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## Article

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## Article

# The Role of Reputation and Regulation in Shaping Non-Financial Information Reporting

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**Abstract:** This study explores how corporate reputation and regulation influence the quantity and quality of non-financial information (NFI) disclosure. While internal drivers of NFI reporting are well-studied, external pressures remain underexplored. Analyzing Ibex35 firms (2015–2019) during Spain’s adoption of Directive 2014/95/EU, the study uses panel data analysis to assess the impact of reputation and regulation on NFI reporting. The findings show that highly reputed firms disclose more extensive and higher-quality NFI, while regulatory changes significantly improve both variables of NFI reporting. Thus, firms go beyond mere compliance. By distinguishing between quality and quantity, the study clarifies conflicting prior findings and highlights the complementary roles of reputation and regulation in fostering transparency. The results offer valuable insights for managers and policymakers, enhancing stakeholder trust and the effectiveness of regulation in promoting corporate transparency.

**Keywords:** non-financial information; reputation; regulation; transparency; sustainability reporting; accountability

## 1. Introduction

According to legitimacy theory, the disclosure of non-financial information (NFI) is an important tool that companies can use to gain or enhance legitimacy. Reports are a way of demonstrating that corporate actions are legitimate (Gray et al., 1995; Reverte, 2009) and of communicating with stakeholders to maintain their support (Branco & Rodrigues, 2008). Some studies indicate that 80% of companies worldwide report on sustainability (KPMG, 2020). However, there are many factors that can act as determinants of such practices that have not received much research attention. Determinants that are internal to the organization, such as size or financial performance, have been more extensively studied than external determinants (Ali et al., 2017; Fifka, 2013; Grueso-Gala & Zornoza, 2022). For this reason, we aim to expand the knowledge of the effects on NFI reporting of two external pressures, namely reputation and regulation. Thus far, the empirical evidence on these two factors has been inconclusive.

One of the most important benefits of NFI reporting is that it improves a firm’s reputation (Armitage & Marston, 2008; Khan et al., 2020; Pérez, 2015). Reputation is a key intangible asset for firms (Castilla-Polo & Sánchez-Hernández, 2020). It is difficult to imitate (Fombrun & van Riel, 1997; Melo & Garrido-Morgado, 2012), and it is associated with numerous advantages (Fombrun & Shanley, 1990). According to various theories (Pérez, 2015; Pérez et al., 2015), such as legitimacy, signaling, and agency theories, firms use NFI reporting as a tool to signal their good behavior to stakeholders, increase transparency, gain legitimacy, and enhance their



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reputation. However, despite the relevance of NFI reporting, the related empirical evidence is still mixed (Castilla-Polo & Sánchez-Hernández, 2020).

Another important external factor is regulation. In the last decade, there have been some key regulatory changes in the European Union (EU) and its Member States. One of the most relevant ones is Directive 2014/95/EU, which was enacted by the European Parliament in 2014. This Directive has since been transposed into each Member State's national legal framework. This new regulation has prompted a shift from voluntary to mandatory reporting in many large organizations. There are very few studies investigating mandatory reports (Cuomo et al., 2024; Ottenstein et al., 2022), as the literature usually focuses on voluntary reporting (Haji et al., 2023). There is also a lack of research that compares the reports provided by EU organizations before and after the entry into force of the Directive, to understand the effect of the transposition on these reports (Matuszak & Róžańska, 2021). We contribute to filling this gap, employing the perspective of hard versus soft power.

Given that external determinants of NFI reporting have received far less attention than internal ones, the purpose of our research is to provide insights into this subject by answering the following questions: Which firms are disclosing a higher quantity and quality of NFI—the ones with the best or the worst reputations? Does mandatory reporting increase the quantity and quality of NFI? Or do firms just meet the minimum requirements to comply with the law?

We perform a panel data analysis of all the firms listed on the Ibex35 index in the period 2015–2019, which includes the years before and after the transposition of Directive 2014/95/EU.

Our analyses indicate that the most reputed firms not only produce better quality NFI reports but also report more extensive information. This knowledge can help build trust that firms' signals and increased transparency are genuine. This contribution will be of interest to managers, as they can use it to support their strategies regarding transparency and NFI disclosure. Also, regulation shows a positive and significant impact on both the quantity and quality of the information disclosed. In other words, policymakers have ensured that firms not only comply with new laws but also report more and better information on sustainability matters. This can motivate legislators to keep working to improve the national legal frameworks on this subject.

We can see that, when social interests (which motivate new legislation) and business interests (which motivate efforts to improve reputation) are aligned, companies are willing to create change, in this case, by reporting better and more NFI.

This paper contributes to the literature in various ways. First, it provides evidence of the role played by reputation and regulation as determinants of the quantity and quality of NFI disclosure. Second, it extends previous studies on NFI reports by examining the information released not only in annual reports but also in stand-alone reports, such as social reports, environmental reports, and sustainability reports. Third, we use econometric models based on panel data, an approach that has not been widely used in analyses of this topic, but which offers numerous benefits. Compared to analyses of cross-sectional or time-series data, panel data analysis presents various advantages, such as more informative data, greater variability, less collinearity among variables, more degrees of freedom, and greater efficiency (Martínez-Ferrero & García-Sánchez, 2017). Fourth, we study two variables—the quality and quantity of NFI—in the same article but as different constructs. Very few papers have specifically focused on the determinants of the quality of reporting. Indeed, many researchers use quantity as a proxy for quality, thus leading to inaccurate results.

The remainder of the paper is structured as follows. The next two sections review the main concepts of this study, reputation and regulation, and develop the related hypotheses.

The methodology section describes the sample, variables, and research method. The following section is dedicated to the presentation of the results. Discussion of the implications, concluding remarks, limitations, and suggestions for further research are presented in the last section.

## 2. Theoretical Framework

### 2.1. Reputation

Reputation can be defined as “a perceptual representation of a firm’s past actions and results that describes the firm’s ability to deliver valued outcomes to multiple stakeholders. It gauges a firm’s relative standing both internally with employees and externally with its stakeholders, in both its competitive and institutional environments” (Fombrun & van Riel, 1997, p. 10).

Reputation is crucial for firms, as it can provide them with a competitive advantage through market differentiation (Castilla-Polo & Sánchez-Hernández, 2020). It is a valuable intangible asset for a company. Indeed, it is often seen as one of the most important ones (Axjonow et al., 2018). It is difficult to imitate (Fombrun & van Riel, 1997; Melo & Garrido-Morgado, 2012), and it is associated with numerous benefits, such as enhancing access to capital markets, attracting consumers and investors, enabling firms to charge premium prices, or increasing profitability (Fombrun & Shanley, 1990). Furthermore, firms can have different sub-reputations for different aspects of their activities (e.g., their CSR commitment, the quality of their products, financial performance, etc.). However, observers will tend to give a net assessment of the organization’s reputation (Fombrun, 1996).

