0,25 |
| Risks | 0,47 | 0,27 | 0,47 | 0,16 | 0,70 | 0,12 | 0,20 | 0,21 |
| Non-financial KPI | 0,45 | 0,14 | 0,52 | 0,15 | 0,71 | - | 0,24 | 0,07 |
| **Social** | **0,24** | **0,22** | **0,63** | **0,13** | **0,56** | **0,18** | **0,15** | **0,19** |
| Policy pursued | - | - | 0,33 | 0,52 | 0,25 | 0,50 | - | - |
| Outcome | 0,31 | 0,31 | 0,83 | 0,11 | 0,71 | 0,21 | 0,20 | 0,31 |
| Risks | 0,17 | 0,41 | 0,17 | 0,41 | 0,50 | 0,58 | - | - |
| Non-financial KPI | 0,17 | 0,41 | 0,17 | 0,41 | - | - | 0,20 | - |
| **Human Rights** | **0,25** | **0,14** | **0,42** | **0,27** | **0,42** | **0,32** | **0,10** | **0,11** |
| Policy pursued | 0,67 | 0,41 | 0,67 | 0,26 | 0,63 | 0,25 | 0,31 | 0,32 |
| Outcome | - | - | 0,17 | 0,41 | 0,25 | 0,50 | - | - |
| Risks | - | - | 0,33 | 0,26 | 0,38 | 0,48 | - | - |
| Non-financial KPI | 0,17 | 0,41 | 0,33 | 0,52 | 0,25 | 0,50 | - | - |
| **Anti-corruption and bribery** | **0,37** | **0,24** | **0,57** | **0,15** | **0,61** | **0,19** | **0,22** | **0,20** |
| Policy pursued | 0,33 | 0,26 | 0,50 | - | 0,63 | 0,25 | 0,20 | 0,26 |
| Outcome | 0,50 | 0,55 | 0,83 | 0,41 | 1,00 | - | 0,20 | 0,52 |
| Risks | 0,37 | 0,32 | 0,57 | 0,34 | 0,55 | 0,34 | 0,26 | 0,30 |
| Non-financial KPI | 0,33 | 0,52 | 0,50 | 0,55 | 0,50 | 0,58 | 0,13 | 0,50 |
| **Diversity** | **0,78** | **0,27** | **0,44** | **0,17** | **0,92** | **0,17** | **0,21** | **-** |
| Policy pursued | 0,67 | 0,52 | 1,00 | - | 1,00 | - | 0,40 | 0,52 |
| Outcome | 0,83 | 0,41 | 0,33 | 0,52 | 1,00 | - | 0,22 | 0,55 |
| Background | 0,83 | 0,41 | - | - | 0,75 | 0,50 | - | - |
| **Business model** | **0,57** | **0,10** | **0,26** | **0,05** | **0,55** | **0,12** | **0,15** | **0,06** |
| **Total** | **0,45** | **0,14** | **0,50** | **0,06** | **0,61** | **0,13** | **0,19** | **0,10** |

*Note: (*) Only for the companies with both financial and sustainability reports*

Also in the *social disclosure*, the sub-categories of risks and non-financial KPIs, have an interesting result: in 2014 there was no information, instead in 2017 the information is present in FR and SR, though not really high (0.17), and 0.50 in the embedded one. It seems that social risks have increased their impact in 2017 compared to 2014. The specific request of Directive could be seen as a boost to that.

The study unfolds another point: the *human rights category* is less disclosed in 2017 than in 2014. The highest difference is on non-financial KPIs. This could be a consequence of a deep disclosure of social matters that are strictly related to human rights, as this category is very specific (NF KPIs: hours of training on human rights policies and procedures). The authors' opinion is this could not be seen as a negative trend because the respect of human rights is 'a condicio sine qua non' of doing business in the European context and, in the meantime, the attention to people and community has increased as demonstrated by the higher level of disclosure on the social and employee matters.

