

Article

Sustainable Management Systems Standards (SMSS): Structures, Roles, and Practices in Corporate Sustainability

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Abstract: Companies need to develop more sustainable management models to support a strategy focused on the environment and society, preventing the sole ambition to maximize economic profits. Several specific tools and frameworks have been developed for the implementation of sustainability management. However, the isolated adoption of new management practices could increase bureaucracy and constrain the development of an effective and systematic sustainability strategy. Based on the development of four case studies of relevant companies based in Portugal, this research presents a cyclical process with the structures, inputs and outputs, and roles in embodying sustainability in Integrated Management Systems (IMS). The originality of the work lies in the level of integration. Beyond identifying interconnection areas, it also specifies the Management Systems Standards (MSS) requirements in each area, assigning different roles in the integration process: drivers, efficient enablers, pathways, and evaluators. These four roles promote the claimed integration in a systematic cyclical process, plan–do–check–act (PDCA), to assist the consolidation of sustainability management. This research reinforces the added value of the IMS. It expands its scope, helping companies implement sustainability effectively and systematically, resulting in the presentation of Conceptual Sustainable Management Systems Standards (SMSS).

Keywords: sustainability; corporate system management (CSM); integrated management systems (IMS); plan–do–check–act (PDCA); sustainable management systems standards (SMSS)

1. Introduction

Sustainability has taken an essential role in societies. Climate change, scarcity of resources, and social inequalities are important risks in the current context. Companies have contributed to these risks, so they should play an active role in attempting any solution. Companies are now facing a challenging paradigm. They must establish mechanisms that allow their activities to be developed

with a systemic perspective in the long-run and sustained through maximizing net results: economic, environmental, and social. To survive, they have to generate value for society, while meeting the future interests of all stakeholders.

Under current business circumstances, sustainable development has been addressed as a competitive advantage with a broader perspective of profitability, encompassing social and environmental results [1]. Sustainability management practices help companies prevent their risks, identify opportunities, and build a sustainability profile [2]. However, sustainability management has been little addressed from the operational perspective and the added value for companies, being still more associated with communicating and promoting the image of companies. There are several reasons for this; hence, the ceremonial or symbolic sustainable practices meet the superficial and short-term stakeholder satisfaction [3]. The reporting of sustainability is a popular tool in sustainability management. Notwithstanding, there is a lack of evidence where the conveyed results come from and how they can help improve the companies' sustainability performance, being reported as isolated indicators. Furthermore, such indicators entail the risk of being understood as mere values, not corresponding to the sustainability management within companies [3]. The sustainable initiatives are often handled piecemeal under several management standards, as ad-hoc projects, as opposed to programs [4]. An approach towards sustainability requires that all elements related to sustainability are addressed simultaneously, rather than in a fragmented way [5]. So, it is crucial to know how sustainability is accomplished, monitored, and managed in favor of the competitiveness of companies [6].

The development of a sustainability strategy should be the purpose of companies to improve their organizational structure and integrate their strategies to become more sustainability-oriented [7]. For such a purpose, it is essential to enhance that sustainability is present in operating practices and the stakeholder's management. Among a wide range of tools to support this goal, the Management Systems Standards (MSS) have been appointed as a path to develop the principles of sustainable development [8]. There is a large number of MSS and guidelines, such as ISO 9001:2015 [9] on quality, ISO 14001:2015 [10] on the environment, ISO 45001:2018 [11] on health and safety, ISO 50001:2018 [12] on energy management, ISO 22000:2018 [13] on food safety, ISO 27001:2013 [14] on information technology, ISO/IEC 20000-1:2018 [15] on information, and NP 4457:2017 [16] on innovation, among others. However, the individual implementation of an MSS does not ensure the pursuit of all sustainability dimensions [17]. Companies need to join the synergies of different MSS and incorporate them [4,17]. The integration of several sustainability elements by different management systems to build an Integrated Management System (IMS) has become a challenge for companies [4]. The International Organization for Standardization (designated as ISO) has made efforts to promote the integration of MSS, with the publication of the High-Level Structure (designated as Annex SL).

If properly implemented, an IMS can improve the company's performance and become a sustainable competitive advantage [18,19]. This argument has led IMS to be acknowledged as a relevant, sustainable approach [18,20,21].

Empirical and theoretical research about the integration of sustainability management in IMS has increased. Several studies have been published relating to the integration of IMS with sustainable development [3,21–24]. However, some authors argue the need to develop proposals for integrating sustainability in IMS and to develop and adapt the IMS tools and practices to support sustainability values as much as possible, instead of just applying them [20,25].

Regarding the evidence of the impact of IMS on sustainability, there is a lack of consensus in the literature [20], since some authors, such as Rebelo et al. [21] and Fresner and Engelhardt [22], argue that IMS is a driver that leads companies to achieve sustained success. However, Nuñez and Oliveira [26] consider it necessary to further explore IMS as a driver of sustainable development. A holistic method for managing sustainability in the context of an organization is still lacking [4].

Nevertheless, to explore the role of IMS in sustainability management, it is necessary to know better the standards that support them; hence IMS is a process to link specific MSS with different

roles into an effective single management system [27]. ISO periodically reviews and publishes new standards editions to fit the standards' requirements to the current challenges. So, in the first level, it is necessary to analyze if the last editions of these standards have enhanced the key elements of sustainability and how IMS can link them with a systematic and efficient Sustainable Management Systems Standards (SMSS).

This research aims to understand how IMS can support corporate sustainability management (CSM), which leads to set the following research questions:

- Have the last standards' editions reinforced the interconnection of the ISO MSS with sustainability management?
- After the transition process to current standards' editions, did companies recognize the opportunity to integrate sustainability practices once they upgraded their IMS?
- What areas could be identified with more synergies and interactions between IMS and corporate sustainability?
- What are the primary methodologies and practices implemented in the IMS that most contribute to promoting the integration of sustainability in the business model?

One research goal is to portray the last edition of MSS concerning the sustainability field, namely by identifying the specific requirements related with sustainability. Thus, this study seeks to reinforce the added value of MSS and expand its scope, helping the companies implement sustainability effectively and systematically.