As mentioned earlier, one of the most important benefits of NFI reporting is the improvement to a firm’s reputation (Armitage & Marston, 2008; Khan et al., 2020; Pérez, 2015), given the critical nature of this intangible asset. However, the literature on the relationship between reputation and corporate social responsibility (CSR) reporting (in this paper, we use the term as NFI reporting) is still scarce, especially relative to the vast literature on CSR in general (Pérez, 2015). Reputation is a variable that has been considered as both an antecedent and a consequence of CSR reports in the literature. Castilla-Polo and Sánchez-Hernández (2020) indicate that both directions of influence (reputation as determinant and as a consequence of NFI reports) are significant, but the effect as a determinant is slightly higher. Reputation as a determinant of NFI reporting has not received much attention in the literature (Michelon, 2011), and regardless of whether it is considered a determinant or a consequence, the empirical results are contradictory (Castilla-Polo & Sánchez-Hernández, 2020). Thus, there is a need for more research to shed light on the relationship between reputation and NFI reporting.

Some authors argue that reputation is an incentive to disclose NFI, with companies using NFI reports to maintain the level of reputation they have already achieved (Castilla-Polo & Sánchez-Hernández, 2020). For instance, studies such as the ones by Kansal et al. (2014) or Michelin (2011) show that more reputable companies will disclose more extensive NFI information. Kansal et al. (2014) explain that, due to their good reputation, companies are more inclined to spend their CSR budget and disclose more information. According to Mishina et al. (2010), when the reputation of a firm increases investor attention, “organizational audiences are much more likely to notice how well a firm performs relative to their expectations” (p. 706), thus raising the pressure exerted by external expectations. Following this idea, Castilla-Polo and Sánchez-Hernández (2020) state that “companies in a reputational position of strength are more interested in sustainability reporting as they are more vulnerable to disappointing stakeholders who hold high expectations” (p. 5). Hence, they will be more inclined to disclose NFI to enhance their image as a responsible organization.

On the other hand, there is also evidence to support the opposite claim. The quantity and quality of the information are not always backed up by good environmental and social performance. Some authors have found that firms with worse environmental and social performance will provide more extensive disclosure (Alon & Vidovic, 2015; Cho et al., 2012; Cho & Patten, 2007; Patten, 2002). As Schreck and Raithel (2018) indicate, there are two potential explanations for this. Either these companies engage in “window dressing” in an attempt to divert attention from their poor performance, or bad performers are serious about improving their CSR commitment and performance and use NFI reports that improve transparency in order to build or repair their reputation. The authors explore whether the environmental and social performance of poorly performing companies with high levels of NFI reporting improves over time, but they do not find evidence of any improvement. Thus, they conclude that extensive NFI reporting by poorly performing firms cannot be taken as a signal of a serious change in their CSR commitment and that they are partially engaging in “window dressing”. While firms with a good reputation and good performance use NFI reports as tools to signal their superior performance, worse-performing firms may use NFI reports to mimic them and pose as good corporate citizens (Mahoney et al., 2013). As a result, stakeholders may be skeptical of NFI reporting because they perceive it as a symbolic strategy (Miras-Rodríguez et al., 2020).

These inconclusive results raise some questions. Are firms with a good reputation (and thus committed to social and environmental issues) the ones that disclose more and better NFI? Or are less reputable firms the ones that make a greater effort to disclose more extensive, better-quality information?

To answer these questions, we draw on ideas from signaling theory, regarding efforts to reduce information asymmetries between two parties (Spence, 2002). In our case, the two parties are the firm (the signaler) and the external stakeholders (the receiver of the signal). The external stakeholders do not know if a firm is being socially and environmentally responsible. This information is only available to the firm, and the firm will decide if, when, and how to communicate (signal) it, such as, for example, through the NFI report. As Connelly et al. (2011) indicate, “signalling theory focuses primarily on the deliberate communication of positive information in an effort to convey positive organizational attributes” (p. 44). In other words, firms make an effort to communicate something positive. However, how can external stakeholders know if this signal is genuine or if it is only intended to imitate a positive attribute?

Signaling theory answers this question with the concept of signal costs (Connelly et al., 2011) and posits that some signalers will be more capable than others of absorbing the costs of the signal. This means, for instance, that it will be easier and less costly for a highly responsible firm to disclose more information regarding good corporate practices than for a non-responsible one. This is due to the fact that the highly responsible firm is already implementing responsible corporate policies and engaging in sustainable practices, whereas the non-responsible one will find it time-consuming and costly to fake these signals.

Following previous results that indicate a positive relationship, and arguments in line with signaling theory, the first of our hypotheses to be tested is:

**H1:** *The quantity of NFI disclosure will be higher for highly reputed firms.*

Some authors (Alon & Vidovic, 2015; Cho et al., 2012; Cho & Patten, 2007; Patten, 2002) have shown that worse performers disclose more extensive information. However, they also note that firms with better environmental performance provide better quality information than poor performers (Alon & Vidovic, 2015; Al-Tuwaijri et al., 2004). The quantity of the disclosed NFI “can be genuine if substantiated, but can also be easily replicated” (Alon & Vidovic, 2015, p. 340) by the worst performers. Quality, on the other



hand, is harder to mimic, as it may only be achievable by superior performers (Clarkson et al., 2008).

Hence, our next hypothesis, which is also in line with signaling theory, is as follows:

**H2:** *The quality of NFI will be higher for highly reputed firms.*

## 2.2. Regulation

NFI reporting has long been voluntary for businesses, and it remains voluntary in most countries around the world (Yang et al., 2021). In the EU, there have been regulatory changes in the last decade that have made this type of report mandatory for certain organizations. Directive 2014/95/EU was enacted by the European Parliament in 2014. This Directive attempts to improve transparency across the EU by standardizing NFI reports and their requirements. It mandates the Member States to transpose the Directive into their national legal frameworks, but gives them the freedom to decide about certain aspects, such as the reporting framework, the verification by independent assurance providers, the place of publication, etc. For instance, the Directive does not require independent assurance of the content of the NFI, but it does stipulate that an auditor must check whether the NFI report has been provided by the organization.

In Spain, there are a number of different laws that govern NFI reporting. Law 2/2011 on Sustainable Economy sets out the obligation for certain public entities to prepare sustainability reports and corporate governance reports. However, under this law, reporting was optional for private organizations. Order ECC/461/2013 introduced the obligation for listed companies and savings banks to provide an annual corporate governance report. This order indicated the content and the structure that the reports must follow. Spain incorporated the EU Directive with Royal Decree-Law 18/2017 and Law 11/2018. The Directive requires firms to report information on six topics: environmental; social; employee matters; respect for human rights; anti-corruption; and bribery. The firms required to disclose this information are public interest entities (PIEs) and large firms (more than 500 employees). The abovementioned elements must be reported either in a separate report or included in the annual report.