Opposite to that, the *diversity category* becomes, from 2014 to 2017, a fully disclosed matter. In the embedded reports all the requirements of the Directive are reached, in the two-reports approach the location is the one of FR, as suggested by the regulation (0.78).

The *anti-corruption category* has substantially the same level of the disclosure; so the Directive does not impact on that kind of information.

The *business model communication* is higher in 2017, but there is still a long run to achieve a full description.

Summarizing, in the ex-post analysis, all the information categories are coordinated with each other promoting the information complementary between the sustainability report and the financial report. Companies are interested in this and, in fact, the overlap index overall has decreased from a score of 0.34 to a score of 0.19.

From the ex-ante analysis, it was concluded that it was appropriate for companies, in order to comply with the Directive, to increase disclosure regarding environmental issues, personnel and company business model. In 2017, all three of the aforementioned categories highlight an increase, reaching, at least in one of the two reports, a value higher than 0.50.

Overall, the degree of completeness of the reports improves in 2017 and the level of overlap is reduced. This leads to the conclusion that the enactment of the Directive had a positive impact on the level of disclosure of companies.

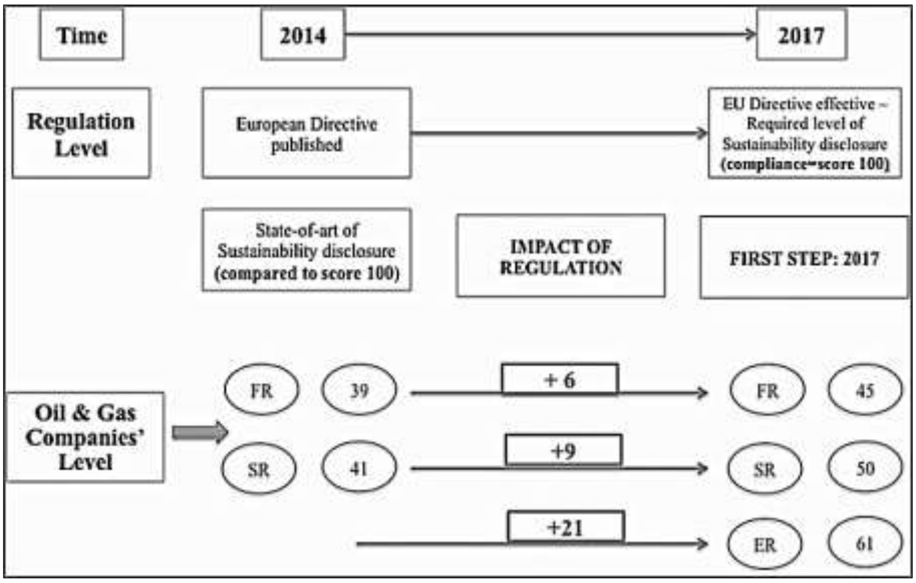
In conclusion, the expected impact of regulation (Carini et al., 2018) is at its first step, as 2017 is the first year; there are more environmental and social information, as request by the Directive, and there is a change in the reporting behaviour choosing an embedded report (4 firms above 10) towards two reports. The study of the location of the information (where) reveals a less overlap with a better structure of disclosure (i.e. diversity), as suggested by the Directive's guidelines.

The following Figure (Figure 1) describes the first exploratory impact of regulation in the Oil and Gas sample. The major impact is on SR and the ER that could also be called as "broader FR" seems to be the best solution for disclosing non-financial information according to the Directive.

## 5. CONCLUSION

According to the RIA framework, the aim of the study is contributing to the debate on the evaluation of regulation examining whether the Directive has changed the companies' behaviour in disclosing non-financial information, i.e. if it achieves its policy objectives of improving sustainability disclosure.

**Figure 1.** The impact of regulation




The answer to the first RQ - Has there been a change in the degree of disclosure (i.e. the content) of non-financial information after the introduction of the Directive (what)? is confirmed by the general improvement of all the information categories analyzed and the companies deal with all the required themes; also the categories identified by poorly disclosed in 2014 are now more detailed in reports.