This research also aims to clarify and highlight the role of IMS in the development of the corporate sustainability system, coming up with a conceptual model to develop an SSMS to assist integration and consolidate sustainability management.

Much of the research is done at the conceptual level, pointing to ideas of synergies. Nevertheless, few articles can support the potential stated by empirical evidence on the integration of sustainability through MSS [28]. Supported by four case studies, this work shares a set of good practices that explain how the involved companies do this integration, and they could inspire others to accomplish a CSM.

The present work starts with the literature review about the main concepts of CSM and IMS and discusses some models already developed for the integration of these two areas. Supported by the theoretical constructs, four case studies developed in companies with activity in Portugal are described, with the subsequent analysis and discussion aiming at answering the research questions.

2. Literature Review

Throughout this section, the main concepts of sustainable development will be addressed, as well as their relationship with CSM. Furthermore, the most widely implemented MSS will be analyzed, namely, quality, environment, and occupational health and safety (OH&S) management systems. Lastly, the review will cover the synergies between CSM and IMS.

2.1. Corporate Sustainability Management (CSM)

The concept of sustainable development received greater diffusion and prominence after the publication of the report of the World Commission on Environment and Development (WCED), "Our Common Future", known as the Brundtland Report [29]. This concept states that development must be planned. Its main objective is to satisfy "(...) the needs of the present, without compromising the ability of future generations to meet their own needs". However, one of the main challenges for sustainable development is the implementation of the Brundtland Commission resolutions to offer clear guidance about decisions, strategies, plans, or activities [30]. Furthermore, so that the sustainable development concept becomes more binding and actionable, numerous actors from different levels of society are needed, particularly individuals, companies, regions, states, and societies with outstanding contributions in any type of development towards sustainability [31].

Several strategies are developed at macro and micro levels to implement sustainable policies and practices. The macro strategies include approaches and methods that adopt regional, national, or international strategies. This work is focused on the micro-level, associated with CSM, where strategies are developed to measure, monitor, and audit the organization's performance regarding sustainability goals.

Sustainability is perceived as the paradigm of the 21st century, being transferred to the business context through the Triple Bottom Line model [32]. This term gained popularity with John Elkington's publication "Cannibals with Forks: The Triple Bottom Line of 21st Century Business" [33]. In this work, the author includes the responsible management approach, arguing that companies should consider the three dimensions of sustainable development in their management: environmental, social, and economical. He also states that the three aspects must be operationalized according to the principles of transparency and with the involvement of the main stakeholders. Pursuing a sustainability approach requires that companies are able to restructure their processes in a comprehensive systemic perspective. It is necessary to identify stakeholders with an impact on the organization's sustainability performance [34]. CSM is stakeholder-oriented from a systematic and holistic perspective [35]. Both directly and indirectly, there is mutual influence, as stakeholders influence and are influenced by the operations of companies [36].

CSM should be present in business operations and reflect the performance of sustainability management practices [37]. Companies should seek to adopt sustainable production processes, which aim to develop practices and technologies to transform materials into products, through the consumption of smaller amounts of energy and non-renewable or toxic materials, as well as reduce emissions and waste [38].

The leadership is decisive for the employers' commitment to follow sustainable strategy, feeding a culture guided to the economic, environmental, and social results. The organization must be permeable, attentive to external context changes, and able to manage them sustainably. Sustainability is also synonymous with acting in the present with a focus on the future. For this, it is necessary to outline a long-term perspective supported by proactive management practices, mitigating risks, and enhancing opportunities (risk-based thinking). The implementation of corporate sustainability should follow a systematic cyclical process, pursuing four main steps: involvement, execution, monitoring, and communication [39].

Blackburn [2] presented the Sustainability Operating System (SOS), in which the author analyzed and assigned roles to key elements of sustainability. This author argues that companies need focusing, skills, teams, and leaders, detailed planning, and proper execution, as shown in Table 1.

Table 1. Sustainability Operating System (SOS). Adapted from Blackburn [2].

Drivers	Efficient Enablers	Pathway	Evaluators
A Champion/Leader	Organizational structure	Vision, values, and policy	Indicators and goals
Approach for selling management on sustainability	Deployment and integration	Operating system standard	Measuring and reporting progress
Accountability mechanisms		Strategic planning for aligned priorities	Stakeholder engagement and feedback

The drivers are the elements that help to ensure that the organization is continuously motivated towards sustainability. This group includes leaders to bring the concept of sustainability into the organization and start the journey towards sustainability. Leaders cannot promote permanent change towards sustainability without first defining a strategy to involve the other key elements, represented in Table 1. Thus, it is vital to continue to promote or "sell" the benefits of sustainability at all levels of the organization. For such a purpose, it is necessary to develop accountability mechanisms, to demonstrate the level of seriousness of the efforts made by the organization.

The efficient enablers (facilitators) allow the development of the sustainability program in a structured, logical, coordinated, and efficient way. Support teams are needed to communicate the

sustainability message to the entire organization, promote data collection, ensure that defined actions are implemented, and analyze their feedback. For this purpose, the role of those teams needs recognition within the organization. Sustainability initiatives will not succeed without being part of the organization's culture. All elements need to understand, accept, and support the concept. For this, it is necessary to develop and integrate sustainability in the values, procedures, tools, and programs that already exist in the company.

The pathways are the elements that outline the path of sustainability, such as vision, values, and policy; hence, these elements define what sustainability means within the organization. The operating systems' standards document a cyclical management process that works as a driver for change, helping to establish a sustainability culture on a long-term perspective. It recommends the establishment of a strategic plan, able to structure several actions aligned towards sustainability.

The evaluators allow the organization to measure the sustainability progress and adjust actions according to the results. Indicators are needed to convey how the organization has progressed in terms of sustainability. The effective measurement and disclosure of the results indicate the internal and external progress of the organization. The involvement and feedback of stakeholders provide external recognition and credibility for economic, environmental, and social responsibility performed by the organization. This element gives the organization information about how it is perceived by others, helping to build a constructive change.