The prior literature, mainly based on voluntary reports (Haji et al., 2023), generally concludes that firms use CSR reports as a tool for legitimation (Michelon et al., 2015; Cho & Patten, 2007; Cho et al., 2012; Deegan et al., 2002). They can thus be said to be engaging in symbolic reporting (Haji et al., 2023). A key objective of the regulations is to improve the quantity and quality of CSR reporting (Haji et al., 2023). However, it remains unclear whether this objective has been accomplished or not. According to some authors, “firms may continue to engage in symbolic reporting even after reporting regulations, especially considering lack of reporting enforcement, non-prescriptive reporting standards and the broad nature as well as diversity of CSR reporting topics” (Haji et al., 2023, p. 8).

The shift from voluntary to mandatory reporting raises some questions: Does mandatory reporting have any impact on the quantity and quality of NFI disclosure? And if so, does mandatory reporting increase the quantity and quality of NFI? Or do firms just meet the minimum requirements to comply with the law?

Arif et al. (2022) show that mandating NFI reporting can enhance the quantity of ESG disclosures, while Agostini and Costa (2018) demonstrate an increase in the amount of environmental information in the consolidated annual report (+26.89%) and in social-environmental reports (+31.27%) after the application of the regulation. Similarly, Yang et al. (2021) find a substantial increase in mandatory environmental reporting in Australian companies. Ottenstein et al. (2022) and Matuszak and Róžańska (2021) find that firms report more sustainability information as an effect of Directive 2014/95/EU. Finally, Haji

et al. (2023) also provide several references of studies that find an increase in CSR disclosure after CSR disclosure regulations in different countries. According to Matuszak and Róžańska (2021), these results may be due to the fact that companies previously tended to report only the NFI that they considered most relevant to their stakeholders, but the requirement to produce a comprehensive NFI report is likely to increase the average quantity of information disclosed.

Most studies of mandatory NFI reports focus on the quantity without exploring the quality (Yang et al., 2021). Evidence of the effect of the new NFI reporting regulations on quality remains weak (Haji et al., 2023). As indicated by Ottenstein et al. (2022), “an increased overall reporting quantity induced by the mandate does not necessarily correspond with an enhanced reporting quality” (p. 58). Hence, it is important not to assume that regulation has the same effect on both quantity and quality and to study the two elements of NFI reporting separately.

The results from Korca et al. (2021) indicate that the effect of regulation on NFI reports depends on the topic. The authors find that, in general, the shift from voluntary to mandatory has caused an increase in the volume of NFI reports, but not an improvement in quality. However, when it comes to social aspects and employee matters, both quantity and quality are enhanced. Carungu et al. (2021) also find that, when moving from voluntary to mandatory, the quality of NFI reporting does not increase. In their review of the literature, Haji et al. (2023) find that disclosure quality remains low after reporting regulations.

Conversely, other authors find a positive and significant relationship between regulations and quality. The study by Habek and Wolniak (2016) indicates that the legal obligation to disclose CSR data has a positive effect on the quality of CSR reports. Caputo et al. (2020) and Ottenstein et al. (2022) find an increase in the quality of sustainability reports after the transposition of Directive 2014/95/EU, while Yang et al. (2021) find that regulation has the same effect on environmental disclosure in Australia. Arif et al. (2022) highlight the importance of NFI regulations in increasing the quality of sustainability reporting.

Due to the mixed evidence on both variables, there is a need for further analysis. To that end, we propose two more hypotheses, drawing on the concept of hard power and soft power. Hard power is used to exert influence through the use of force or coercive measures. In this case, legislators establish a legal obligation to report on certain aspects of NFI. Based on this idea, we formulate our next hypothesis as follows:

**H3:** *The quantity of NFI disclosure will increase after the introduction of the new NFI disclosure regulation.*

However, the new legislation does not directly force companies to improve quality. It leaves quality improvement as voluntary. That is, hard power is not applied. Soft power, on the other hand, consists of the ability to influence or persuade without using coercive power, through culture, values, or social models. We posit that regulation indirectly brings about a change in values in society and in companies, which are recognizing the need for greater information transparency. Therefore, this leads us to propose the last hypothesis:

**H4:** *The quality of NFI disclosure will improve after the introduction of the new NFI disclosure regulation.*

In Figure 1 we can visually see the summary of the hypothesis.

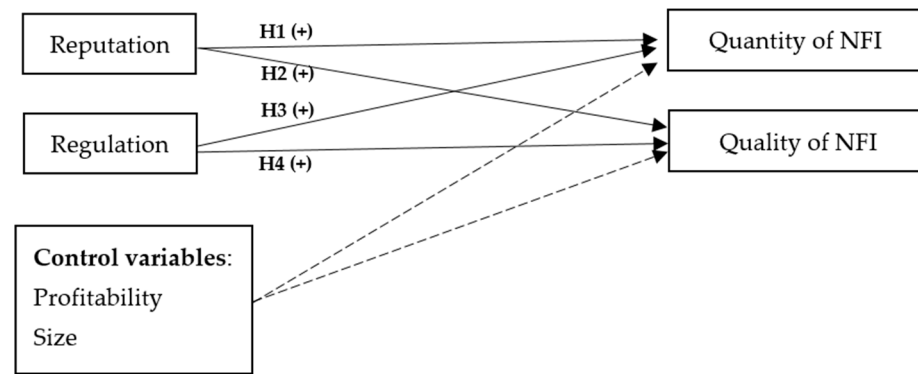


Figure 1. Overview of research model.

### 3. Materials and Methods

#### 3.1. Sample

The sample for our research includes all the firms listed on the Ibex35 index during the period 2015–2019. The Ibex35 comprises the 35 most liquid companies traded on the Spanish stock exchange, and it is representative of Spanish economic development (Odriozola & Baraibar-Diez, 2017). Every six months, the list is revised, and the composition of the index can change. To increase the number of observations in our sample, we included all the firms that had been listed on the Ibex35 at any time during the analyzed period. The total number of firms in our sample is 40. We specifically analysed the years 2015, 2017, and 2019. These years were selected to enable an analysis of the effect of the regulation, as 2017 was when the abovementioned regulatory changes were implemented in Spain. Thus, with the selected years, we have observations from before the regulatory changes (2015), the first year of implementation (2017), and after implementation (2019), giving us a total of 120 observations.

#### 3.2. Variables

The dependent variables in our study are the quality and quantity of NFI reporting.