About the second RQ - Has there been a change in the location of non-financial information in the reporting system after the introduction of the

Directive (where)? The answer is that there are four companies (above 10) that decide to adopt an embedded report, thus the "where" question is not anymore a question. Furthermore, the overlapping also in the other six companies that maintain two reports has decreased.

In reading the reports, before and after the enforcement of the Directive, we recognize that there is a choice of more connectivity between reports, as a request by the Regulation thus less information are redundant.

According to the RIA framework, the goal of this paper is to verify if the purpose of the regulation is achieved in practice in a post-implementation review. Nonetheless, the findings of the current research explained that the regulatory process has been carried out in a constructive way recognizing the problem (lack of non-financial information) and trying to fix it with regulation (policy objectives and regulatory choices). However, the Directive is flexible on the information overlap as a regulatory policy choice (see Para. 2.2). Our opinion is that this is a starting point and the regulation could be more specific on "where" to publish this information without any option in order to achieve European comparability on sustainability disclosure and reduce the amount of the same information replicated in different documents. At the moment different reporting scenarios can be found, e.g., a company with two reports (FR and SR) or a company with an embedded one.

In conclusion, the results reveal that there is no decoupling between rule and practice, something has changed (more non-financial information, more connected) but there is still work to do to achieve full comparability.

The results of the research undoubtedly suffer from some limitations. The analysis is an exploratory study conducted on only one sector and the reduced number of observations does not allow any generalization of the conclusions. However, the model proposed in the research could be replicated in other areas.

Future research is needed. Firstly, the regulation of accounting develops both at European level (Coglianese, 2012; Radaelli & Oliver, 2012) but also at National level and this could have influenced the companies' behaviour in some countries more than in others (for example in France were the national law prescribed an embedded report). So the suggested analysis model can be used for national comparative analysis.

Secondly, the application of the model developed in the reports over the years following the entry into force of the Directive will be required in order to obtain a useful benchmark to assess the real effect of the accounting regulation.

Thirdly, it will be useful to replicate the research method used in the study for sectors other than oil and gas, which is generally considered among the most evolved in terms of communication. The future research aims to understand the effective long-term impact of mandatory non-financial disclosure on a wider range of companies, across countries and sectors.