In short, all the authors mentioned above had complementary contributions to set the key elements of CSM, namely: the Triple Bottom Line model [32]; stakeholder-oriented perspective [34–36]; sustainable business operations [36–38]; a systematic and holistic perspective [35]; leadership and culture; external context changes; long-term perspective support; mitigating risks and enhancing opportunities; systematic cyclical process [39]. Blackburn [2] added a new perspective, assigning roles to the key elements to implement the CSM.

2.2. Management Systems Standards (MSS): Quality, Environment, and Safety

A company's ability to compete, gain confidence, and ensure long-term viability is currently linked to responsible business behavior. This fact seems to generate new ways of exercising economic activity that benefit both the company and society.

The development and implementation of an MSS requires organizational commitment to developing the principles of sustainability, namely, to guarantee the quality of its products and services, ensure the preservation of the environment, and provide for the safety and health of employees, without neglecting social responsibility, ethical principles, and risk-based thinking. The implementation of MSS generates benefits for-profit (quality), for the planet (environment), and the people (occupational safety and health) [40].

As previously mentioned, there are several standards and guidelines to implement management systems. According to the data available from the Portuguese Institute of Accreditation (IPAC) presented in Table 2, the most popular certification systems in Portugal are Quality Management System (QMS) (ISO 9001:2015) [9], Environmental Management System (EMS) (ISO 14001:2015) [10], and OH&S Management System (ISO 45001:2018 [11], OHSAS 18001:2007 [41], NP 4397:2008 [42]). Rebelo et al. [21] stated that ISO 9001:2015 can boost the growth of the economic pillar, the ISO 14001:2015 for the environmental integrity pillar, and the OHSAS 18001:2007 for social accountability.

Table 2. Number of certifications in Portugal (2016–2019). Adapted from IPAC [43].

Certification	Management System	2016	2017	2018	2019
ISO 9001	Quality	5589	5837	5743	5827
ISO 14001	Environmental	1123	1174	1174	1202
ISO 45001	Health and safety	561	734	674	645
OHSAS 18001					
NP 4397					
ISO 22000	Food Safety	295	298	296	294
ISO 50001	Energy	0	27	31	30
ISO/IEC 27001	Information technology	35	46	63	87
ISO/IEC 20000-1	Information	0	10	11	6
NP 4457	Innovation	170	164	161	157

Mustapha et al. [4] performed a literature review on the most used MSS for integration, where ISO 9001:2015, ISO 14001:2015, and OHSAS 18001:2007 ranked top three. Considering these results, the scope of this research covers the following three management systems: QMS (ISO 9001:2015) [9], EMS (ISO 14001:2015) [10], and OH&S (OHSAS 18001:2007 [41]/NP 4397:2008 [42]/ISO 45001:2018 [11]).

The QMS ISO 9001:2015 [9] establishes the organizational structure in terms of the resources, procedures, and responsibilities, in order to consistently control and ensure quality, by creating the right framework for continual improvement, and to achieve stakeholder satisfaction [44]. A QMS promotes continual improvements in processes and procedures, leading to excellence, sustainability, and competitiveness [45].

The EMS ISO 14001:2015 [10]: ISO defines an EMS as “the part of the global management system that includes an organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources to develop, implement, achieve, review, and maintain environmental policy” [44]. Through a systematic approach to environmental management, the top management obtains information that can guarantee long-term success and create options to contribute to sustainable development.

The OH&S Management System (OHSAS 18001:2007 [41]/NP 4397:2008 [42]/ISO 45001:2018 [11]) aims at attending the needs of companies, considering occupational health and safety management [46,47].

In particular, the ISO Management Systems Standards can be applied to any organization, large or small, whatever the product or service, or sector of activity [9]. It provides a model to follow and therefore offers the benefit of global management experience and good practices. All ISO MSS are based on the High-Level Structure (designated Annex SL), with the same core text, standard terms, and definitions. The revised ISO 9001:2015 and ISO 14001:2015, as well as ISO 45001:2018, are already based on the Annex SL High-Level Structure that shares requirements, terms, and definitions. The combined structure and layout of the new standard are broken down into 10 chapters.

The new designated “Annex SL” provides a framework for structuring the MSS in an IMS, such as ISO 9001:2015, ISO 14001:2015, ISO 45001:2018. The last edition includes key changes, as shown in Table 3.

Table 3. Key changes of the ISO Annex SL [9,48,49].

Structure of ISO 9001:2008	Structure of ISO 9001:2015—Annex SL	Key Changes
1—Scope 4—Quality management system	4—Context of the organization	Organizations must analyze both internal and external context (new clause) Stakeholders management must be determined (new clause) Includes risk management (new clause) Fit this information with the Management System scope
5—Management responsibility	5—Leadership	The concept “Management” was replaced by “Leadership” Enhanced leadership for the involvement and commitment to the MSS
5.4.2 Quality management system planning 8.5.3 Preventive Action	6—Planning	Plan to manage the risk and opportunities (new clause). Risks and opportunities have replaced preventive action Link risk management to processes management approach Focus on results—strategic plan to achieve the management system goals, monitoring, and communication of results
6—Resource management 5.5.3 Internal communication	7—Support	Human resources management based on transparency, ethics, and being socially responsible Add the organizational knowledge management (new clause) Enhanced communication requirement Emphasize its applicability to services
7—Product realization	8—Operation	Enhance change management (new clause). Involvement of customers and users in the design and development process.
8—Measurement, analysis, and improvement	9—Performance evaluation	Integrate the new information that comes up from context changes, stakeholders’ management, and risk management.
8.5 Improvement	10—Improvement	Take into account the future stakeholders’ expectations and context changes as input for improvements Add innovation as an improvement mechanism

The main changes of the ISO Annex SL were the inclusion of the context of the companies, risk-based thinking to improve the application of the process approach, enhancing the applicability for services, increasing the leadership requirements, adding stakeholder management, more focus on results, adding knowledge management, and innovation [44,50].