Academic analyses of NFI reports generally use two main variables: the quantity of information disclosed and the quality of the report. Quantity measurements have been more extensively studied than quality (Castilla-Polo & Ruiz-Rodríguez, 2021), due to the difficulty of measuring the latter (Brammer & Pavelin, 2008). There are also some studies that use quantity as a proxy for quality, for instance, Romero et al. (2019) or Adel et al. (2019). However, empirical evidence suggests that quantity is not a good proxy for quality (Castilla-Polo & Ruiz-Rodríguez, 2021). Moreover, most of the related studies (e.g., Adel et al., 2019; Avram et al., 2019; Fernandez-Feijoo et al., 2018; García-Sánchez et al., 2019; Martínez-Ferrero et al., 2015; Romero et al., 2019; or Sierra-Garcia et al., 2018) examine just one of these two variables. For all these reasons, in this study, we analyze both the quantity and quality of NFI reports.

To measure these variables, we adopt an index from Castilla-Polo and Ruiz-Rodríguez (2021). To assess quality, the authors measure more than one aspect: relevance and accuracy. For quantity, options applied by previous researchers, such as counting words (e.g., Lee, 2017) or sentences (e.g., Al-Shaer et al., 2017), were considered but discarded. Counting only words or sentences would mean ignoring many informative charts or figures (Unerman, 2000). Thus, this issue was resolved by counting the number of pages.

Tables 1 and 2 show the measurements of each variable. All the relevant data were manually collected from the reports found on the firms' websites.



**Table 1.** Variables for the quantity index.

ID	Variable	Type <sup>a</sup>	Description
R1	Annual Report	D	Absence (=0) or presence (=1) of annual reports in which sustainability issues were disclosed
P1	Annual Report: pages	N	Number of pages dedicated to content related to sustainability in this type of report
R2	Integrated Report	D	Absence (=0) or presence (=1) of integrated reports in which sustainability issues were disclosed
P2	Integrated report: pages	N	Number of pages dedicated to content related to sustainability in this type of report
R3	Sustainability Report	D	Absence (=0) or presence (=1) of sustainability reports
P3	Sustainability Report: pages	N	Number of pages dedicated to content related to sustainability in this type of report

<sup>a</sup> D: dichotomous variable and N: numerical variable. Source: Own elaboration adapted from [Castilla-Polo and Ruiz-Rodríguez \(2021\)](#).

**Table 2.** Variables for the quality index.

ID	Variable	Type <sup>a</sup>	Description
RE1	SR strategy	D	Explicit reference to sustainability in business strategy (broad sense or specific contents)
RE2	SR committee	D	Presence or absence of a sustainability committee within the organization
RE3	SR awards	D	Awards or recognitions related to sustainability performance (broad or specific aspects)
L1.1	GRI	D	Preparing the report in accordance with the GRI guidelines
L1.2	UN Global Compact	D	Adhering to the principles of the UN Global Compact
L1.3	AA1000	D	Adoption of the standard
L1.4	IIFR	D	Using the International Integrated Reporting Framework (IIFR)
L1.5	Other standards	D	Adoption of any other sustainability standard
L2	Assurance	D	If the company has had any external assurance of the NFI

<sup>a</sup> D: dichotomous variable. Source: Own elaboration adapted from [Castilla-Polo and Ruiz-Rodríguez \(2021\)](#).

The quantity index, for company “a” in year “x” was formulated as follows:

$$\text{Quantity Index (a, x)} = \sum_{i=1}^3 \text{Type of report (Ri)} * \text{Number of pages (Pi)} \quad (1)$$

Regarding the types of reports, we considered various different types, as firms often disclose NFI in more than one document or more than one format. As [Lee \(2017\)](#) or [Castilla-Polo and Ruiz-Rodríguez \(2021\)](#) argue, considering multiple reports will provide a more comprehensive view of the firm’s commitment to sustainability issues. If we had only counted annual reports, we would have missed stand-alone reports, and if we had only considered reports that follow Global Reporting Initiative (GRI) guidelines, we would have missed other types of documents that follow different standards. Thus, we included in our count all of the available reports that disclosed NFI published on the sample firms’ websites.

In addition, [Castilla-Polo and Ruiz-Rodríguez \(2021\)](#) included the total number of pages of the sustainability report. In our study, when counting the pages dedicated to NFI, we excluded pages such as the cover, the table of contents, the CEO letter, other general or contextual information (‘about this report’ section, history of the firm or business areas/divisions), or information belonging to the financial statements. Counting pages versus counting words/sentences allows the inclusion of informative charts or figures, but it might mean including non-informative, decorative images. While some firms focus on reporting just text, others format the document with many non-informative photos or big blank spaces, which can significantly inflate the number of pages. In some cases, this kind of content represents up to 40% of the document. To deal with this issue, we corrected the

total number of pages by subtracting a percentage of each page according to the size of any images on it. For example, if we found an image occupying half of a page, we subtracted 50% of that page from the total page count. We can see some visual examples of this in Appendix A.

The quality index was formulated as follows:

$$\text{Quality Index (a, x)} = \frac{\sum_{ij=1}^n \text{Score from REi} + \text{Score from Lj}}{\text{Maximum score}} \times 100 \quad (2)$$

For the quality index, five variables were used: three variables for relevance issues (RE1 to RE3) and two for liability concerns (L1 and L2). Since they are all dichotomous variables, the maximum possible total score in each year was 9 = RE1/RE2/RE3/L1.1/L1.2/L1.3/L1.4/L1.5/L2. The variables related to the type of standards followed were included separately in the index (L1.1, L1.2, L1.3, L1.4, and L1.5) because, in terms of quality, following one standard is not the same as following more than one standard. The quality index is a percentage that indicates the quality level detected for company “a” in year “x”.

For the independent variables, in our study, the independent variables are reputation and regulation.

To analyse reputation, we have used the Spanish Corporate Reputation Business Monitor (MERCO), as in several related studies (Baraibar-Diez & Sotorrío, 2018; Castilla-Polo & Sánchez-Hernández, 2020; Odriozola & Baraibar-Diez, 2017). MERCO is the main ranking of corporate reputation in Spain (Odriozola & Baraibar-Diez, 2017) due to its multi-stakeholder methodology (participants are business professors, influencers and social media managers, consumer associations, trade unions, NGOs, government representatives, economic journalists, and financial analysts), and the public availability of the results. Each year, MERCO publishes a ranking of the 100 companies in Spain with the best reputation. Companies in our sample have been given a value of 1 if they are included in the MERCO ranking in year “x – 1”, and a value of 0 otherwise.

