

Toward comparable corporate sustainability reporting in state-owned enterprises

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Abstract

Purpose – The purpose of this study is to explore the comparability of corporate sustainability reporting (CSR) among Spanish State-Owned Enterprises (SOEs) and the evolution of their metrics over time. It specifically examines the extent to which these enterprises adhere to national and international key performance indicators (KPIs), focusing on environmental and human capital indicators. The research aims to understand if regulation alone fosters comparable reporting or if other drivers, such as collaborative platforms and external verification, play a significant role in enhancing the quality and consistency of sustainability disclosures.

Design/methodology/approach – The study employs a longitudinal analysis of sustainability reports from 25 Spanish SOEs over two fiscal years (2018 and 2021). It utilizes a set of commonly accepted KPIs based on GRI standards and AECA recommendations. The methodology includes Content Analysis: Evaluating four variables for each KPI: reporting presence, inclusion of historical evolution, target setting and unit of measurement. Statistical Testing: Applying Wilcoxon and Mann–Whitney U tests to assess the impact of regulatory changes and other drivers. Herfindahl–Hirschman Index (HHI): Calculating this index to quantify the concentration or dispersion of measurement units to evaluate homogeneity and comparability across the sector.

Findings – The results reveal a general improvement and homogenization in CSR among Spanish SOEs between 2018 and 2021. Reporting volume increased, and internal comparability improved through better contextualization of data and target setting. While basic environmental and employee metrics are widely reported, complex indicators like Scope 3 emissions remain low. The study identifies three strategic responses: “acquiescence” (proactive alignment), “compromise” (minimalist compliance) and “avoidance” (nonconformity). Notably, membership in collaborative platforms significantly enhances reporting quality and comparability, whereas the impact of external verification remains inconclusive during the studied period.

Originality/value – The novelty of this study lies in its specific focus on the comparability of CSR within the unique context of State-Owned Enterprises, which serve as hybrid organizations balancing public mandates and market competition. Unlike previous research that often focuses on disclosure presence, this work analyzes units of measurement, historical disclosures and target setting as critical elements for monitoring sustainability performance. It provides empirical evidence on how collaborative platforms act as key drivers for reporting convergence, offering valuable insights for policymakers and standard-setters aiming to improve the effectiveness of non-financial reporting regulations.

Keywords Comparability, Corporate sustainability reporting (CSR), State-owned enterprises (SOEs), Key performance indicators (KPIs)

Paper type Research article

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1. Introduction

Traditional financial statements, once the cornerstone of organizational assessment, are increasingly being complemented by non-financial metrics. The impetus for this shift is the burgeoning recognition of sustainability as a critical component of corporate governance. Environmental degradation, climate change, and social equity are no longer peripheral concerns but central to the risk assessment and investment decisions in both the private and public sectors (Ali *et al.*, 2023; Molin *et al.*, 2023). Europe has been at the forefront of this paradigm shift, actively sculpting the regulatory landscape to promote transparency and accountability in sustainability reporting. Since Directive 2014/95/EU of the European Parliament, there has been concerted effort across EU countries to standardize sustainability disclosures. The regulatory framework was further reinforced by Directive (2022)/2464/EU on Corporate Sustainability Reporting (CSRD), which aims to standardize and improve the quality of sustainability disclosures across the European Union. In this context, Spain has required large consolidating companies to engage in nonfinancial/sustainability reporting through Law 11/2018. Despite these developments, challenges such as materiality, assurance quality and, especially, comparability, continue to cast shadows on the effectiveness of corporate sustainability reporting (CSR) (Luque-Vílchez *et al.*, 2023). Reports teeter between thoroughness and superficiality, often muddled by selective disclosures and greenwashing tactics (Ali *et al.*, 2023). The recent first “omnibus” package of proposals (February, 2025 [1]) – which simplified the reporting framework in order to make European companies more competitive with those in other environments that are not subject to such stringent sustainability reporting standards – shows the continuous challenges of CSR. This is therefore a good time to reflect on the progress that has been made in this field, before further developments by the standard-setting bodies.

CSR aims to bridge the accountability gap, equipping stakeholders with information that is not only intelligible and applicable but also benchmarked and comparable across entities (León-Silva *et al.*, 2022). Accounting for nonfinancial issues should enable organizations to inform and address sustainable development challenges (Bebbington and Larrinaga, 2014). This study, focused on Spanish State-Owned Enterprises (SOEs), attempts to understand how sustainability reporting regulation affects the disclosure of sustainability information and the comparability of the information disclosed. Thus, it explores the extent to which regulation helps to comparability across time and across companies. The importance of Spanish sustainability reporting has been widely recognized (Larrinaga *et al.*, 2019), offering valuable insights into the limits of regulation.

SOEs are at the confluence of public mandate and market competition and, because of this, they have been defined as a hybrid organization that must balance the scrutiny of diverse stakeholders with the imperative of public service delivery (Grossi *et al.*, 2015; Royo *et al.*, 2019). Sustainability reporting by SOEs – ranging from environmental management to contributions to social welfare – not only enables the creation of public value in dynamic socioeconomic environments, but also reinforces their alignment with public priorities. The common ownership of SOEs by the State introduces a special environment for comparability, as it engenders a natural premise for benchmarking and cross-entity analysis. The comparability of reporting by SOEs operating under the aegis of the same government is essential to provide a consistent picture to the common sovereign owner and the public at large. Thus, by examining sustainability reports, we aim to understand how SOEs address the pressures and regulations of CSR.

This study contributes to existing debates over CSR reporting regulation and standard setting, offering insights into the effects of the national and international regulation of CSR reporting. Previous studies have analyzed comparability by comparing standards from a theoretical point of view (Giner and Luque-Vílchez, 2022; Cohen *et al.*, 2023; Ali *et al.*, 2023; Abela, 2022), by analyzing the presence or absence of the information (León-Silva *et al.*, 2022), or the implementation of CSR in Spain by the Sustainable Economy Law 2/2011 (Luque-Vílchez and Larrinaga, 2016). No study has analyzed the key performance indicators (KPIs) across time and the setting of targets, all key elements for CSR to compare sustainability performance over time. This work is guided by the following research questions:

RQ1: Does regulation alone foster comparable reporting across companies and time? RQ2: Are there other drivers fostering comparable reports? By exploring these questions, the study aims to contribute to an understanding of to what extent regulation and other drivers can foster not only reporting but comparability.

The remainder of this article is organized as follows: [Sections 2](#) and [3](#) delve into the background and theoretical framework, laying the groundwork for the methodology and the analysis of subsequent results. The article concludes with a discussion that summarizes the findings and their implications, as well as the main conclusions.

2. Toward more comparable corporate sustainability reporting in SOEs: the regulatory landscape

The pursuit of harmonization in financial reporting, which gained momentum in the early 1990s, has been paralleled in today's sustainability reporting landscape. Within the realm of sustainability, comparability is more than a benefit – it is fundamental for clear and consistent disclosures across global and sector divides, minimizing inconsistencies ([Giner and Luque-Vílchez, 2022](#)), although the interplay between materiality and comparability should not be neglected. The development of universally accepted standards and guidelines is vital in improving the quality of sustainability reporting and achieving the sought-after uniformity ([Fortanier et al., 2011](#)). Reflecting on the historical development of financial information harmonization, it becomes apparent that early emphasis on CSR comparability is critical to avoid the entrenchment and complexity that impeded financial standardization efforts ([Cohen et al., 2023](#)). Thus, advocating prompt convergence in CSR reporting is essential to prevent the kind of stagnation that has characterized the financial accounting harmonization process ([Caruana et al., 2019](#)). Although convergence is a notable goal, the ultimate purpose is to enable robust and verifiable information that also, effectively, conveys real achievements ([Abela, 2022](#)).