2.3. Sustainability Management and Integrated Management Systems (IMS)

Companies are permanently facing uncertainties and new challenges, claiming proactive continual improvement and innovations in operational processes and products, looking for a sustainable business. Sustainability can be achieved with better-coordinated management processes and resources through the implementation of MSS to meet the needs and expectations of different stakeholders [51].

Several authors have been making efforts to develop solutions to integrate the concept of sustainable development with the MSS already implemented. These can be used in different types of companies from different sectors and are disseminated throughout the world.

Poltronieri et al. [52] performed a literature review to summarize how quality management research has been linked with sustainability management. Their results were clustered in four main topics: (I) supporting sustainability through the integration of management systems; (II) quality of management as support to the implementation of EMS and sustainability management; (III) supporting the integration of sustainability considerations in daily work; (IV) supporting stakeholder management and customer focus.

Most research has addressed the first two themes [52]. For example, Asif et al. [53] highlighted the need for sustainability to be systematically integrated into business processes. In this sense, the authors demonstrated how MSS can structure the entire process of managing, measuring, and evaluating progress towards CSM. Some frameworks were found in the literature with essential contributions to the field. Nawaz and Koç [54] developed a holistic CSM model called Sustainability Management System Framework (SMSF). The SMSF integrates essential components for sustainability management and guarantees structural consistency through the inclusion of standardized and internationally accepted standards, established by ISO. This inclusion can be a guarantee for full acceptance by companies.

The Lean-Integrated Management System for Sustainability Improvement (LIMSSI) was developed, considering the difficulties companies face in carrying out sustainability improvement activities. These difficulties are mainly related to the integration process complexity and the large amount of human and financial resources [55], and the necessary tools to integrate these systems [56]. This model aims to avoid the loss of organizational efficiency resulting from waste, duplication, and increased bureaucratic processes [57].

More focused on ISO 50001:2011 (energy) and ISO 14001:2004 (environmental), Mustapha et al. [4] proposed the development of an integrated green management framework called the Sustainable Green Management System, with the potential to save resources, exclude redundancies, promote cleaner production, and increase the organization's efficiency.

Due to focusing on specific issues, the individual implementation of an MSS seems to be limited within the sustainability lens. As such, companies should implement more than one MSS, fit their synergies to building an IMS. The tri-dimensional sustainability approach is aligned with the multiple scopes of an IMS, i.e., the economic (quality), environmental, and social (health and safety, social responsibility, and accountability) MSS. IMS impact is generally positive, with benefits linked to customer satisfaction, service quality and stability, reduction of failures, facilitation for growth and certification, and better alignment of people and information [58].

The integration of sustainability into business processes can be facilitated through an IMS approach, which provides the necessary flexibility and clarity to address the multiple problems associated with the management, measurement, and assessment of corporate sustainability. The main feature of an IMS, which encompasses several individualized management systems, is to develop an integrated system to meet the requirements of stakeholders in a systematic way, which can be called "systematization of stakeholder requirements". It is necessary to consolidate sustainability experiences in the organizational processes and integrate new knowledge into the organization's explicit and tacit knowledge [53].

However, the evidence regarding the impact that IMS has on sustainability performance is still scarce, which is why some authors consider that it is necessary to explore more the IMS as a sustainable development driver [25]. There are commonalities and synergies between IMS and CSM, such as stakeholder orientation, complexity, and innovation. However, sustainability needs to be first managed within a system and then measured to assess its performance [3].

3. Methodology

The research methodology followed a qualitative approach, with the development of multiple case studies. In general, case studies are the method selected when the researcher has little control over behavioral events, and the focus is on a contemporary phenomenon. As a research method, the case study allows an investigation that preserves the holistic and significant characteristics of real-life

events, such as, organizational and administrative processes, international relations, and the maturity of companies, among others [59].

Four case studies were carried out in companies established in Portugal, selected according to the criteria that these companies should:

- represent different industry and services sectors;
- have at least two certifications managed as an Integrated System, namely, ISO 9001:2015, ISO 14001:2015, and OH&S such as OHSAS 18001:2007/NP 4397:2008/ISO 45001:2018;
- face sustainability as one of the business model's pillars with some degree of acknowledgment in the industry;
- be conveniently geographically located, as data were intended to be collected based on the companies' premises.

Semi-structured interviews were carried out targeting quality, environment, and safety managers, to identify the main practices and methodologies implemented by the IMS that could promote the integration of sustainability in the organization's management. The data triangulation technique was used to increase the validity of the studies and obtain additional relevant information to complement interviews [60]. A search for information was carried out, concerning the official websites and the organizations' internal documents, as well as direct observations in the companies' premises to complement the information reported in the interviews.

The presential interviews (Table 4) were conducted from May to July 2019 in the premises of the companies selected for the study. Each interviewee was assigned a code (first column in Table 4), used later in citations throughout the text.

Table 4. List of interviews carried out in the study.

Interviewed Companies' Codes	Job Position	Date	Duration (min)	Companies
EC01	Engineer and Quality Manager	30-05-2019	75	Company A
EC02	Coordinator for IMS QES	30-05-2019	75	
EC03	Responsible for IMS QES	31-05-2019	90	Company B
EC04	Coordinator for IMS QES	10-07-2019	120	Company C
EC05	Optimization Manager	22-07-2019	120	Company D

Notes: IMS—Integrated Management System; QES—Quality, Environment, and Safety.

A brief description of the study was presented to the companies regarding the objectives, the inclusion criteria, the voluntary nature of responses, and the absence of compensatory economic participation. The interviewees voluntarily agreed to participate in this research study. Then, the authorization to record the interviews in audio format to comply with the data protection policy was requested, thus increasing the reliability of the transcription process of the testimonies and simplifying data analysis.

The data analysis was supported by content analysis [61], constructing categories derived from theoretical foundations, as described in Section 5. According to Bogdan and Biklen [62], content analysis involves working with data, its organization, division into handling the units, synthesis, looking for patterns, discovering important aspects of what should be learned, and the decision of what will be transmitted to others, essential in this case.