Measuring regulation and its intensity is a “difficult task, and a relatively unexplored territory” (Kalmenvitz, 2021, p. 30). Previous articles in other research areas have provided different methods for capturing the intensity of regulation and how it has changed over time. Marcos et al. (2010) propose counting the number of pages dedicated to the regulation of interest in the official journals in which all regional laws and rules are published. They suggest that the length of the laws can be a proxy for the intensity of the regulation. However, taking into account that not all the pages published on the laws are dedicated to describing the regulatory burden on business activities, we opt to count words instead of pages. This will allow us to select only the sections of the laws that set out the new impositions on companies. Another reason for counting words and not pages is that the format could affect the number of pages, without necessarily meaning that there are more words or sentences, thus giving rise to an inconsistent measure.

We selected the regulations that mandated Spanish-listed companies (which are the ones in our sample) to disclose NFI information. Order ECC/461/2013 of 20th March determines the content and structure of the annual corporate governance report, the annual report on remuneration. We count the words in chapters II and III. This regulation has not changed since 2013. Thus, the number of words remains constant for the entire analyzed period.

Directive 2014/95/EU required each EU Member State to modify its laws in order to make NFI reports mandatory for certain businesses. In 2017, Spanish Law 18/2017 incorporated the aforementioned Directive into the Spanish legal system by modifying the Commercial Code (CC), specifically article 49. The following year, Law 11/2018 again amended article 49 of the CC regarding the contents and requirements of NFI reports. Thus,

we count the number of words in article 49 of the Spanish CC in the years of our sample in 2015 (prior to the enactment of the aforementioned laws), 2017 (when Law 18/2017 was enacted), and 2019 (after Law 11/2018 had already been implemented). Thus, the intensity of the regulation in year “x” is:

$$\text{Regulation}(x) = \text{Chapter II and III of Order ECC/461/2013} + \text{Art.49x of CC} \quad (3)$$

For the control variables, we control for additional variables that are theoretically and empirically related to NFI reporting.

For profitability, different theories, such as signaling theory, agency theory, or political cost theory, support the idea that firms’ profitability or levels of financial performance are related to their levels of disclosure (Brammer & Pavelin, 2008; Branco & Rodrigues, 2008; del Giudice & Rigamonti, 2020; Ortas et al., 2015). Financially healthy organizations can more easily fulfil their obligations (Brammer & Pavelin, 2008) and have more available resources to allocate to this task. We downloaded from the ORBIS database the return on assets (ROA) ratio of each sample company for every year.

For size, firm size is often proposed as a determinant of sustainability disclosures (Ortas et al., 2015). Large firms are more visible. Hence, they are subject to more pressure and scrutiny from external groups (Brammer & Pavelin, 2008; Branco & Rodrigues, 2008; Ortas et al., 2015). As a result, large firms may pay special attention to sustainability disclosure in order to demonstrate that their actions are legitimate (Brammer & Pavelin, 2008). This variable was measured as a natural logarithm of total assets (TA). The information about the TA of each company was downloaded from the ORBIS database.

For sector, the sector in which the company operates has been studied as a driver of sustainability disclosures (Kilian & Hennigs, 2014; Niskala & Pretes, 1995). Companies that are in an industry with a potentially large impact on the environment (an environmentally sensitive industry or ESI) are considered to be under greater pressure than companies that are not. Thus, the former are more likely to disclose more sustainability information than the latter. In our analysis, this is a dichotomous variable that takes a value of 1 if the firm is in an ESI, and 0 otherwise. Based on the prior literature (Branco & Rodrigues, 2008; Djajadikerta & Trireksani, 2012; Kilian & Hennigs, 2014; Morales-Raya et al., 2019; Zeng et al., 2012), we consider the following to be ESIs: pharmaceutical; chemical; forestry, paper and pulp mills; mining; oil and gas; steel and other metals; petroleum and plastic manufacturing; construction and building materials; electricity, gas distribution and water; transport; textile, clothing and fur; and tourism.

### 3.3. Method

After building the database, we imported all of the data into the software RStudio version 4.1.2. for data analysis. First, we calculated descriptive statistics to summarize our sample data. Second, we conducted a correlation analysis to determine the relationships among the variables in our study. Next, we employed three different methods of static panel data analysis to estimate our regression: pooled OLS, fixed effects (FE), and random effects (RE). Using the Hausman test and the F-test, we identified which of these three methods was the best one for our model. We also checked for multicollinearity, heteroskedasticity, and autocorrelation.

Panel data consists of repeated observations of a cross-section of companies over time. The use of panel data techniques allows the researcher to overcome the limitations of the low explanatory power (Martínez-Ferrero & García-Sánchez, 2017) of cross-sectional (different companies at a particular moment in time) and time-series analyses (one company for several periods).

## 4. Results

### 4.1. Descriptive Statistics

Table 3 reports the descriptive statistics of the dependent and independent variables in our study. We have divided the results into the three years of our sample to see the evolution of each variable.

**Table 3.** Descriptive statistics.

Variable	2015				2017				2019			
	Mean	Min	Max	SD	Mean	Min	Max	SD	Mean	Min	Max	SD
Quantity	82.68	9.50	230.81	52.12	86.08	36.17	225.57	52.49	98.98	16.03	373.07	68.63
Quality	58.61	0	88.89	18.49	65.28	22.22	100	18.52	65.56	33.33	100	15.67
Regulation	7013	7013	7013	0	7911	7911	7911	0	9195	9195	9195	0
Reputation	0.67	0	1	0.47	0.75	0	1	0.44	0.55	0	1	0.50
ROA	2.77	−20.92	16.26	5.91	4.31	−0.12	16.09	4.22	2.06	−23.81	15.88	6.18
Size	16.70	13.63	21.02	1.75	16.82	13.78	21.09	1.69	16.91	13.90	21.14	1.66
Sector	0.50	0	1	0.51	0.50	0	1	0.51	0.50	0	1	0.51

We can see that the mean of quality and quantity has increased over the years, which means that businesses are reporting more and better NFI. It is also noteworthy that the quantity and quality levels of the report vary widely among the firms in each year.

In terms of quality, some firms scored 0% on our quality index, while others scored almost 90%. Regarding quantity, in 2015, the minimum number of pages disclosing NFI information was 9.5, and the maximum was 230.81. Meanwhile, in 2019, the corresponding values were 16.03 and 373.07, respectively. This variable also shows an increase in the standard deviation over the years, which means that, in general, the differences in quantity levels among firms have increased.

The regulation has grown every year, and particularly in the last year, with an increase of 1284 words compared to the previous year. The previous increase between the analyzed years was 898 words.

Reputation is a dummy variable that takes a value of 1 if the firm is in the ranking of the 100 most reputable firms, and 0 otherwise. We can see that the mean of reputation every year is above 0.5, which means that most of the firms in our sample have a value of 1. The year with the most firms included in the ranking is 2017, with 30 of the 40 firms having a value of 1. In 2015 and 2019, there were 27 and 22 firms in the ranking, respectively.