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# APPENDIX 1

**Table A.** Variables analyzed (Part 1)

| *Categories* | *Subcategories* | *No.* | *Variables* |
|---|---|---|---|
| **Environmental** | Policy pursued | 3 | Initiatives to use renewable energy sources and to increase energy efficiency |
| | | | Objectives, programmes, and targets for protecting and restoring native ecosystems and species in degraded areas |
| | | | Initiatives aimed at the reduction of emissions |
| | Outcome | 5 | Environmental investments and expenditure |
| | | | Description of the major impacts on biodiversity associated with activities and/or products and services in terrestrial, freshwater, and marine environments |
| | | | Changes to natural habitats resulting from activities and operations and percentage of habitat protected or restored |
| | | | The total amount of waste by type and destination |
| | | | Water sources and related ecosystems/habitats significantly affected by discharges of water and runoff |
| | Risks | 4 | Type of risk: environmental risks |
| | | | Time horizon/degree of probability/entity of impact: environmental risks |
| | | | Ways of dealing with environmental risks. |
| | | | Adoption of protocols or adherence to conventions on the environment. |
| | Non-financial KPI | 12 | Total materials use other than water, by type |
| | | | Percentage of materials used that are wastes (processed or unprocessed) from sources external to the reporting organization |
| | | | Direct and indirect energy use segmented by the primary source |
| | | | Total water use |
| | | | Water sources and related ecosystems/habitats significantly affected by the use of water |
| | | | Total recycling and reuse of water |
| | | | The total amount of land owned, leased, or managed for production activities or extractive use |
| | | | Location and size of land owned, leased, or managed in biodiversity-rich habitats |
| | | | Emissions of greenhouse gas (direct and indirect), of ozone-depleting substances, of NOx, SOx, and other significant air emissions by type |
| | | | Recycled waste |
| | | | Significant spills of chemicals, oils, and fuels in terms of the total number and total volume |
| | | | Accidents and fines for environmental damage |
| **Total environmental variables** | | **24** | |
| **Employee** | Policy pursued | 10 | Description of human resources management policy |
| | | | Recruitment policies |
| | | | Training policies (hours, interventions per project, etc.) |
| | | | Local Employment opportunities |
| | | | Descriptions of incentive policies |
| | | | Initiatives for monitoring employee satisfaction. |
| | | | Initiatives for improving the work environment |
| | | | Description of policies or programmes for health and safety at work |
| | | | Involvement in the decision-making process |
| | | | Restructuring plans (sale of business units, outsourcing) involving personnel mobility |
| | Outcome | 6 | Information on employees |
| | | | Employment type (full time/part-time), contract (indefinite or permanent/fixed-term or temporary) |
| | | | Employee benefits beyond those legally mandated |
| | | | Compliance with human resources management standards (SA8000, ILO) |
| | | | Performance bonuses |
| | | | Presence of trade union representatives |
| | Risks | 5 | Type of risk: safety at work risks |
| | | | Time horizon/degree of probability/entity of impact: safety at work risks |
| | | | Ways of dealing with safety at work risks |
| | | | Disputes and complaints with/of employees |
| | | | Compliance with voluntary codes, social responsibility bonuses awarded to the company |
| | Non-financial KPI | 7 | New recruitments/dismissals |
| | | | Absenteeism |
| | | | Hours on strike |
| | | | Employee turnover |
| | | | Number of accidents/injuries |
| | | | Illness Rates |
| | | | % of women employed |
| **Total employee variables** | | **28** | |
| **Social** | Policy pursued | 1 | Information on future objectives in relations with the stakeholders |
| | Outcome | 6 | General information on relations with the stakeholders |
| | | | Involvement of the stakeholders |
| | | | Investments in the social field |
| | | | Support and/or financing of no-profit or humanitarian organizations |
| | | | Social/cultural development interventions and initiatives |
| | | | Donations to the community, civil society, and other groups |
| | Risks | 1 | Social risks: operations that could negatively impact on society (local community) |
| | Non-financial KPI | 1 | Percentage or number of operations with local communities |