In recognizing the required comparable in sustainability reporting, there is a dichotomy. On the one hand, there is an imperative for standardized comparability to ensure clarity and consistency in disclosures. As shown by [Korca et al. \(2021\)](#) “comparability” is seen as an attribute of information quality by the European Financial Reporting Advisory Group [2] (EFRAG) and the International Sustainability Standards Board [3] (ISSB). On the other hand, we must be wary of oversimplification, which risks undermining the multifaceted nature of sustainability challenges ([Abela, 2022](#)). Standardization should facilitate – not hinder – the ability of organizations to authentically report their unique sustainability endeavors ([Adams and Abhayawansa, 2022](#)). Materiality and comparability are deeply interconnected in CSR, but their relationship is complex and often conflicting ([Korca et al., 2021](#)). Equilibrium is needed between inter-firm comparability (comparison between organizations), often prioritized by investors and capital providers, and intra-firm comparability (comparison within the same company over time), which is considered more effective for fostering long-term accountability and encouraging entities to improve their sustainability practices. Furthermore, the push toward mainstreaming sustainability reporting carries the risk of commodification, potentially leading to superficial compliance instead of genuine advancements in corporate sustainability ([Korca et al., 2021](#)). The beneficial convergence in CSR practices should lead to transparent communication of sustainability successes, fundamentally grounded in robust and credible data ([Abela, 2022](#)), while allowing entities to show their particularities when it comes to sustainability.

The rising number of sustainability reporting protocols highlights the need for consistency and comparability in disclosures ([Ali et al., 2023](#)). Nowadays, the existence of multiple actors focused on setting sustainability norms and standards, such as the Global Reporting Initiative [4] (GRI), the EFRAG, the ISSB, the Task Force on Climate-related Financial Disclosures [5] and the Integrated Reporting (IR) [6] shows that there is no doubt of the aim of standardizing the practice of sustainability reporting. The GRI, in particular, has been a trailblazer, advocating comprehensive reporting across the full spectrum of an organization's impact ([Prado-Lorenzo et al., 2009](#)). It could be said that the tsunami of regulatory efforts and

standards could be counterproductive for the achievement of comparability of sustainability disclosure at the international level. Before the regulatory efforts, there was a belief that the GRI was the most commonly accepted standard for sustainability reporting, helping the comparability of the reported information. Now, the effects of the evolving regulatory landscape need to be analyzed. We do so by focusing our attention on Europe and Spain.

The European Directive 2022/2464/EU sets a foundation for compulsory sustainability reporting standards to ensure comparability and thoroughness in disclosures. In accordance with EU policies, the Spanish government implemented a series of initiatives with the objective of enhancing CSR in Spain. Initially, promoted sustainability reporting among large companies (with more than 1,000 employees) through the Law 2/2011 on Sustainable Economy without establishing specific contents and indicators. Nevertheless, [Luque-Vílchez and Larrinaga \(2016\)](#) showed that this Law was unsuccessful in increasing the number of reporting companies and only resulted in a limited improvement in disclosure. A few years later, for the adoption of the 2014/95/EU Non-Financial Reporting Directive, the Spanish Government approved the Royal Decree-Law 18/2017, which increased the scope in terms of the number of companies obliged and content, only enumerating the topics that should be considered in CSRs. It was with Law 11/2018 when the CSRs were really promoted as the number of companies obliged increases considerably [7] as well as the content that should be included in each topic, especially in terms of environmental, human resources and social issues. At present, as we have said, the first “omnibus” package of proposals that aims to simplify the corporate reporting framework in order to make European companies more competitive will affect the Spanish transposition of the CSRD.

While regulatory advancements typically lead to a rise in sustainability disclosures, achieving comprehensive compliance is a challenge for many firms ([Fallan and Fallan, 2009](#); [Negash and Lemma, 2020](#); [Esteban-Arrea and Garcia-Torea, 2022](#)). Studies have shown that although there is an increase in the quantity of reporting post-regulation, the depth and quality of these disclosures may not necessarily follow suit ([Chauvey et al., 2015](#); [Costa and Agostini, 2016](#); [Luque-Vílchez and Larrinaga, 2016](#)). Moreover, differences among sustainability accounting frameworks continue to exist, highlighting the critical need for scholarly examination of comparability ([Giner and Luque-Vílchez, 2022](#)). Ensuring the success and credibility of these standards does therefore require a concerted effort to stabilize the sustainability standard-setting domain ([Ali et al., 2023](#)).

SOEs, with their distinct public sector stewardship, are at the vanguard of evolving expectations for transparency and accountability, particularly in areas concerning societal and environmental impact. The Law 4/2007, on the transparency of financial relations between public administrations and public companies, the Law 19/2013 on transparency, access to public information and good governance, and the Royal Decree 615/2024, which regulates the transparency and good governance council, are directly applicable to the SOEs. Central government, increasingly mandates these entities to prioritize societal interests, striving to mitigate their environmental footprints and demonstrate a commitment to the broader goals of sustainable development ([Argento et al., 2019](#); [Garde Sánchez et al., 2017](#)). There is a compelling argument for SOEs to exceed the sustainability disclosure standards expected of their private sector counterparts. The rationale for this is twofold: firstly, to validate the unique public mandate they hold by a transparent demonstration of how they navigate the dual objectives of commercial success and societal good ([Greiling et al., 2015](#); [Royo et al., 2019](#)), and secondly, to provide evidence of responsible political stewardship and operational autonomy. While an enhanced sense of responsibility might be well-defined for SOEs, the actual implementation of these standards is not guaranteed. Challenges include ensuring that the reported information is accurate, comparable and reflective of the impact. Therefore, the pursuit of CSR at SOEs is not only about adherence to regulations, but also about embedding a culture of accountability and continuous improvement that advances the public interest.

It is not the first time that public sector companies engage in pioneering practices that are later cascaded to public administrations. A case in point is the adaptation of International Accounting Standards of the private companies to public sector companies in the 1980s by the

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International Federation of Accountants (IFAC), setting a precedent for the development of International Public Sector Accounting Standards (IPSAS) that followed a decade later. This underscores the role of SOEs as testing grounds for new governance and reporting paradigms.

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3. Theoretical framework: to comparable reporting across companies and time in SOEs

Institutional, stakeholder and legitimacy theories, together with [Oliver's \(1991\)](#) strategic response framework, provide a comprehensive understanding of how organizations respond to the challenges of fostering comparable reporting across companies and time. Institutional theory highlights how regulatory frameworks exert coercive pressures that drive reporting practices. Nevertheless, reporting levels can also be justified by normative and mimetic pressures that push organizations to achieve legitimacy within their institutional environments ([DiMaggio and Powell, 1983](#); [Nicolo et al., 2021](#)). Regulation alone may not ensure comparability, as organizations often engage in symbolic compliance or “window dressing” to meet external expectations without substantive changes to internal processes ([Fang et al., 2023](#); [Pina et al., 2009](#)). This disconnection between rhetoric and reality asks for a closer examination of SOEs' behavior in sustainability disclosures.

Stakeholder theory emphasizes the role of stakeholder engagement as a driver for comparability, as organizations prioritize the needs and expectations of key stakeholders ([Freeman, 1984](#); [Kaur and Lodhia, 2018](#)). SOEs operate under the influence of two key stakeholder groups: the State, which is a close and direct stakeholder, and citizens, a more distant stakeholder group. Given the limited time and resources of managers, stakeholder theory highlights the need for prioritization in addressing the demands of certain groups ([Mitchell et al., 1997](#)), encouraging SOEs to comply with standardized reporting practices to meet governmental oversight and accountability requirements, also about sustainability.

Legitimacy theory posits that organizations strive to establish their legitimacy by meeting the expectations of those stakeholders. It is more frequently used for explaining nonmandatory disclosures, where organizations disclose information to enhance moral legitimacy by demonstrating alignment with broader societal values, such as sustainability and transparency ([Deegan, 2002](#)). It is particularly valuable in understanding the strategic use of voluntary reporting to build and sustain legitimacy in the absence of regulatory compulsion. However, the complexity of SOEs' operations and the public interest involved call into question whether current applications of legitimacy theory sufficiently capture the nuances of CSR practices.

Sustainability reports could be considered a window into the use of communication strategies by organizations that account for what the organization has done, but they are also increasingly used to celebrate achievements and to present a favorable image ([Roman et al., 2019](#)). As stated by [García-Benau et al. \(2022\)](#), CSR reflects the organization communication strategy aimed at addressing stakeholder expectations. The variety of CSR practices suggests that there is not only a dichotomy of rhetorical versus instrumental implementation ([Burns and Scapens, 2000](#); [Siti-Nabiha and Scapens, 2005](#)), but also different ways of introducing a reform that can lead to action ([Torres et al., 2019](#)). Contemporary research points out that organizations are not passive entities but actors dynamically responding to evolving institutional pressures, including the increasing demands related to sustainability information and action ([Oliver, 1988, 1991](#); [Barman, 2002](#); [Scott, 2001](#); [Lounsbury, 2008](#)). This is particularly relevant in the context of CSR, where the complexity of organizational responses becomes evident. [Oliver \(1991\)](#) identified five types of organizational responses, each representing a different behavior toward institutional conformity: acquiescence, compromise, avoidance, defiance and manipulation ([Neu et al., 1998](#); [Aureli et al., 2020](#)). In this vein, such responses could range from being reactive to proactive ([Oliver, 1988](#)), contingent upon organizational and environmental factors.