Regarding ROA, it has remained roughly between 2% and 4% for the periods in our sample. However, we note the wide variation among firms. For example, in 2015, the minimum is −20.92% and the maximum is 16.26%. Size, which is the natural logarithm of total assets, has remained fairly constant over the years. The mean value is approximately 16% for all the periods. Finally, sector is a dummy variable that indicates whether a firm belongs to an ESI or not. We can see that the values remain constant over the 3 years, as businesses do not often change from one sector to another. The mean is 0.5, which indicates that 20 out of 40 firms in our sample belong to an ESI.

### 4.2. Correlation Analysis

Before conducting the panel data analysis, a Spearman correlation analysis was performed to check the bivariate relationships among the variables (Table 4). Spearman correlation does not require normally distributed variables (Schober et al., 2018). As our data do not follow a normal distribution, the Spearman correlation analysis is indicated instead of Pearson's correlation.

There is a positive and significant relationship between quantity and reputation; quantity and size; and quantity and sector. Regulation and size are also positively and significantly associated with quantity. We find negative and significant relationships

between size and ROA and between size and sector. Finally, the highest significant and positive association is between size and reputation.

**Table 4.** Spearman correlation matrix.

N°	VIF	Tolerance	Variables	1	2	3	4	5	6	7
1			Quantity	1						
2			Quality	-	1					
3	1.035	0.966	Regulation	0.116 (0.208)	0.150 (0.103)	1				
4	1.419	0.704	Reputation	0.307 *** (0.001)	0.388 *** (0)	−0.108 (0.242)	1			
5	1.086	0.920	ROA	0.092 (0.319)	−0.076 (0.41)	−0.102 (0.269)	−0.054 (0.556)	1		
6	1.564	0.639	Size	0.239 *** (0.009)	0.260 *** (0.004)	0.072 (0.435)	0.485 *** (0)	−0.400 *** (0)	1	
7	1.124	0.889	Sector	0.310 *** (0.001)	−0.028 (0.759)	0 (1)	0.088 (0.34)	0.127 (0.167)	−0.166 * (0.07)	1

Note: \* and \*\*\* indicate a correlation statistically significant at the 0.10 and 0.01 levels, respectively (two-tailed test). We do not show correlation coefficients between 1 and 2 because they are both independent variables.

The assumption of no perfect multicollinearity was tested by using the variance inflation factor (VIF) and tolerance. A VIF value greater than 10 (O'Brien, 2007; Thompson et al., 2017) or a tolerance below 0.20 (O'Brien, 2007; Thompson et al., 2017) indicates serious collinearity problems. As can be seen in Table 4, the VIF values for the variables range from 1.035 to 1.564, and the tolerance values range from 0.639 to 0.966. We can conclude that multicollinearity among the input variables is not a concern in our study.

#### 4.3. Regressions

We employed OLS, FE, and RE models to analyze the data. Then, to select the most appropriate of the three static panel data models, we ran the F-test and the Hausman Test. We also checked for serial correlation and heteroskedasticity. First, we show the results for the regression in which quantity is the independent variable and then the results for quality.

##### Quantity regression

We used the F-test to choose between the OLS and FE models. The null hypothesis is that all FE constants are zero. The results of the F-test = (6.0307;  $p = 1.651 \times 10^{-11}$ ) indicate that the null hypothesis is rejected, and so, the FE model was selected.

To select between FE and RE, we used the Hausman test (Hausman, 1978). We tested the null hypothesis that the RE model is appropriate. The results (1.0195;  $p = 0.9068$ ) show that the null hypothesis is accepted. Therefore, the findings of the RE model were considered for further discussion below. The Hausman test is also a formal test for endogeneity (Wooldridge, 2010). The Hausman test assesses whether the regressor is endogenous or exogenous, and in our case, the test indicated no significant evidence of endogeneity. The null hypothesis of the Hausman test assumes that the regressor is exogenous, implying that the random effects estimator is both consistent and efficient. Given that the Hausman test favored the RE model, this suggests that endogeneity is not a major issue in our analysis.

In the selected model, we checked for autocorrelation issues. We performed two tests to detect serial correlation: the Durbin–Watson (DW) test and the Wooldridge test (Wooldridge, 2002). The null hypothesis of both tests is that autocorrelation does not exist in the model. The results of the DW test (1.8168;  $p = 0.1424$ ) and the Wooldridge test (2.1292,  $p = 0.546$ ) indicate that the null hypothesis is accepted, meaning there are no serial correlation issues in this model.

We also tested the null hypothesis that there is no heteroskedasticity in the model. To that end, we used the Breusch–Pagan test, the results of which (42.966;  $3.754 \times 10^{-08}$ )



indicate that the null hypothesis is rejected, and that there is an issue with heteroskedasticity in our model. To deal with the heteroskedasticity problem, we obtained heteroskedasticity robust standard errors and their corresponding *t* values (Zeileis, 2004). The robust random effects model is provided in Table 5.

**Table 5.** Regression results using the RE models.

Dependent Variable	Quantity	Quality
Independent Variables	Coefficients	Coefficients
Intercept	−150.35 *	104.428
Reputation	20.594 **	12.3798 ***
Regulation	0.0085 **	0.0036 ***
ROA	0.7906 **	−0.1458
Size	7.7973 **	0.9714
Sector	47.3501 ***	−0.8560
N	120	120
R <sup>2</sup>	0.1945	0.1588
Wald X <sup>2</sup>	27.5354 ***	21.5205 ***

Note: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

### Quality regression

We used the F-test to determine the best model (OLS or FE) to estimate our regression. The results of the F-test ( $3.7495$ ;  $p = 4.76 \times 10^{-07}$ ) indicate that the null hypothesis is rejected. Hence, the FE model was selected. We then used the Hausman test to decide between FE and RE. The results ( $1.0258$ ;  $p = 0.9059$ ) show that the null hypothesis is accepted. Therefore, the findings of the RE model were considered for further discussion below, and this also suggests that endogeneity is not a major issue in our analysis.

In the selected model, we performed two tests to detect serial correlation: the DW test and the Wooldridge test. The results of the DW test ( $1.8348$ ;  $p = 0.1617$ ) and the Wooldridge test ( $5.1316$ ,  $p = 0.1624$ ) indicate that the null hypothesis is accepted, meaning that there are no serial correlation issues in this regression.

We used the Breusch–Pagan test to check for heteroskedasticity in our model. The results ( $8.1272$ ;  $0.1494$ ) indicate that the null hypothesis is accepted, confirming that there is no heteroskedasticity in our model. The regression results are provided in Table 5.