4. Case Studies

As referenced before, four companies participated in the present investigation: companies A, B, C, and D. Their activity is described below, as well as the management systems and certifications adopted and the policy towards sustainability. All information was collected within the scope of the interviews.

4.1. Company A

Company A was established in 2009 and belongs to a multinational group dedicated to the production of wind blades. The basis of the group's success, which claims to be a pioneer in the wind energy sector, relies on 25 years of experience as well as on about 8200 turbines installed worldwide.

A sustainable future drives the vision of the group. Thus, it works with passion and commitment to make wind energy profitable and competitive for its customers, offering them the best wind energy solutions.

The protection of natural resources and the prevention of environmental damage are the cornerstone of the group's mission and business model, which led the group to implement an IMS. This system includes environmental management—ISO 14001:2015, quality—ISO 9001:2015, and occupational health and safety—OHSAS 18001:2007. The EMS helps to identify the environmental and energy aspects inherent to the Company A activities, products, and services. Through the system, combined with the commitment of a qualified team, the group can continuously improve the mitigation of the impacts of its activities. To ensure that Company A's products have the highest quality and the least possible environmental impact, the group implemented a process known as Life Cycle Assessment (LCA).

Company A considers that CSM is a critical aspect integrated into its business model and strategy: "the environmental issue, it is a powerful vector because to produce blades, we produce waste also" (EC01). Although there is no sustainability department, this aspect is considered transversal to the entire company. Its main objective is to safely and responsibly carry out its activities, assuming the commitment to preserve the environment, the health, and safety of all those who work in the organization and the community.

4.2. Company B

Company B was created in 2006, with 100% Portuguese equity. Its main activity is the distribution and sale of liquid fuels and the production of biofuels. Three large companies build Company B: Company B Energy, which operates gas stations, the one that is most visible to the customer; Company B Biofuels, a refinery and production plant; and Company B Supply stores the biofuels and biodiesel. As for the vision, "Company B imagines a more efficient world with intelligent energies that promote sustainable mobility and encourage the progress of society" (EC03).

The Company B values are based on several pillars: courage (we can), social responsibility, ambition (always creating new opportunities), innovation (trying to always do better), efficiency (doing the best at the lowest cost), accessibility for all, simplicity (being simple is always easier), and sustainability. "We build the mobility of the future by betting on innovative and environmentally friendly solutions, and we want to build a better world for future generations" (EC03).

Company B has implemented an IMS—Quality, Environment, and Safety (QES), ISO 9001:2015 for quality, ISO 14001:2015 for the environment, and ISO 45001:2018 for safety.

4.3. Company C

Company C was established in 1977, and it is considered a reference in the ceramic world, specialized in the production of ceramic wall covering and ceramic floors. Company C established a partnership with a close relationship and collaboration with various professionals in the national and international markets, and nowadays, it is present in over 50 countries.

The company's values include exclusivity, innovation, design and creativity, and, finally, the Portuguese soul as differentiation and innovation characteristics: "We have sensitive ceramics: without buttons, without keys, with the incorporation of sensors not visible under the ceramic surface" (EC04).

The CSM is considered an important aspect integrated into the Company C business model. Considering the circular economy, this company reuses all its waste in the production process: "we almost need to break material to incorporate it" (EC04). The company also trains its customers. When there is a renovation, it encourages them to reuse the pieces that come out, giving specific indications of what can be done with them, in order to prevent placing them in dumps (linear economy). Corporate sustainability is part of the company's organizational culture and starts with top management because "if it didn't start, it wouldn't work" (EC04). Over the years, Company C has been awarded several sustainability-related distinctions, which show the importance that it has put on sustainable development and the efforts spent in this area. The company has been increasingly focusing on eco-innovation, and therefore, contributing to change in the construction sector for environmental protection, energy efficiency, preservation of health and well-being, as well as greater architectural integration to promote a sustainable future.

Company C is certified in Quality (ISO 9001:2015), Environment (ISO 14001:2015), Social responsibility (NP 4469-1:2008), and Research, development, and innovation (NP 4457:2007).

4.4. Company D

Company D was founded in 1976 as a governmental company, and it was privatized in the 1990s. The company's mission is to grow and develop with customers, employees, suppliers, shareholders, and communities, driven by innovation, sustainability, and operational excellence. Company D intends to be one the largest, most reliable, and profitable international companies in the sector.

Company D's principles are the prevention and minimization of environmental impacts, health and safety risks of its operations, education, training, and commitment of its professionals and suppliers, regarding environmental, health, safety, and social responsibility.

The company has implemented an IMS QES, which is certified by ISO 9001:2015, ISO 14001:2015, and OHSAS 18001:2007/NP 4397:2008, respectively. Furthermore, Company D is also registered with the Eco-Management and Audit Scheme (EMAS) (EC05).

5. Analysis and Discussion of Results

The content analysis of the literature review and the database of the four case studies were structured to find and compare the relevant information to answer the research questions, following three main phases, as shown in Figure 1. Initially, the evolution of the last edition of MSS towards sustainable development was analyzed, followed by addressing the consistency of the requirements with the key elements of sustainability, and identifying which practices could be developed to implement such requirements. These results were linked to set a process to integrate the sustainability in IMS.

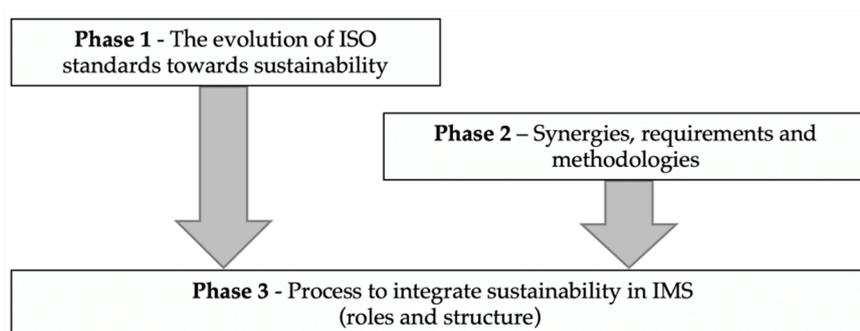


Figure 1. The three content analysis phases addressed in this study.