Societal actors are far from monolithic in their behaviors. [Cooney \(2007\)](#) illustrated how actors involved in change processes might engage, reject, or even transform reforms. This diversity of responses to regulation, ranging from avoidance to acquiescence, is

detectable through an examination of the CSR (Criado-Jiménez *et al.*, 2008; Esteban-Arrea and Garcia-Torea, 2022), also in the case of the SOEs. The studies by Wijethilake (2017) and Vejvar *et al.* (2018) reiterate the fact that organizational reactions to CSR are influenced by a variety of pressures, not solely legislative mandates, indicating a spectrum of potential responses. Boiral *et al.* (2022) emphasize that inconsistencies in measurement methods are a primary barrier to rigorous comparison among GRI adopters. While standards may be uniform, their application varies significantly (Cerioni *et al.*, 2021), raising questions about varying responses in alignment with institutional norms.

In this context, organizations that fully acquiesce to regulatory requirements are more likely to adopt standardized reporting practices, enhancing comparability across companies and time. However, those that compromise may selectively conform, balancing regulatory demands with internal priorities, which could result in partial comparability. For instance, organizations may adapt reporting practices to align with stakeholder expectations or societal norms, fostering comparability through external pressures rather than regulation alone. By integrating these theoretical perspectives, it becomes evident that achieving comparable reporting is a complex process shaped by the interplay of regulatory frameworks, stakeholder dynamics, legitimacy concerns and strategic organizational responses.

The presence of multiple stakeholders significantly determines an organization's response (Aureli *et al.*, 2020; Esteban-Arrea and Garcia-Torea, 2022), a situation that is quite pertinent to SOEs. Neu *et al.* (1998) found that voluntary environmental disclosures by organizations exhibited a mix of acquiescence, compromise and defiance. As regulations grow more stringent, so the responses evolve, something which has been observed in Spanish companies by Criado-Jiménez *et al.* (2008). In our study, we posit that acquiescence will be evident in those SOEs that not only adopt CSR but also take the initiative to align with accepted standards and establish targets for the key performance indicators, thereby enabling comparability over time and between entities. Conversely, a compromise strategy may reveal a minimalistic approach to new reporting frameworks, while avoidance will likely manifest itself through nonconformity and inaction, even in the face of basic requirements, positioning CSR comparability as an onerous obligation rather than a critical asset. Dismissal or defiance responses are unlikely, given the increased importance of CSR reforms in Spain and the comprehensive nature of Law 11/2018, which eclipses the demands of the Directive 2014/95/EU (Esteban-Arrea and Garcia-Torea, 2022; Criado-Jiménez *et al.*, 2008). As responses may evolve, it is important to explore drivers that may produce a shift toward acquiescent responses. This temporal analysis will thus shed light on the dynamic nature of SOEs' responses to CSR, providing information to anticipate the impact of the CSR implementation barriers and drivers.

4. Methodology

This article analyzed SOE's CSR over two fiscal years -one following the enactment of Spanish Law 11/2018 and another three years later- to not only as certain if the number of KPIs reported has increased, but also to see if there is an enhancement in the comparability of information. The initial dataset, sourced from the Central Government database (Invente) [8], included 203 SOEs, of which only 49 were initially identified as companies meeting the criteria for nonfinancial reporting under the Directive 2014/95/EU. Some exclusions were made from this group because four companies were in liquidation and two were based outside Spain. The 43 resulting companies were analyzed. Given the evolution of the regulation, they can be divided into two types: 37 groups and subgroups under the umbrella of the Law 11/2018 – of which some could apply a legal exemption- and six large undertakings bound by the Royal Decree 18/2017 [9] – excluded from the scope of application of the Law 11/2018, as a consequence of the inclusion of the consolidation requirement in the same-. From those 43 companies, 25 reported nonfinancial information from 2018 to 2021 (see Table 1).

In order to define commonly accepted indicators, the parameters used in the GRI standards and the AECA KPIs (Spanish Association of Accounting and Business Administration) – based

Table 1. Spanish SOEs obliged to disclose CSRs

	Name	CSR	Sustainability business network	CSR verified in 2018	CSR verified in 2021
1	ADIF-Alta Velocidad (ADIF-AV)	Group	Yes	No	No
2	Aena, S.M.E., S.A. (AENA)	Group	Yes	Yes (Valora)	Yes (Deloitte)
3	Agencia EFE, S.A., S.M.E. (EFE)	Subgroup	No	No	Yes (BNFIX Advisory)
4	Autoridad Portuaria de Barcelona (APB)	Group	No	No	No
5	Autoridad Portuaria de Gijón (APG)	Group (exempted from CSR but a sustainability report prepared)	No	No	No
6	Autoridad Portuaria de Sevilla (APS)	Group (exempted from CSR but a sustainability report prepared)	No	No	No
7	Centro para el Desarrollo Tecnológico y la Innovación E.P.E. (CDTI)	Group (exempted from CSR but a sustainability report prepared)	No	No	No
8	Compañía Española de Seguros de Crédito a la Exportación, Sociedad Anónima., Compañía de Seguros y Reaseguros, Sociedad Mercantil Estatal (CESCE)	Group	Yes	No	No
9	Corporación de Radio y Televisión Española, S.A., S.M.E. (RTVE)	Individual	Yes	No	Yes (EY)
10	Empresa de Transformación Agraria, S.A., S.M.E., M.P. (TRAGSA)	Subgroup	Yes	No	Yes (AENOR)
11	ENAIRES E.P.E. (ENAIRES)	Group	Yes	No	Yes (Bureau Veritas)
12	Entidad Pública Empresarial Renfe-Operadora (RENFE)	Group	Yes	Yes (KPMG)	Yes (EOA)
13	Enusa Industrias Avanzadas, S.A., S.M.E. (ENUSA)	Subgroup	Yes	Yes (AENOR)	Yes (AENOR)
14	Equipos Nucleares, S.A., S.M.E. (ENSA)	Subgroup	No	No	Yes (EUDITA)
15	Hulleras del Norte, S.A., S.M.E. (HUNOSA)	Subgroup	No	No	Yes (EUDITA)
16	Ingeniería de Sistemas para la Defensa de España, S.A., S.M.E., M.P. (ISDEFE)	Individual	No	Yes (Grant Thornton)	No
17	Ingeniería y Economía del Transporte, S.M.E., M.P., S.A. (INECO)	Group	Yes	No	No
18	Instituto de Crédito Oficial (ICO)	Group	Yes	Yes (AENOR)	No
19	Navantia, S.A., S.M.E. (NAVANTIA)	Subgroup	Yes	No	No

(continued)

Table 1. Continued

	Name	CSR	Sustainability business network	CSR verified in 2018	CSR verified in 2021
20	Paradores de Turismo de España, S.M.E., S.A. (PARADORES)	Individual	Yes	No	No
21	SEPI Desarrollo Empresarial, S.A., S.M.E. (SEPIDES)	Subgroup (exempted from CSR but a sustainability report prepared)	No	No	No
22	Servicios y Estudios para la Navegación Aérea y la Seguridad Aeronáutica, S.M.E., M.P., S.A. (SENASA)	Individual	Yes	No	Yes (AUREN)
23	Sociedad Estatal Correos y Telégrafos, S.A., S.M.E. (CORREOS)	Subgroup	Yes	Yes (AENOR)	No
24	Sociedad Estatal de Participaciones Industriales (SEPI)	Group	No	No	No
25	Sociedad Estatal Loterías y Apuestas del Estado, S.M.E., S.A. (SELAE)	Individual	No	Yes (Grant Thornton)	Yes (AUREN)

Source(s): The authors, from INVENTE data base

on Spanish Law 11/2018 – for environmental and social indicators have been used as a reference. AECA is an innovative association of great prestige in Spain and Latin American countries, whose proposal on integrated reporting and KPIs has even been taken into account in Law 11/2018. These KPIs are included in the most recent reporting standards developed by the [EFRAG \(2023\)](#). The selected indicators encompass energy efficiency and emissions indicators, waste management efficiency indicators and human capital indicators (see [Table 2](#)). The data of the selected KPIs were extracted from the CSR of the 25 SOEs of the sample.