### Regressions results

In the following table, we can see the results for both regressions (quality and quantity) using the RE models. For the quantity regression, we provide the robust random effects model that solves the heteroskedasticity issue.

According to the results, reputation has a positive and significant effect on the quantity ( $\beta = 20.59$ ;  $p < 0.05$ ) and quality ( $\beta = 12.37$ ;  $p < 0.01$ ) of reporting, thus supporting H1 and H2. These findings are in line with prior studies (Castilla-Polo & Sánchez-Hernández, 2020; Kansal et al., 2014; Michelin, 2011). They suggest that firms with a good reputation are under more pressure to report a larger amount of NFI and produce higher-quality reports to maintain or enhance their reputation.

Moving to regulation, we can see that it also shows a positive and significant effect on both quantity ( $\beta = 0.0085$ ;  $p < 0.05$ ) and quality ( $\beta = 0.0036$ ;  $p < 0.01$ ). Hence, H3 and H4 are also supported. These results show that the increase in regulation regarding NFI reports has served to improve firms' reporting.

Regarding the control variables, we find surprising results. Profitability, size, and sector are found to have a positive and significant impact on the quantity of NFI disclosed. We can see that having more available resources, higher visibility, and belonging to an ESI

drives firms to disclose more NFI information in their reports. However, we cannot say the same for the quality levels of the reports, as the relationship is not significant. It can thus be said that these variables increase the amount of NFI, but they do not seem to improve the quality.

## 5. Discussion and Conclusions

Using panel data techniques, this paper aims to clarify the relationship between reputation and NFI reports, as well as the impact of regulation on reporting, in particular, how the shift from voluntary to mandatory reporting has affected these reports.

Most previous studies on reporting include only a single variable: either the quality or the quantity of reporting. We believe this may be behind the contradictory results in the literature. In our study, we measure both variables and examine firms in the IBEX35 index, which is the main national and international reference of the Spanish Stock Exchange.

The results of the panel data analysis reveal a positive and significant relationship between reputation and the quantity and quality of the NFI disclosed by firms. In other words, our results show that highly reputed firms disclose more extensive and higher-quality information. These findings are in line with prior studies such as [Kansal et al. \(2014\)](#), [Michelon \(2011\)](#), and [Mishina et al. \(2010\)](#). They suggest that firms with a good reputation are under more pressure to report a larger amount of NFI and to produce high-quality reports to maintain or enhance their reputation. Highly reputable firms are subject to more public scrutiny and are more vulnerable to disappointing stakeholders who hold high expectations ([Mishina et al., 2010](#)).

We also find that regulation has a positive and significant effect on the quantity and quality of the information in the report. This means that the shift from voluntary to mandatory reporting has accomplished the objective of increasing the length and quality of NFI reports. This finding is in line with prior studies that found that regulation positively affects the length of reports ([Agostini & Costa, 2018](#); [Arif et al., 2022](#); [Matuszak & Róžańska, 2021](#); [Ottenstein et al., 2022](#); [Yang et al., 2021](#)) and their quality ([Caputo et al., 2020](#); [Habek & Wolniak, 2016](#); [Haji et al., 2023](#); [Hamed et al., 2022](#); [Ottenstein et al., 2022](#); [Yang et al., 2021](#)).

The findings of this study have significant implications, particularly in terms of advancing the theoretical understanding of this issue. By drawing on signaling theory and the concept of hard power to construct a multi-theoretical framework, we help clarify the relationship between reputation and reporting, as well as the effects of regulation. These insights shed light on the mixed results previously identified in the literature and help clarify the nature of the relationships between key variables. Furthermore, this study opens new avenues for exploration across multiple disciplines, offering a rich potential field for future inquiry.

Regarding the practical implications, [Miras-Rodríguez et al. \(2020\)](#) indicated that stakeholders are skeptical because they perceive NFI reporting as a symbolic strategy. Findings such as the ones presented by [Schreck and Raithel \(2018\)](#) contribute to this perception. Those authors found that firms with bad CSR performance are partially engaging in “window dressing”: the increase in the length of the report was not backed up by better performance or a stronger CSR commitment. With our findings, we can add some evidence that may help enhance stakeholders’ trust in NFI reports. Although previous results in the literature show that bad performers try to mimic the practices of the best firms, our results indicate that quantity and quality are still predominantly associated with the highly reputed firms. One might think that quality is harder to mimic than quantity, and that increasing the length of the report would be the easiest way for poor-performing firms to try to symbolize a good performance. However, we have seen that highly reputed firms are the ones that present not just better quality NFI reports but also more extensive information.

This knowledge can help build trust that the firms' signals and their increased transparency are genuine. As we can see in [Fiechter et al. \(2022\)](#), the real effect of the directive "reflect meaningful increases in CSR beyond firms' potential attempts to "greenwash" CSR performance" (p. 1500) and an increase of firm's commitment due to the regulatory efforts ([Cicchiello et al., 2023](#)). These insights are highly relevant for both corporate managers and policymakers.

This contribution will be of interest to managers as they can use it to support their transparency strategies and NFI disclosure. For managers, the findings underline the importance of adopting disclosure practices that enhance the perceived authenticity of sustainability reporting. Companies should prioritize the use of standardized, credible reporting frameworks, such as the GRI, the Sustainability Accounting Standards Board (SASB) guidelines, or the IR framework. These frameworks can help ensure that NFI disclosures are structured, comparable, and transparent. Moreover, to further enhance credibility, companies are encouraged to obtain independent assurance for their non-financial reports. External verification by reputable auditors or specialized assurance providers can significantly reduce perceptions of symbolic compliance among stakeholders. Managers should also communicate clearly about the scope and findings of such assurance engagements and disclose any material weaknesses identified and addressed. Additionally, firms could proactively engage with stakeholders to identify material issues.

The results from this study will also be of interest to policymakers. After examining the reports before, during, and after the transposition of Directive 2014/95/EU, we have demonstrated that the shift from voluntary to mandatory reporting has had a positive influence on both the quantity and quality of the report. In other words, policymakers have ensured that firms not only comply with new laws but also report more and better information on sustainability matters. This can motivate legislators to keep working to improve the national legal frameworks on this subject, as there are still many aspects left to regulate ([Dumay et al., 2016, 2017](#)). In particular, mandating independent third-party assurance of NFI reports, or at least setting minimum assurance standards, would discourage superficial compliance and incentivize firms to invest genuinely in sustainability practices. Policymakers could also enhance verification processes by introducing clearer criteria for what constitutes high-quality reporting, possibly linked to internationally recognized frameworks. Additionally, mechanisms to monitor and publicly disclose the degree of assurance obtained could create a reputational incentive for firms to pursue more authentic reporting practices.