5.1. Phase 1 of Content Analysis—The Evolution of ISO Standards Towards Sustainability

The discussion starts with analyzing the evolutionary process of the standards towards sustainability to answer the research questions:

- Have the last editions of ISO MSS reinforced the interconnection with sustainability management?
- After the transition to current editions, did companies recognize the opportunity to integrate sustainability practices once they upgraded their IMS?

Considering the main changes of Annex SL reported in Table 3, the organization's context requirement allows the development of a more systemic business model by the analysis of internal and external contents. This openness of the organization is reinforced with the need to identify and manage the relevant stakeholders. With the implementation of methodologies that promote risk-based thinking, the management process becomes more preventive, with the analysis of its positive and negative impacts from a long-term perspective. As a result, a strategic plan can be set, giving priority to the main threats and opportunities. The development of leadership promotes the culture and employer's commitment to meeting the objectives, both in terms of quality (with economic impact) and environmental and social results. Thus, some changes in the last ISO editions have several commonalities with the CSM model's key elements, which means that the two areas are close, as described in Table 5.

Table 5. Requirements and key elements of sustainability management.

Requirements	Key Elements	Studies
1—Scope (IMS)		
Quality (ISO 9001:2015) Environmental (ISO 14001:2015)	Triple Bottom Line	Elkington [32]
Occupational Health and Safety (ISO 45001:2018)		
4.1—Understanding the organization and its context	Systematic, holistic, and open perspective	Dyllick & Hockerts [34]; Lozano et al. [35]
4.2—Understanding the needs and expectations of interested parties	Stakeholder-oriented	Elkington [32]; Dyllick [34]
5—Leadership	Follow a sustainable strategy feeding a culture guided by economic, environmental, and social results.	Silva & Gouveia [39]
6—Planning	Future/long-term perspective	UN [29]; Silva & Gouveia [39]
6.1—Actions to address risks and opportunities	Risk-based thinking	Silva & Gouveia [39]
7.3—Awareness	Transparency and involvement	Elkington [32];
7.4—Communication	Cyclical systematic process—Communication	Silva & Gouveia [39]
8—Operation	Sustainable production	Asif & Searcy [37]; Bhanot et al. [38]; Silva & Gouveia [39]
9—Performance evaluation	Systematic cyclical process—Monitoring	Silva & Gouveia [39]
10—Improvement	Systematic cyclical process	Silva & Gouveia [39]

However, did companies improve their practices with the transition processes to current ISO standards editions, making their management models more sustainable?

The four companies under study, A, B, C, and D, reported that most of these changes brought more formalization, standardization, and organization. These were the main advantages mentioned by interviewees.

Company A assigned higher importance to stakeholder management. Although risk management had already been implemented, the interviewees mentioned that this was not done systematically until the transition to the last standard edition, which is an important tool for analyzing the organization's impacts.

For Company B, the great advantage that the new editions brought was the formalization, organization, and structuring of risk-based thinking. The new ISO 14001:2015 vision led the company to outline and analyze each product or service's life cycle. For example, the transportation's emissions are considered as causing a negative impact, and in this sense, the company influences transporters through the optimization of logistics routes.

Regarding the main changes that the new editions imposed on management systems, Company C highlighted risk-based thinking as an essential aspect for the analysis of the organization's impacts, leading towards sustainability concerns. It was one of the most important tools from which the company has benefited. The interviewee also referred to the emphasis on leadership, as many aspects need top management intervention. Due to the new edition, Company C started to make context analysis. Stakeholder management was already implemented, but it has been improved and carried out systematically.

According to Company D, the organization context requirement promotes a more open and permeable management model. Therefore, it is more conscious and responsible, and consequently, a more transparent policy with the stakeholder, improving the receptivity to suggestions. The main changes in the current editions brought improvements to the company's results, namely regarding environmental sustainability.

For all companies, the main changes in ISO standards (structured in Annex SL) improved their IMS due to the adoption of new management practices, namely risk management, the organizational context, stakeholders' management, the strengthening of the leadership, and the analysis of the product's life cycle. These new editions come with a different perspective with relevant aspects in the scope of sustainable development. The companies recognized improvements after the transition to the current editions, namely in the organization and systematization of practices that lead to sustainability concerns. That could make business models more sustainable.

5.2. Phase 2 of Content Analysis—Synergies and Practices

It is also necessary to understand which areas could be identified as having more synergies and interactions between IMS and Corporate Sustainability. The elements highlighted by the Company A interviewee were the organization context and decision-maker (vision, scope, and principles), risk assessment and objectives, management review, and continual improvement "(...) When we want to improve the system, we also have to contribute to the organization's sustainability, whether economic, environmental, or social. In every continual improvement, we take into account the environment, security, and the employees' social life" (EC02).

For the head of the Company B IMS, the elements with significant convergence are risk assessment and sustainability initiatives for risk management. The interviewee stated that through the implementation of IMS, the company can achieve sustained success, since "there are metrics that we have to comply with; if we don't meet them, we will not reach our goals" (EC03).

For the Company C IMS coordinator, the elements with more synergies are risk assessment, the definition of objectives, management review, and continual improvement. These elements must be under the supervision of top management (decision maker and leadership).

The Company D interviewee highlighted the organization context, giving the macro view of the business context and a plan for the future. Following the objectives and risk management, the company

defines goals and sets sustainability initiatives for risk reduction. Management review and continual improvement are also essential to adopt a sustainable strategy in the long run.

Analyzing these statements, a strong alignment within the case studies regarding the synergies identified can be found. These include the definition of objectives with sustainability purposes, risk management, the decision-maker's intervention (as a key element in the definition of a sustainability strategy), the need to review and analyze the results achieved, and continual improvement to contribute to sustainable development.

This consensus indicates that corporate sustainability can be integrated into the IMS structures for the professionals of the four studied companies, with the key points of symbiosis being clear. Therefore, there is no need to implement systems dedicated to sustainability management. Integration seems the right solution, with the benefit of not increasing the bureaucracy associated with management systems.