[Oliver's \(1991\)](#) strategic response framework allows us to understand how organizations respond to institutional pressures, including those related to fostering comparable reporting. In the context of RQ1, organizations that acquiesce fully to regulatory requirements are more likely to adopt standardized reporting practices, thereby enhancing comparability across companies and time. However, those that balance regulatory demands with internal priorities could lead to partial comparability. Avoidance behaviors, such as symbolic compliance or decoupling, may undermine the effectiveness of regulation alone in achieving comparability. RQ2 highlights how other drivers, such as stakeholder pressures or legitimacy concerns, can influence organizational responses, fostering comparability through external pressures rather than regulation alone. By examining these strategic responses, the framework underscores the complexity of achieving comparable reporting and the interplay between regulatory and nonregulatory drivers in shaping organizational behavior.

To answer RQ1 (Does regulation alone foster comparable reporting across companies and time?), we evaluated the information included for each KPI for 2018 and 2021 and the comparability of the unit of measurement.

First, for each KPI we evaluated, four dichotomous variables: whether SOEs in its CSR (1) reports the commonly accepted indicator, (2) includes information of two or more fiscal years which allows readers to understand the evolution of the indicator (3) establishes targets to achieve, regarding the indicator, and (4) uses the commonly accepted units of measurement according to AECA. Then, a Wilcoxon test was applied [\[10\]](#) to evaluate the effect of the

Table 2. GRI and AECA KPIs

GRI	AECA KPIs	Name	Recommended units of measurement	Other international references
<i>Energy efficiency and emissions</i>				
GRI 302–1	E1	Energy consumption	MWh	CDP 2018 (C8.2), IC (UNCTAD- ISAR) IA (UNCTAD- ISAR) CDP 2018 (C6.1)
GRI 303–5	E2	Water consumption	m ³	
GRI 305–1	E3	Polluting emissions Scope 1	Metric tons CO ₂	
GRI 305–2	E4	Polluting emissions Scope 2	Metric tons CO ₂	CDP 2018 (C6.3)
GRI 305–3	E5	Emissions from transport and distribution activities Upstream (Scope 3)	Metric tons CO ₂	CDP 2018, (C4.1b)
GRI 305–3	E6	Emissions from transport and distribution activities Downstream (Scope 3)	Metric tons CO ₂	CDP 2018, (C4.1b)
<i>Waste management efficiency</i>				
GRI 306–2	E7	Waste generation	Tons of waste generated	IE (UNCTAD- ISAR)
GRI 306–2	E8	Managed waste	Tons of waste managed	
GRI 306–2	E9	Reused waste	Tons of waste reused	
<i>Human capital</i>				
GRI 405–1	S1	Employees	Number of people under contract at year-end	5 (UNCTAD- ISAR)
GRI 405–1	S2	Employee gender diversity	Number of women under contract at year-end	5 (UNCTAD- ISAR)
GRI 405–1	S3	Senior management positions	Number of senior management positions	
GRI 405–1	S4	Gender diversity in senior management	Number of women in senior management positions	
GRI 405–1	S5	Job stability	Number of employees with indefinite-term contracts in force at the end of the year	
GRI 401–3	S6	Right to parental leave	Number of male employees who have exercised their right to parental leave and who have started to take parental leave in the fiscal year	ISO 26000 Section 6.4.4
GRI 401–3	S7	Right to maternity leave	Number of female employees who have exercised their right to maternal leave and who have started to take maternal leave in the fiscal year	ISO 26000 Section 6.4.4
	S8	Disability	Number of employees with a recognized degree of disability at the end of the fiscal year	OECD Guidelines for Multinational Enterprises (Chapter V, paragraph 58) ISO 26000 Section 6.4.6 and ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy, paragraph 43
	S9	Occupational hazards	Number of employees engaged in work activities considered high risk due to potential occupational accidents or diseases	
<i>(continued)</i>				

Table 2. Continued

GRI	AECA KPIs	Name	Recommended units of measurement	Other international references
GRI 403–9	S10	Absenteeism	Number of days lost as a result of accidents and illnesses of all types (occupational or not), or for any other reason or circumstance, for all employees during the fiscal year	
GRI 401–1	S11	Employee turnover	Total number of employees leaving voluntarily during the fiscal year	7 (UNCTAD- ISAR)
	S12	Net employment creation	Number of new contracts – (number of retirements + number of voluntary redundancies (S11) + number of dismissals)	
	S13	Length of service	Average number of years of tenure for all employees	
GRI 404–1	S14	Employee training	Total number of hours of training received by employees during the year	10 (UNCTAD- ISAR)

Source(s): The authors, from AECA and GRI sustainability standards

increase in the regulatory framework for nonfinancial information between 2018 and 2021 and the changes in SOEs responses on these variables.

It is expected that SOEs with an “acquiescence” response would fully report and draw comparisons over time for all indicators, embedding them within a framework of established targets. Targets for the KPIs are considered key as CSR ultimately leads to action. Such rigorous reporting facilitates stakeholders in evaluating an organization’s nonfinancial performance over time and in comparing them with sector peers (Luque-Vilchez *et al.*, 2023). Strategies of “compromise” and “avoidance” reflect varying degrees of partial compliance or outright non-disclosure, signaling a more selective or minimalist approach to CSR. A “compromise” strategy may satisfy reporting requirements, but it does limit the depth of comparative analysis and target-setting. An “avoidance” strategy would result in scant or non-reporting of KPIs, eschewing benchmarks and targets, thereby limiting the informational value of disclosures.

Secondly, we used the Herfindahl–Hirschman Index (HHI) to evaluate the comparability of the unit of measurement. This index quantifies the concentration or dispersion of a set of variables within a specific sector or industry and has been used previously in public sector accounting studies by Pina and Torres (2003), together with the Archer *et al.* (1995) index, to measure the degree of comparability and concentration of accounting practices across countries, showing that the highest values of the HHI occur in those groups with a degree of disclosure closer to the IPSAS and the IFAC guideline recommendations for accrual accounting. In our research, we calculate this index to the units of measurement of each KPI of the sample in 2018 and 2021. The results will show if the companies are using common units of measurement (high HHI) to report the KPIs or if there is a high dispersion (low HHI).

$$HHI = \sum_{i=1}^n s_i^2$$

Where n = number of different units of measurement for the KPI, s_i = percentage of SOEs using the unit of measurement i for the KPI multiply by 100, $HHI = (0, 10,000]$ (Pina and Torres, 2003).

The uniformity in measurement units would reflect an “acquiescence” behavior, denoting a full and unreserved compliance with institutional expectations, thereby facilitating comparability. Conversely, a lack of standardization could indicate a “compromise” or “avoidance” approach, pointing to partial alignment or a deliberate distancing from institutional pressures. A discernible trend toward decreased dispersion in reporting would suggest that institutions progressively move toward full compliance with prevailing standards, thereby enhancing the comparability and utility of reported information.

To answer RQ2 (Are there other drivers fostering comparable reports?), we evaluate three drivers: the effect of belonging to a sustainability business network, having the CSR verified and belonging to an industry of high risk for climate change. Sustainability business networks are defined as both formal and informal structures that facilitate the dissemination of specialized information and best practices in sustainability. They function as mechanisms for institutionalization through mimicry and professional standardization. The relevance of sustainability business networks for sustainability reporting in SOEs is predicated on their ability to overcome resource constraints through strategic networking and the development of a critical mass to implement more effective sustainable practices (Collins *et al.*, 2007; Higgins *et al.*, 2014). Therefore, companies that belong to a sustainability business network for sustainable development and corporate social responsibility could lead to higher reporting and comparability of the information included in the reports. The verification of the CSR could also lead to a higher level of comparability as verification processes try to ensure the reliability of the information included in the report. Lejárraga García *et al.* (2024) posit that external verification of nonfinancial information not only improves its quality and increases the company’s credibility with its stakeholders (Ortiz-Martínez and Marín-Hernández, 2016), but also ensures better quality in sustainability reports when audited by external entities (Simnett *et al.*, 2009), which acts as a mechanism to improve their reliability, generating a positive influence on both the perception of corporate reputation by stakeholders and the value of the company. Companies that belong to an industry that has a high impact on the environment are receiving higher external pressures and, therefore, they should have higher levels of disclosure (Patten, 2002). Arkoh *et al.* (2024) also identified this driver as one of the determinants of sustainability reporting.