Although this study focuses on Spain, the findings have broader relevance in light of recent developments in the European regulatory landscape. The transposition of Directive 2014/95/EU offered valuable insights into the effects of shifting from voluntary to mandatory non-financial reporting. However, the European Union has continued to strengthen sustainability reporting requirements. In 2022, the adoption of the Corporate Sustainability Reporting Directive (CSRD) marked a major regulatory evolution. The CSRD significantly expands the scope of reporting obligations, requires the use of standardized European Sustainability Reporting Standards (ESRS), and mandates external assurance of sustainability information. These developments show a clear regulatory trend toward greater oversight, comparability, and credibility in non-financial reporting across Europe. Our findings, therefore, anticipate the need to align transparency efforts with substantive sustainability performance and to invest in high-quality, verifiable reporting practices.

For further research, we suggest studying firms from another country and analyzing whether they follow the same pattern. Also, it would be interesting to replicate the same study on smaller firms (listed SMEs) that are directly affected by the EU's recent CSR

Directive. The application of the law to new companies will be staggered, and they do not have to report until 2027.

The literature indicates that there is a relationship between our control variables (profitability, size, and sector) and sustainability reporting. However, in our results, we found that this relationship was only significant when studying the quantity of reporting, not the quality. Thus, it would be interesting for further studies to test whether these findings hold when studying other samples and provide insights on why it affects one but not the other.

This study is not without limitations. First, we are aware that the selection of the constructs and indicators might affect the results obtained. Although we relied on the previous literature to select our measurements of these variables, we recognize that the results are constrained by this research design. Second, we only include in the sample the IBEX35 firms. Even though it is the most representative index in the Spanish stock exchange, it is composed of a limited number of firms in just one country, meaning the results should be extrapolated with caution.

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## Abbreviations

The following abbreviations are used in this manuscript:

NFI	Non-financial information
EU	European Union
GRI	Global Reporting Initiative
CC	Commercial Code
ROA	Return on assets
TA	Total assets
ESI	Environmentally sensitive industry
VIF	Variance inflation factor
FE	Fixed effects
RE	Random effects

## Appendix A

The following images are extracted from the sustainability reports of the firms included in the sample. With these examples, we intend to explain how the page count for the quantity index was corrected. In Figure A1, we can see a page that would count as 100%, since the text covers all the space, and there is an image. But, it is informative. It provides information rather than just decoration.



Figure A1. Example of 100%.

In Figures A2 and A3, we can see examples of pages that include a non-informative image that occupies half the page. Thus, it would count as 50% of a page.

Finally, in Figure A4, we can see a page that includes a non-informative image and also a black space. In this example, the page would only count as 25% because it is only the proportion that the text occupies.





Líneas tecnológicas prioritarias (continuación)

Soluciones avanzadas de centrales de gas y carbón

En el ámbito de las centrales térmicas de carbón y de ciclo combinado se desarrollan proyectos propios o se incorpora el conocimiento y tecnología ya comercial, o casi comercial, a los activos en servicio mediante la transferencia de tecnología.

Las mejoras durante 2015 se han centrado en:

Mejora de rendimiento: introduciendo nuevos materiales y técnicas que permiten funcionar a temperaturas más elevadas. También se están estudiando mejoras en los equipos auxiliares.

Emisiones: adaptando los sistemas de depuración de gases a normativas más exigentes o extendiendo el conocimiento en nuevas tecnologías de captura de CO<sub>2</sub>.

Flexibilidad en arranques, paradas y ciclado: atendiendo a nuevos requerimientos por parte de los mercados debido a la introducción de energías renovables menos previsibles y el impacto de estos cambios en la vida útil de las instalaciones.

Consumo de agua: introduciendo mejoras en los sistemas de enfriamiento para que los consumos sean menores.

Energías renovables

La compañía tiene entre sus objetivos el desarrollo de nuevas tecnologías que aumenten el porcentaje de energía renovable de su portfolio.

Por ello, trabaja en la ejecución de proyectos de innovación para demostrar la viabilidad técnica y económica de la implantación de este tipo de tecnologías en las instalaciones del grupo, en especial en el ámbito eólico para incrementar el nivel de eficiencia y seguridad.

En el ámbito de la energía hidráulica destaca la inauguración de la sede permanente del Centro Internacional de Excelencia Hidráulica (CIEH), en Vigo, que centra su estrategia en iniciativas de I+D+i en el ámbito del aprovechamiento de la energía hidráulica convencional y marina, que puedan ser trasladadas, en fases de desarrollo o explotación, a las instalaciones de la compañía.

Figure A2. Example of 50%.



Los rasgos que definen a Gas Natural Fenosa

Empresa con experiencia.

Empresa eficiente.

Empresa responsable.

Empresa innovadora.

• Empresa con experiencia: Gas Natural Fenosa trabaja a diario y desde hace más de 170 años, en un proceso de mejora continua, a fin de ofrecer servicios a la sociedad, mediante la implantación de las tecnologías más avanzadas en cada momento. Su experiencia y posicionamiento competitivo, la convierte en una compañía preparada para afrontar con éxito los retos planteados en un mercado globalizado.

• Empresa eficiente: su logro se basa en conseguir más con menos. La eficiencia constituye el motor de la compañía y define su forma de actuar, permitiendo alcanzar los objetivos deseados mediante un uso óptimo de los recursos humanos, financieros, físicos y tecnológicos disponibles.

• Empresa responsable: para la compañía es fundamental contribuir al desarrollo y bienestar de las comunidades con las que se relaciona, centrando sus esfuerzos en ofrecer un suministro energético sostenible, eficiente, seguro y respetuoso con el medio ambiente y con los derechos humanos.

• Empresa innovadora: la innovación ha sido una de las claves de la compañía desde su origen. Además de proyectos de I+D+i, lleva a cabo actividades de vigilancia tecnológica, transferencia de tecnología y fomento de la cultura innovadora.

Figure A3. Example of 50%.

Por último, cabe citar el "Proyecto de Redes Inteligentes" (PRICE), en el Corredor del Henares, que reúne la mayor parte de los aspectos anteriormente citados.

Finalizado en 2015, ha tenido como objetivo crear una solución global para el despliegue de las redes inteligentes que pueda ser replicable a gran escala en diferentes áreas geográficas, en el ámbito nacional e internacional.

Además, durante el proyecto, se han generado resultados del análisis de la mejora de la operación y mantenimiento de la red, como la optimización de la conexión de la generación renovable distribuida, la integración de los vehículos eléctricos en la red, y el análisis del comportamiento de los usuarios finales en cuanto a la gestión activa de la demanda.



En 2015, las actividades de innovación en redes inteligentes se han centrado en: telegestión de contadores, automatización de la red, integración de recursos energéticos distribuidos y optimización de los procesos de desarrollo y mantenimiento

**Figure A4.** Example of 25%.

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