The next research question is, "What are the main methodologies and practices implemented in the IMS that most promote the integration of sustainability in the business model?" The data collected in the four case studies were structured in hierarchical categories: PDCA Cycle, Requirements of Annex SL, Requirements of ISO, and Practices and Methods, to link the sustainability practices reported by companies to the standards structure, namely, to the precise requirements, and match them to the PDCA cycle, as Appendix A shows.

All case studies identified sustainable practices toward the triple bottom line, which were implemented by a specific requirement following the PDCA cycle, as shown in Appendix A. This is explained by a common denominator, as all companies have an IMS with the scope of quality (ISO 9001:2015), and the environment (ISO 14001:2015). However, Company D has chosen to enhance the environmental dimension with the EMAS registration. To address the social dimension, companies A, B, and D also integrated OHSAS 18001:2007, or ISO 45001:2018, or NP 4397:2008 (OH&S). Company C is the company with more integrated standards, having also selected NP 4469:2008—Social Responsibility and NP 4457:2007—Research, Development, and Innovation. The analysis of sustainable practices in Company C revealed a more robust connection of its IMS with social responsibility, sustainable leadership, and sustainable process and products by implementing a circular economy embracing its supply chain. In turn, continual improvement actions were more noticeable in eco-innovation projects.

These results prove that the integration of sustainability towards only one MSS has weaker support, according to Darnall et al. [17]. They defend that the individual implementation of an MSS does not allow us to pursue all sustainability dimensions. An IMS could address a variety of key elements that belong to CSM.

Furthermore, as the companies come from different industries (renewable energy, construction sector, and fuel sector), there are other significant differences. Company C and Company D started their activity around 1976–1977, whereas Company A and Company B are less than half their age, having started around 2006 and 2009. Only Company A belongs to a multinational group. Despite these important differences, the research results were coherent; hence the definitions of objectives, risk management, leadership, continual improvement, and management review were identified as the areas with more synergies to integrate sustainability management. The differences among companies A, B, C, and D had no impact on research results, improving the reliability and validity of this study.

The case studies allowed a more detailed analysis of the IMS implemented in four companies with activity in Portugal. The four case studies have shown how the IMS supports a CSM model, namely by identifying the synergy areas and the specific requirements associated with them, as well as by disseminating a set of practices and methods adopted to operationalize several actions towards the most sustainable management model.

5.3. Phase 3 of Content Analysis—A Process to Integrate Sustainability in IMS (Structures and Roles)

Major gaps were referenced previously, such as the need to develop proposals to integrate sustainability into IMS, to develop and adopt quality management tools and practices in order to support sustainability considerations as much as possible, and to explore further the IMS as a driver of sustainable development [25].

This phase collected all the results from previous phases (1 and 2) to propose a conceptual model, designated as SMSS, to consolidate the integration of sustainability in an IMS, in which three key elements could be featured: (I) structures; (II) inputs and outputs; and (III) roles (Figure 2).

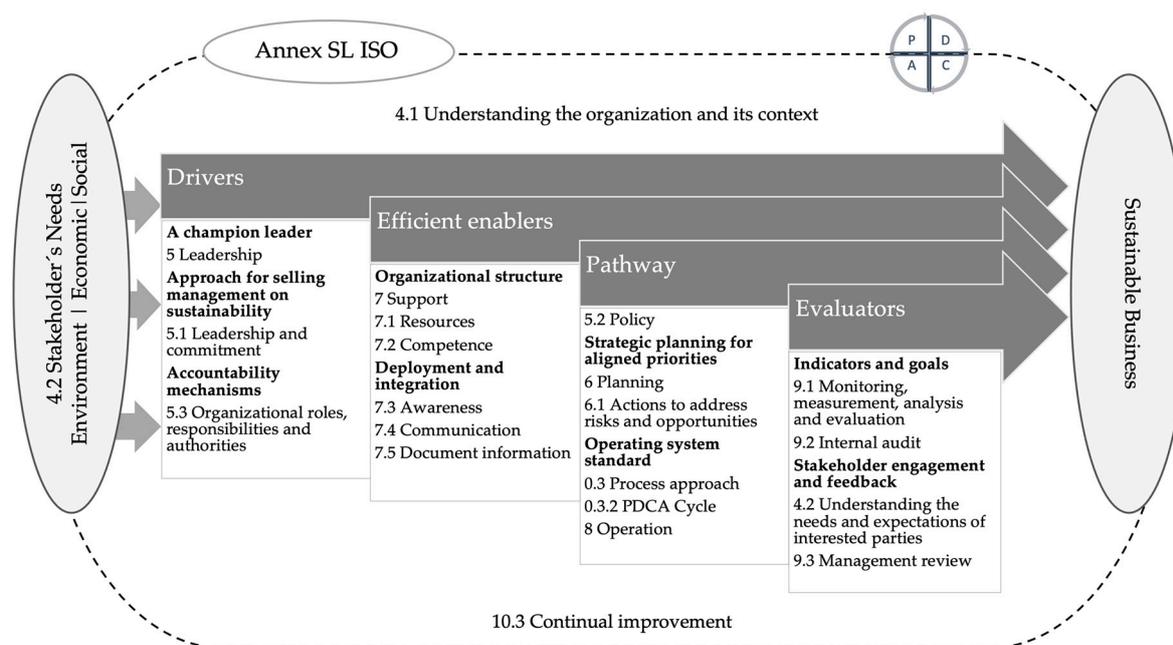


Figure 2. Proposed Sustainable Management System Standards (SMSS).

All parameters indicated in Figure 2 refer the requirements' sections of ISO Annex SL (common to ISO 9001:2015 [9], ISO 14001:2015 [10], ISO 45001:2018 [11]).

(I) Structures

First, it is crucial to ensure that any management system is structured in a customized way, able to support the actual organization's needs, adapted to the organization context (requirement 4.1). For this, the organization must understand its context, considering internal and external issues relevant to its purpose and for the sustainable strategic orientation.