We obtain the data of these variables by searching on the webpages and CSR of the SOEs, looking for their participation in a sustainability business network and the verification report of the CSR. Then, we classify the SOEs as participating in a sector of high climate impact according to the classification of the EU [11]. The effect of these three dichotomous variables on the parameter of the KPIs of RQ1 (report, evolution, target and unit of measurement) is evaluated using the Mann–Whitney *U* test. The consideration of “size” and “sector” as driving factors has been omitted, as all SOEs chosen are regarded as large corporations, encompassing a diverse range of sectors.

5. Results

Our analysis shows distinct patterns in the reporting strategies of SOEs concerning KPIs related to environmental (E) and human capital (S) over the years 2018–2021. The data reveal a nuanced landscape of responses in the realm of CSR. The percentage of companies that present each indicator and the level of development of each of them can be seen in Table 3.

For environmental KPIs, which encompass metrics on environmental impact and sustainability practices, a trend toward increased reporting and development is evident. However, not all indicators show a similar evolution. The first group is formed by *energy consumption*, *water consumption*, *emissions scope 1*, *emissions scope 2* and *waste generation*, which show a greater level of development, composed of water and energy consumption, CO₂ emissions and waste generation. These indicators are frequently reported in 2021, and most companies not only report them but also include at least two other reporting items, namely evolution throughout years, targets and use the recommended unit of measurement

Table 3. Evolution in KPI parameters

KPIs	Report			Evolution			Target			Unit of measurement		
	2018	2021	Var	2018	2021	Var	2018	2021	Var	2018	2021	Var
	(%)	(%)	(n, %)	(%)	(%)	(n, %)	(%)	(%)	(n, %)	(%)	(%)	(n, %)
E1 Energy consumption	80	84	1, 5%	64	84	5, 31.3%	68	80	3, 17.6%	20	28	2, 40%
E2 Water consumption	72	84	3, 16.7%	56	84	7, 50%	68	68	0, 0%	68	80	3, 17.6%
E3 Emissions Scope 1	64	64	0, 0%	44	64	5, 45.5%	52	56	1, 7.7%	36	56	5, 55.6%
E4 Emissions Scope 2	44	64	5, 45.5%	32	64	8, 100%	40	48	2, 20%	24	60	9, 150%
E5 Emissions Scope 3 Upstream	8	16	2, 100%	8	16	2, 100%	8	12	1, 50%	8	16	2, 100%
E6 Emissions Scope 3 Downstream	0	20	5, 100%	0	20	5, 100%	0	16	4, 100%	0	20	5, 100%
E7 Waste generation	60	60	0, 0%	44	60	4, 36.4%	60	52	-2, -13.3%	36	52	4, 44.4%
E8 Managed waste	40	48	2, 20%	32	44	3, 37.5%	40	40	0, 0%	24	44	5, 83.3%
E9 Reused waste	16	32	4, 100%	12	28	4, 133.3%	16	24	2, 50%	4	24	5, 500%
<i>E KPIs mean</i>	43	52	2.4, 22.9%	32	52	4.8, 58.9%	39	44	1.2, 12.5%	24	42	4.4, 72.7%
S1 Employees	80	96	4, 20%	48	72	6, 50%	68	44	-6, -35.3%	80	92	3, 15%
S2 Gender diversity	80	92	3, 15%	44	60	4, 36.4%	64	32	-8, -50%	68	80	3, 17.6%
S3 Senior management positions	64	80	4, 25%	32	52	5, 62.5%	48	20	-7, -58.3%	56	60	1, 7.1%
S4 Gender diversity in senior management	60	64	1, 6.7%	28	44	4, 57.1%	44	12	-8, -72.7%	44	52	2, 18.2%
S5 Job stability	68	84	4, 23.5%	24	56	8, 133.3%	52	16	-9, -69.2%	60	76	4, 26.7%
S6 Right to parental leave	40	44	1, 10%	12	24	3, 100%	24	28	1, 16.7%	36	44	2, 22.2%
S7 Right to maternity leave	40	48	2, 20%	12	28	4, 133.3%	24	32	2, 33.3%	36	48	3, 33.3%
S8 Disability	32	68	9, 112.5%	12	40	7, 233.3%	20	44	6, 120%	32	68	9, 112.5%
S9 Occupational hazards	4	0	-1, -100%	0	0	0, 0%	0	0	0, 0%	4	0	-1, -100%
S10 Absenteeism	56	80	6, 42.9%	32	56	6, 75%	28	8	-5, -71.4%	20	20	0, 0%
S11 Employee turnover	28	44	4, 57.1%	4	16	3, 300%	12	12	0, 0%	16	32	4, 100%
S12 Net employment creation	28	20	-2, -28.6%	4	4	0, 0%	16	8	-2, -50%	4	0	-1, -100%
S13 Length of service	20	24	1, 20%	4	12	2, 200%	20	4	-4, -80%	20	16	-1, -20%
S14 Employee training	68	92	6, 35.3%	16	56	10, 250%	68	84	4, 23.5%	60	88	7, 46.7%

(continued)

Table 3. Continued

KPIs	Report 2018 (%)	2021 (%)	Var (n, %)	Evolution 2018 (%)	2021 (%)	Var (n, %)	Target 2018 (%)	2021 (%)	Var (n, %)	Unit of measurement		
S KPIs mean	48	60	3, 3.1%	19	37	4.4, 91.2%	35	25	–2.6, –29.5%	38	48	2.5, 26.1%
Mean	46	57	2.8, 24.3%	25	43	4.6, 74.6%	37	32	–1.1, –11.9%	33	46	3.3, 39.7%
Wilcoxon	220.5*			231.0*			69.5			245.5*		
Max	80	96	–	64	84	–	68	84	–	80	92	–
Min	0	0		0	0		0	0		0	0	

Note(s): $N = 25$ KPIs, * p -value < 0.01
Source(s): The authors

(see Table 3). By contrast, *emissions Scope 3 upstream and downstream*, *waste management* and *reused water* indicators, which are more difficult to measure as they are related to a specific activity of the company (*emissions scope 3 upstream*), show a lower level of disclosure in both years. The reporting of environmental indicators has improved in general, but differences persist in the percentage of companies reporting the indicators. Different speeds can therefore be observed, suggesting different reporting responses. When the indicator is difficult to assess, the number of SOEs reporting decreases notably, both in terms of reported indicators and the comparability over time. Not only are there different speeds in the indicators, but also in the commitment of companies toward comparable and useful information.

In the realm of human capital indicators, the reporting trends are more varied. While certain KPIs demonstrate high levels of disclosure and comparability (show evolution and use the recommended unit of measurement), others show lower levels of reporting. This disparity suggests that SOEs may be prioritizing certain aspects of human capital over others. As such, *Employees*, *Gender diversity*, *Senior management positions*, *gender diversity in senior management*, *job stability*, *absenteeism* and *employee training* show high levels of disclosure and comparability over time (evolution) and between companies (unit of measurement). However, *right to parental and maternal leave*, *occupational hazards*, *employee turnover*, *net employment creation* and *length of service* show lower levels of reporting. Moreover, the differences between these groups have increased between 2018 and 2021. The evolution in the reporting of human capital indicators differs according to the variable studied, with SOEs presenting a higher number of these indicators in 2021 (with the exception of *occupational hazards* and *net employment creation* and with a higher level of comparability over time and between companies). However, the number of companies reporting the targets for these KPIs decreased in this period. This change may be caused by uncertainty in the achievement of targets and, therefore, indicating “avoidance” with respect to showing a failure. As these targets are not mandatory under the regulation, it is possible that companies have elected to discontinue their presentation. This may be due to a lack of confidence in their ability to achieve the objectives, changes in human resources policies or a sense of uncertainty regarding future targets. This variation can be interpreted as an avoidance strategy to mitigate potential negative impacts on their reputation or stakeholder perceptions.