**Table A.** Variables analyzed (Part 2)

| *Categories* | *Subcategories* | *No.* | *Variables* |
|---|---|---|---|
| **Total social variables** | | **9** | |
| **Human rights** | Policy pursued | 2 | Global policies and procedures for preventing all forms of discrimination in the organization's business activities |
| | | | Description of policies and programmes to ensure respect for human rights in the company's business activities |
| | Outcome | 1 | Actions and programmes for aid to minorities and underprivileged categories |
| | Risks | 2 | Any disputes in progress for discrimination |
| | | | Verification of compliance with laws on child and forced labour |
| | Non-financial KPI | 1 | Hours of training on human rights policies and procedures |
| **Total human rights variables** | | **6** | |
| **Anti-corruption and bribery** | Policy pursued | 2 | Description of policies, procedures and control systems for the company and the workers concerning corruption |
| | | | Description of policies, procedures and control systems for management of political pressures and contributions to political parties |
| | Outcome | 1 | Transparency of payments to governments |
| | Risks | 5 | Management systems implemented |
| | | | Objectives of management systems |
| | | | Status of certifications obtained (ISO 140001, etc.) |
| | | | Existence of revisions for certifications |
| | | | Involvement of suppliers and contractors in the management systems |
| | Non-financial KPI | 1 | Number or percentage of verification operations on anticorruption policies |
| **Total anti-corruption and bribery variables** | | **9** | |
| **Diversity** | Policy pursued | 1 | Diversity: policy |
| | Outcome | 1 | Organizational chart and structure |
| | Background | 1 | Indication of a CV of board members and principal managers |
| **Total diversity variables** | | **3** | |
| **Business model** | | | Summary of company history |
| | | | Countries of operations |
| | | | Expression of company identity |
| | | | Expression of mission and strategic plan |
| | | | Company vision and values |
| | | | Profile of year |
| | | | Comparison with main competitors |
| | | | Relations with main competitors |
| | | | Collaboration agreements |
| | | | Indication of the main drivers of company efficiency |
| | | | Initiatives concerning the acquisition of oilfields |
| | | | Initiatives concerning the disposal of oilfields |
| | | | Initiatives concerning the acquisition of exploration rights |
| | | | Recovery initiatives |
| | | | Initiatives for development of existing oilfields |
| | | | Exploration initiatives with a positive outcome |
| | | | Exploration initiatives with a negative outcome |
| | | | Discovery of new oilfields |
| | | | Description of extraction activity |
| | | | Description of reserve revision |
| | | | Description of Product Sharing Agreement |
| | | | Availability of transport channels for extracted resources |
| | | | Description of overall strategy |
| | | | Volumes/revenues/market share objectives |
| | | | Margins/profit results/profitability/value creation objectives |
| | | | Strategic collaboration agreements |
| | | | Planned exploration initiatives |
| | | | Costs of exploration initiatives |
| | | | Initiatives concerning the acquisition of exploration rights |
| | | | Costs of initiatives concerning the acquisition of exploration rights |
| | | | Drilling programmes of major oilfields |
| | | | Costs of drilling programmes of major oilfields |
| | | | Initiatives for development of oilfields |
| | | | Costs of development initiatives |
| | | | Initiatives for recovery of additional crude oil |
| | | | Costs of recovery initiatives |
| | | | Programmes for the acquisition of new oilfields |
| | | | Costs of acquisition initiatives |
| | | | Programmes for disposal of oilfields |
| | | | Expected proceeds from disposals |
| | | | Estimated growth of reserves |
| | | | Extraction programmes budgeted |
| | | | Description of the timeline of most important projects |
| | | | Presentation of projects and previous objectives achieved |
| | | | Presentation of projects and previous objectives not achieved |
| | | | Presentation of projects and previous objectives deferred |
| | | | General description of risk management policy |
| | | | General description of risk management structure |
| | | | Type of risk: operating risks |
| | | | Time horizon/degree of probability/entity of impact: operating risks |
| | | | Ways of dealing with operating risks |
| | | | Type of risk: risks from contractual disputes |

**Table A.** Variables analyzed (Part 3)

| *Categories* | *Subcategories* | *No.* | *Variables* |
|---|---|---|---|
| **Total diversity variables** | | **3** | |
| **Business model** | | | Time horizon/degree of probability/entity of impact - Risks from contractual disputes |
| | | | Ways of dealing with risks from contractual disputes |
| | | | Extraction wells (number) |
| | | | Development wells (number) |
| | | | The success rate of exploration initiatives |
| | | | Reserve replacement rate |
| | | | Extraction rate |
| | | | Extraction rate due to new oilfields |
| | | | Productivity of major oilfields |
| | | | Reserve life |
| | | | Reserve replacement cost |
| | | | Existence of company culture geared to technological innovation |
| | | | Description of policies for investment in technology |
| | | | Description of technologies used in the company |
| | | | Details of technologies and patents launched by the company over the last few years |
| | | | Technological partnership relations |
| | | | Objectives and main benefits of technological projects |
| **Total business model variables** | | **69** | |

## APPENDIX 2

**Table B.** Categorizations' examples

| *Examples from reports* | *Category* | *Subcategory* |
|---|---|---|
| Our annual engagement survey, "Engage xxx", gives employees the opportunity to provide feedback on their experience of working for xxx. | Employee | Policy pursued |
| We report GHG emissions from all xxx's consolidated entities, as well as our share of equity-accounted entities other than xxx's share of xxx. Our direct GHG emissions were 48.9 million tonnes (Mte) in 2015 (2014 48.6 Mte, 2013 50.3 Mte). | Environmental | Non-financial KPI |
| In 2014, all of the material investment agreements and contracts were analyzed from a human rights perspective. | Human Rights | Outcome |