5.1 Does regulation alone foster comparable reporting across companies and time?

Table 4 shows that the response of “acquiescence,” which entails compliance and alignment with prevailing norms, was applied by some SOEs with high reporting and comparability levels of some of these companies for which CSR was mandatory (E.g. AENA and ENUSA).

The response of “compromise,” characterized by a balanced approach to address both global environmental concerns and business interests more than compliance with the law, shows medium levels of reporting but does not increase between the selected years. It portrays that full compliance with the law is not a priority, but that they do still perceive the importance of informing about certain environmental and social issues (e.g. RENFE, ENAIRE and ISDEFE).

The “avoidance” response, implying a tendency to sidestep the disclosure of environmental and social indicators, has evolved over time. In 2018, many companies exhibited a lower inclination toward reporting on sustainability. However, in 2021, only some SOEs maintained an “avoidance” response, such as APG, INECO and SEPIDES, and others moved from “avoidance” to “acquiescence” (e.g. CDTI and SENASA). This suggests that for some of them the novelty of the law required some time for adoption, while others could be showing greater resistance. Not showing a comparable indicator could signal that some SOEs are trying to avoid a negative view of the company.

As is often the case with information initiatives, when regulatory pressure rises, the results of the Wilcoxon test (see Tables 3 and 4) demonstrate that the SOEs increased reporting on these indicators between 2018 and 2021. Furthermore, the comparability of the information was enhanced by the use of the commonly accepted unit of measurement more frequently and the inclusion of the evolution for a greater number of indicators.

Table 4. Evolution in SOE parameters

SOE	Report 2018 (%)	2021 (%)	Var. (n)	Evolution 2018 (%)	2021 (%)	Var. (n)	Target 2018 (%)	2021 (%)	Var. (n)	Unit of measurement		
										2018 (%)	2021 (%)	Var. (n)
ADIF	57	83	6	43	74	7	9	26	4	35	70	8
Aena	65	78	3	35	70	8	48	43	−1	43	65	5
EFE	13	57	10	0	17	4	0	22	5	9	35	6
APB	0	39	9	0	22	5	0	22	5	0	39	9
APG	35	0	−8	22	0	−5	22	0	−5	9	0	−2
APS	0	30	7	0	17	4	0	9	2	0	9	2
CDTI	0	70	16	0	30	7	0	30	7	0	70	16
CESCE	39	61	5	39	39	0	17	22	1	17	52	8
RTVE	57	52	−1	17	26	2	22	17	−1	30	43	3
TRAGSA	78	78	0	13	35	5	43	48	1	35	70	8
ENAIRES	43	57	3	35	22	−3	39	26	−3	35	35	0
RENFE	74	70	−1	74	70	−1	70	48	−5	74	65	−2
ENUSA	83	87	1	57	70	3	70	78	2	43	65	5
ENSA	74	74	0	70	74	1	74	74	0	43	52	2
HUNOSA	43	61	4	0	61	14	43	35	−2	39	52	3
ISDEFE	70	65	−1	35	65	7	65	39	−6	48	57	2
INECO	39	9	−7	22	0	−5	35	9	−6	39	9	−7
ICO	65	74	2	39	70	7	57	39	−4	61	61	0
NAVANTIA	74	70	−1	9	48	9	70	61	−2	65	61	−1
PARADORES	48	61	3	17	57	9	48	52	1	35	48	3
SEPIDES	35	22	−3	0	0	0	35	0	−8	30	13	−4
SENASA	9	52	10	0	52	12	9	26	4	4	35	7
Correos	52	78	6	43	78	8	52	22	−7	43	65	5
SEPI	39	17	−5	17	4	−3	39	13	−6	35	17	−4
SELAE	52	78	6	26	70	10	48	43	−1	48	61	3
Mean	46	57	2.56	25	43	4.2	37	32	−1	33	46	3
Wilcoxon	206.5*			243.5**			109.0			226.5**		
Max	83	87	−	74	78	−	74	78	−	74	70	−
Min	0	0	−	0	0	−	0	0	−	0	0	−

Note(s): N = 23 SOEs, *p-value < 0.05 **p-value < 0.01. Print in color

Source(s): The authors

Our analysis using the Herfindahl-Hirschman Index (HHI) focuses on the comparability of units of measurement among SOEs. The results indicate a positive trend in the homogeneity and comparability of each indicator from 2018 to 2021, suggesting that SOEs are moving toward a more standardized approach to reporting, possibly reflecting an “acquiescent” response to institutional pressures for uniformity in sustainability reporting. Table 5 shows that 15 out of the 23 analyzed KPIs maintained their levels and follow the recommended indicators from 2018 to 2021. Some KPIs show an increase in homogeneity (higher HHI), such as *energy consumption* and *gender diversity*, and others show a decrease (lower HHI), such as *emissions scope 3 upstream* and *disability*. These changes in values indicate fluctuations or trends in the performance of the measured metrics during this period.

The convergence of each indicator is due to two elements: the number of companies that start reporting an indicator, and the reduction in the metrics used (see Table 5). Except for *energy consumption*, *emissions scope 1*, *absenteeism* and *employee turnover*, with more than 2 metrics used, all the others have a maximum of two measurements, showing that comparability is increasing over time in two-thirds of the indicators, and there is consistency with the recommended measurements. For the majority of the KPIs, the most used units of measurement remained the same between 2018 and 2021. This consistency suggests that the primary unit of measurement did not significantly change over time. Moreover, the measurement units employed conform to the recommended standards for those specific KPIs.

However, there are a few exceptions where the most used unit of measurement differs from the recommended unit. For instance, S12 - Net employment creation, for which the recommended unit is the *number of new contracts - (number of retirements + number of voluntary resignations + number of layoffs)*, but where the most used unit is *new hires minus layoffs*. This discrepancy might indicate either a divergence in data reporting or a deviation from the recommended measurement practices. This pattern could suggest a potential attempt by SOEs to obscure information that could portray them unfavorably, although a more comprehensive analysis would be necessary to establish definitive conclusions regarding such reporting behavior. Overall, while there are a few instances where the most used unit of measurement does not match the recommended unit, the majority of the KPIs in the table demonstrate consistency between these two columns.

The stability of the HHI for human capital KPIs suggests a consistent approach to measurement within this domain. This might be aligned with responses that prioritize standardization and comparability in assessing aspects related to personnel. The relatively consistent HHI values for these KPIs may be influenced by “acquiescence” responses, which promote a balanced and uniform approach to measuring human capital indicators.

In contrast, the environmental-related KPIs exhibit a more dynamic trend in HHI. The increase in HHI values indicates a growing diversity in measurement units used for assessing environmental performance. This could be reflective of responses that encourage a more nuanced and comprehensive evaluation of environmental impacts. Strategies like “compromise” may have contributed to this greater variety in measurement units, signifying a willingness to address a wider range of environmental aspects. SOEs employing a “compromise” strategy utilize a measurement unit that is different from the recommended one, but they consistently maintain it over both years. These entities focus on their stakeholders, rather than on legal compliance and comparison with other SOEs.

These findings show some variability in the indicators over time, but the measurement framework and units of measurement remained relatively stable, allowing for meaningful comparisons between the two years. The upward trend of the HHI, as presented in Table 5, implies a positive evolution in the measurement and reporting of environmental and human capital values by SOEs.

5.2 Are there other drivers fostering comparable reports?

In exploring drivers beyond regulations and strategies that contribute to the alignment of CSR practices, our study examines the role of participation in sustainability business networks of

Table 5. The Herfindahl–Hirschman index analysis

KPI	HHI 2018	2021	Number of different measurement units		Most used unit of measurement		Recommended units of measurement
	2018	2021	2018	2021	2018	2021	
E1 energy consumption	2,224	2,448 ↑	8	6 ↓	kWh	kWh	MWh
E2 Water consumption	5,136	7,216 ↑	2	2 =	m ³	m ³	m ³
E3 Emissions Scope 1	3,184	4,464 ↑	4	3 ↓	tCO ₂	tCO ₂	tCO ₂
E4 Emissions Scope 2	3,984	4,912 ↑	3	2 ↓	tCO ₂	tCO ₂	tCO ₂
E5 Emissions Scope 3 Upstream	8,528	7,312 ↓	1	1 =	tCO ₂	tCO ₂	tCO ₂
E6 Emissions Scope 3 Downstream	10,000*	6,800 ↓	0	1 ↑	tCO ₂	tCO ₂	tCO ₂
E7 Waste generation	3,312	4,368 ↑	3	2 ↓	T	T	T
E8 Managed waste	4,336	4,656 ↑	3	2 ↓	T	T	T
E9 Reused waste	7,216	5,776 ↓	2	2 =	Kg	T	T
S1 Employees	6,800	8,496 ↑	1	2 ↑	Number of people	Number of people	Number of people
S2 Gender diversity	5,168	6,608 ↑	2	2 =	Number of people	Number of people	Number of people
S3 Senior management positions	4,496	4,400 ↓	2	2 =	Number of people	Number of people	Number of people
S4 Gender diversity in senior management	3,792	4,144 ↑	2	2 =	Number of people	Number of people	Number of people
S5 Job stability	4,688	6,096 ↑	2	2 =	Number of people	Number of people	Number of people

(continued)

Table 5. Continued

KPI	HHI 2018	2021	Number of different measurement units		Most used unit of measurement		Recommended units of measurement
			2018	2021	2018	2021	
S6 Right to parental leave	4,912	5,072 ↑	2	1 ↓	Number of people	Number of people	Number of people
S7 Right to maternity leave	4,912	5,008 ↑	2	1 ↓	Number of people	Number of people	Number of people
S8 Disability	5,648	5,648 ↓	2	2 =	Number of people	Number of people	Number of people
S9 Occupational hazard	9,232	10,000* ↑	2	1 ↓	Number of people	Number of people	Number of people
S10 Absenteeism	2,992	2,672 ↓	4	4 =	%	%	Number of lost days
S11 Employee turnover	5,584	4,208 ↓	2	4 ↑	Number of people	Number of people	Number of people
S12 Net employment creation	5,392	6,800 ↑	5	1 ↓	New hires and layoffs	New hires and layoffs	Number of new contracts - (number of retirements + number of voluntary redundancies (S11) + number of dismissals)
S13 Length of service	6,800	6,096 ↓	1	2 ↑	Average number of years of tenure for all employees	Average number of years of tenure for all employees	Average number of years of tenure for all employees
S14 Employees training	4,656	7,824 ↑	3	2 ↓	Total number of training hours received by employees during the year	Total number of training hours received by employees during the year	Total number of training hours received by employees during the year

Note(s): *HHI = 10,000 since no company reported this KPI
Source(s): The authors

SOEs, verification of their CSR, and belonging to an industry that has a high impact on the environment in 2018 and 2021. Out of 25 SOEs analyzed, 14 are part of a sustainability business network both in 2018 and 2021, 7 and 11 had their CSR verified in 2018 and 2021, respectively, and 14 belong to an industry with high impact on the environment in both years.

Table 6 shows the values of the variables according to their membership to a sustainability business network or not, whether they had their report verified or belong to a high-impact industry [12]. Companies in a sustainability business network (e.g. RENFE, ICO and NAVANTIA) achieve significantly higher levels of reporting than those that do not belong, both in 2018 and 2021 (12.9 vs. 7.6 and 14.9 vs. 10.7, respectively). Moreover, the members of the sustainability business network have higher levels of comparability over time than those who do not belong, both in 2018 and 2021 (7.3 vs. 3.6 and 11.6 vs. 7.6). These findings suggest that membership in the sustainability business network significantly influences reporting levels and comparability, indicating that collaboration among SOEs may be a crucial driver for enhancing the quality and consistency of reporting.

The results on the verification of CSR are not so conclusive. In 2018, those companies that had their CSR verified showed higher levels of reporting and comparability over time (evolution and target) and between companies (use the recommended measurement units). However, these differences are not significant in 2021. This trend may be caused by the novelty of the verification and auditing process included in the law, which required some time for adoption, or by the evolution from “avoidance” to the “acquiescence” responses explained in the previous section. In terms of belonging to an industry with a high impact on the environment, results do not show it as a significant driver as there is no difference in the parameters of the KPIs disclosed between the companies in 2018 and 2021.

6. Discussion

This study contributes to the literature by analyzing how SOEs respond to regulations enforcing sustainability disclosures (Esteban-Arrea and Garcia-Torea, 2022; Aureli *et al.*, 2020; Criado-Jiménez *et al.*, 2008). Our focus on the impact of regulation on comparability enriches the debate on the ability of CSR to achieve effective accountability. Our results highlight a positive evolution in CSR among Spanish SOEs, not only increasing the volume of reported information but also enhancing internal comparability by contextualizing data with previous years and setting targets. This growing alignment with standardized units of measurement is a positive step, promising more consistent and comparable sustainability reporting practices. Such advancements are essential, not only for effective data analysis and comparison but also for fostering informed decision-making and policy formulation in the pursuit of sustainable development and corporate accountability.

Regarding the role of regulation to foster comparability, institutional theory suggests that regulatory frameworks exert coercive pressures on organizations, driving them to adopt standardized reporting practices to achieve legitimacy within their institutional environments. Improvements in several KPIs over time, such as *energy consumption* (E1) and *gender diversity* (S2), may reflect the influence of regulatory requirements. The European Directives and other sustainability regulations likely play a role in fostering comparability by mandating disclosures on environmental and social performance. However, the variability in progress across SOEs (e.g. significant differences in *scope 3 emissions* (E5-6) or *waste management* (E8)) suggests that regulation alone is insufficient to ensure full comparability. This aligns with the idea that while coercive isomorphism can drive compliance, it does not necessarily lead to uniformity in reporting practices due to differences in organizational resources, priorities and interpretations of regulatory requirements (Meyer and Rowan, 1977). Different reporting levels can also be justified by normative and mimetic pressures that push organizations to achieve legitimacy within their institutional environments (DiMaggio and Powell, 1983; Nicolo *et al.*, 2021).

Stakeholder and legitimacy theories provide insights into additional drivers of comparable sustainability reporting. Stakeholder theory emphasizes the role of stakeholder engagement in

Table 6. Drivers in 2018 and 2021

		Report (Mean)			Evolution (Mean)			Target (Mean)			Unit of measurement (mean)		
		2018	2021	Var (%)	2018	2021	Var (%)	2018	2021	Var (%)	2018	2021	Var (%)
Sustainability business network	Yes	12.9	14.9	16.1	7.3	11.6	59.7	9.6	8.5	−11.8	9.2	12.2	32.6
	No	7.6	10.7	42.1	3.6	7.6	112.7	6.8	6.0	−12.0	5.5	8.5	55.0
	U M-W	119.0**	109.5*		115.5**	107.0*		101.0	103.5		105.5	109.5*	
CSR verified	Yes	15.1	15.6	2.7	10.1	11.8	16.6	13.4	9.6	−28.2	11.9	12.1	1.9
	No	8.7	11.1	26.9	3.9	7.9	103.9	6.4	6.0	−6.8	5.9	8.9	51.6
	U M-W	105.0**	100.4		110.0***	100.5		112.0***	114.5*		118.5***	93.5	
High climate impact sector	Yes	11.7	13.6	15.9	6.6	10.5	59.8	9.4	8.1	−14.4	8.1	10.9	33.4
	No	9.0	12.5	38.3	4.5	9.0	102.2	7.1	6.6	−7.6	6.8	10.2	49.3
	U M-W	99.5	96.5		90.5	91.5		96.0	89.0		87.5	91.5	

Note(s): p -value < 0.01***; p -value < 0.05**; p -value < 0.10*

Source(s): The authors

shaping reporting practices (Freeman, 1984). Our results indicate that SOEs with closer ties to influential stakeholders, such as the State or regulatory bodies, show greater progress in certain KPIs (e.g. ADIF and Aena in *energy consumption* (E1) and *gender diversity* (S2)). This suggests that stakeholder pressures, particularly from powerful actors like governments, can drive improvements in reporting practices. However, the limited progress in some areas (e.g. *scope 3 emissions* (E5-6) or *waste reuse* (E9)) may reflect the deprioritization of less vocal or distant stakeholders, such as citizens, whose concerns are less directly tied to regulatory compliance. Legitimacy theory further explains the variability in reporting practices. Organizations may adopt nonmandatory disclosures to enhance moral legitimacy by demonstrating alignment with societal values, such as sustainability and transparency (Suchman, 1995). The improvements in KPIs like *gender diversity* (S2) and *employee training* (S14) suggest that some SOEs are voluntarily addressing broader societal concerns to maintain or enhance their legitimacy. However, the uneven progress across KPIs and SOEs indicates that the pursuit of legitimacy is often selective, focusing on areas that align with organizational priorities, stakeholder expectations or lower costs.

The observed improvement in external comparability, through increasingly similar measurement units, aligns with the “acquiescence” response. By demonstrating that this response goes beyond mere reporting, the SOEs actively compare, set targets, and utilize common measurements. This proactive approach reflects a full alignment with the expectations regarding sustainability reporting. There are also indications of a “compromise” strategy among some SOEs, where the response to CSR is more neutral, with low variations in reporting practices. This might be observed in organizations where CSR is still evolving, and significant changes in reporting practices are not yet deemed necessary. The “compromise” strategy indicates a balanced approach, partially aligning with institutional expectations while also considering internal organizational contexts and constraints. Certain SOEs exhibit “avoidance” responses, where the availability of reports is reduced or even eliminated. This approach aligns with the notion of concealment (Criado-Jiménez *et al.*, 2008), where organizations fulfill legislative requirements minimally, essentially concealing nonconformity behind a semblance of compliance. This tactic may involve superficial adherence without genuinely embracing the principles of sustainability reporting. The study also confirms that CSR strategies evolve and that the increasing relevance of CSR is affected by the strategies portrayed by SOEs.

The Spanish adoption of the EU Directives for CSR highlights the role of regulation in shaping SOE reporting. At present, there is room for improvement in increasing comparability. Limited comparability can undermine the accountability potential of sustainability reporting (Criado-Jiménez *et al.*, 2008). As previous studies have shown, we have shown that regulation increases reporting (Fallan and Fallan, 2009; Negash and Lemma, 2020; Esteban-Arrea and Garcia-Torea, 2022; Criado-Jiménez *et al.*, 2008; Chauvey *et al.*, 2015; Costa and Agostini, 2016; Luque-Vilchez and Larrinaga, 2016), but additional efforts are required to improve the quality and convergence of CSR.

The study of SOEs is particularly relevant compared to private entities, due to their distinct stakeholders, facing greater pressures to present a comprehensive view of their nonfinancial performance (Andrades Peña and Jorge, 2019; Argento *et al.*, 2019; Gallo and Christensen, 2011). This varied stakeholder landscape seems to foster “acquiescence” behaviors in some SOEs. However, not all SOEs perceive or respond to these pressures uniformly, leading to varied strategic responses. This variability suggests the need for future research to delve deeper into the causes behind these divergent strategies. Since SOEs often precede the public sector in implementing accounting and auditing reforms, insights gained from their experiences with CSR might provide information on broader public sector implementation practices.

The discretion allowed in specific KPI selection has resulted in varying levels of disclosure among SOEs, underscoring the need for common standards as highlighted by Directive (EU) 2022/2464. Reporting initiatives like the GRI have played a significant role in standardizing practices. Our findings confirm their influence, with most KPIs adhering to GRI-recommended

methods. However, the presence of divergent reporting practices suggests that “acquiescence” is not the sole response. The adoption of standardized units of measurement is expected to foster uniformity among SOEs in reporting practices, aiding comparability.

Our results also indicate that sustainability business networks can be effective in enhancing comparability. Such initiatives not only provide an indirect incentive for SOEs to adopt comparable CSR but also guide organizational adaptation toward sustainability and comparability. However, results show that verification has not yet created the same convergence effect as financial audits. Future research should continue looking into the role of verification and auditing firms in promoting common measurement units.

7. Conclusions

This article analyzes the comparability of CSR among SOEs in Spain. Drawing from institutional, stakeholder and legitimacy theories, our findings reveal that, in general, CSR is increasingly embraced by SOEs, as is often the case with information initiatives when regulatory pressures increase. Most SOEs increased the number of reported KPIs between 2018 and 2021. There has been a positive evolution of comparable metrics across companies and over time. Nevertheless, there is still room for improvement for some KPIs and some more resistant SOEs. Moreover, the State does not exert a key influence in fostering comparability and, as shown in previous studies, public sector-related entities not always show an identical behavior.

Basic indicators about energy, water consumption and employee metrics are extensively reported. This suggests that environmental concerns are gaining attention, possibly driven by heightened public awareness and media emphasis on climate issues. However, the low adoption of some complex environmental indicators (e.g. *scope 3 emissions*) shows that the lack of reporting could be driven by the difficulties or the costs of obtaining them or that SOEs give priority to some environmental or social KPIs over others. Comparability has increased in two-thirds of the indicators, as SOEs are increasingly using the recommended units of measurement. All indicators, except for energy consumption, Scope 1 emissions, absenteeism and employee turnover, have a maximum of two metrics. For the majority of the KPIs, the most used units of measurement remained the same between 2018 and 2021. This consistency suggests that the primary unit of measurement did not significantly change over time.

Despite increased homogeneity in KPIs and units of measurement, variations persist in the comparability of this information, both over time and between different entities. This variability in reporting underscores the different responses adopted by SOEs, with varying degrees of alignment to regulatory expectations, from low compliance, to alignment with the law and metrics recommendations. The disparities in reporting responses, from “avoidance” to “acquiescence,” indicate a complex and evolving landscape, one that warrants further investigation.

This research has also revealed the importance of sustainability business networks in fostering comparability, while the role of verification processes is still unclear. The novelty of the verification and auditing processes has meant that they are still not a common practice. Future studies should further study the role of verification and auditing firms in promoting common measurement units. The varying relevance of these two drivers underscores the need for continued efforts toward enhancing convergence in CSR.

Future studies should analyze the decision-making processes behind these reporting variations, enriching our understanding of how SOEs navigate the intersection of regulatory compliance and stakeholder engagement in the context of sustainability reporting.

Although the sample used in this study allows us to assess whether mandatory regulation fosters the comparability of sustainability information, it does have some limitations. Given that the number of SOEs required to disclose nonfinancial/sustainability reporting in Spain is low, it is not possible to use other explanatory analyses and include other possible factors such as the SOE sector size or profitability. Future studies should compare CSR in SOEs across European countries to confirm the ability of regulation to bring about change as well as the impact of each country’s business culture.

Notes

1. Proposal for a Directive amending the Directives: Accounting, Audit, CSRD and CSDDD – Omnibus I and Proposal postponing the application of some reporting requirements in the CSRD and the transposition deadline and application of the CSDDD – Omnibus I – COM (2025)80. https://finance.ec.europa.eu/publications/commission-simplifies-rules-sustainability-and-eu-investments-delivering-over-eu6-billion_en
2. <https://www.efrag.org/en>
3. <https://www.ifrs.org/groups/international-sustainability-standards-board/>
4. <https://www.globalreporting.org/>
5. <https://www.fsb-tcfd.org/>
6. <https://integratedreporting.ifrs.org/>
7. Law 11/2018 extended this obligation to all groups of companies with more than 500 employees (this threshold is reduced to 250 from 2021) and which are public interest groups of companies or large groups of companies. The Royal Decree-Law 18/2017 limited the scope only to public interest groups of companies with more than 500 employees and considered a large group of companies.
8. INVENTE, the Spanish Inventory of public sector entities, is an official database whose principal objective is to guarantee transparency and public access to information on all the entities that constitute the Spanish institutional public sector. This system records data such as the name of the entities, their NIF, DIR3 codes, the entity's type, affiliation or guardianship, and its classification according to National Accounts. <https://www.pap.hacienda.gob.es/invente2/PagMenuPrincipalV2.aspx?Entorno=2>
9. Royal Decree-Law 18/2017 amends, in relation to nonfinancial information and diversity, the Code of Commerce, the revised text of the Corporate Enterprises Act (2010) and the Law 22/2015 on Auditing. <https://www.boe.es/buscar/doc.php?id=BOE-A-2017-13643>
10. Based on the Shapiro–Wilk test, it was concluded that the distribution of the variables is not normal, and the Wilcoxon and Mann–Whitney *U* tests were applied.
11. Commission Delegated Regulation (EU) 2022/1288.
12. To ensure robustness, we also carry out a U-Mann–Whitney analysis, limited to those companies obliged and not exempt from presenting a sustainability report in 2018. The results show that the verification variable maintains its significance. However, the sustainability business network variable loses its significance, while belonging to an industry with a high environmental impact becomes significant.

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