Following the structure of ISO standards, sustainability programs are implemented based on the PDCA cycle (requirement 0.3.2), promoting their development from a long-term perspective and in a systematic way, seeking continual improvement.

(II) Inputs and outputs

Analyzing the model developed by Asif et al. [53], the sustainability integration process begins with the identification of the main stakeholders and an understanding of their needs systematically and comprehensively, to be able to reach the triple bottom line vectors of sustainability (economic, social, and environmental). When implementing requirement 4.2, an organization develops a set of tools that leads to understanding the needs and expectations of the relevant stakeholders, considering the impacts of the organization on stakeholders and vice versa.

(III) Roles

Considering the data analysis presented above, this SMSS model advocates that the four fundamental roles (drivers, efficient enablers, pathway, and evaluators) present in the sustainable management system, as defended by Blackburn [2], are integrated into the Annex SL ISO Standard (dashed outline in Figure 2). A set of requirements of the ISO Annex SL standards are assigned to each role (boxes in Figure 2).

The requirements integrated in the ISO Annex SL Section 5 (5.1, 5.2, 5.3) allow companies to develop drivers for the development of a sustainability-oriented leadership, adequate to contribute to a more sustainable business model from a long-term perspective and to serve future generations.

By fulfilling the requirements included in the ISO Annex SL Section 7, companies can structure their sustainability programs. The requirements 7.1 and 7.2 require companies to determine and provide the necessary resources (people, infrastructure) and skills and promote the right atmosphere for developing their strategies. The success of sustainability initiatives depends on the organizational culture, so requirements 7.3—Awareness, 7.4—Communication, and 7.5— Documented information, could be enabler mechanisms for the deployment and integration of the sustainability strategy.

To ensure leadership towards sustainability, the organization will have to follow the steps that outline this path (pathways). In compliance with requirement 5.2—Policy, the vision statement must recognize the need and relevance of sustainability to the business model. A focused sustainability vision, with a clear scope, can easily be divided into meaningful sustainability principles and, subsequently, short-term and long-term sustainability goals. Following the processes approach (requirement 0.3), and supported by the triple bottom line concept, indicators for each operational process should be defined, and implemented with a set of activities that lead to sustainable performance. The policies guide the planning (requirement 6) to align priorities dictated by assessing risks and opportunities (requirement 6.1). Risk management results should lead the organization to establish its sustainability goals, which should not be restricted to adapting the resources available. They should be extended as much as possible, because ambitious goals can lead to innovation and positive investments.

The organization's performance in sustainability can be measured. The system's performance must be periodically assessed by top management stakeholders to evaluate sustainability goals (requirement 9.1). Internal and external audits (requirement 9.1) are highly recommended; hence the audit process guarantees the system's transparency and credibility.

The management review of the system's performance (requirement 9.3) allows ensuring the pertinence and adequacy, the effectiveness, and the alignment of the results with the organization's sustainable strategy. Based on the results, the organization can determine new needs or opportunities to be addressed in the continual improvement context (requirement 10.3) for the next PDCA cycle.

Companies around the world have dedicated themselves to the inclusion of sustainability in their management systems. Given the vague understanding of the fundamentals of sustainability, this has only been partially done and in an isolated way [63]. The SMSS conceptual model presented in this research seeks to support companies in this challenge, linking their existing IMS with the main elements present in CSM.

6. Conclusions

Considering the context in which companies currently operate, namely intense competition, more informed and demanding consumers, pressure from stakeholders, scarcity of resources, climate change, and progressive technological advancements, the adoption of sustainable practices is crucial. It is imperative to understand how sustainable development can become a part of the companies' business models.

The present study assumed that CSM could be effectively managed when integrated into MSS already implemented by companies, namely the IMS. The main changes in the Annex SL that support the last editions of ISO 9001:2015, 14001:2015, and 45001:2019, reinforced this conclusion, hence new requirements of Annex SL of the ISO Standards were identified that support the interconnection between IMS and sustainability management interconnection. The four case studies revealed that

companies assumed that the transition process to the new standards' editions, mainly the ISO 9001:2015, 14001:2015, was advantageous, as the use of MSS structures contributes to the development of more sustainable business models. Company A claimed that it could achieve sustained success through its MSS. The quality, environment, and safety management practices structured in the management system enabled the integration of sustainability more systematically and promoted greater commitment from top managers to shop floor. The Company D interviewee sustained that through its IMS the company could achieve sustained success and believed it would become one of the greatest international players, increasingly focused on sustainability, producing cement with a low environmental footprint, reducing CO₂ emissions, and using alternative fuels in its operational processes. The responsible for the IMS of Company B mentioned that the standards require to demonstrate to customers that the organization is concerned with sustainability issues. The coordinator of the Company C IMS shared the same opinion, referencing that the IMS supports the organization in developing a more comprehensive management model.

6.1. Theoretical Contributions and Practical Implications

Based on the four case studies, this research presents a proposal for a theoretical, conceptual model designated as SMSS. This model consists of a process with structures, inputs and outputs, and roles. It defines how the fundamental elements of sustainability management are linked with the requirements of the ISO MSS.

The novelty of the proposed SMSS model is related to the level of integration, once it presents the interconnection of the specific standard requirements, realizing its role in the development of a sustainable management model. In this way, the present investigation also intends to overcome the scarcity of studies that defend the IMS as a driver for the sustained success of companies, reinforcing that it could be much more than just a driver. The IMS also has requirements to promote the organizational structure and enable the deployment and integration of sustainability (enablers) to build a culture that helps the organization implement sustainability management step by step and implement sustainability as a standard system (pathway). The evaluators are the requirements for ensuring stakeholder engagement and promoting continual improvement to start a new sustainability cycle.

This work has the purpose of broadening MSS practicality, developing and adapting its tools and practices, rather than applying them just as they are with the only purpose of the organization's certification MSS.

At the practical implications level, this SMSS conceptual model, based on the four case studies presented through the text, can further support other companies to identify the standards' requirements with greater compatibility to integrate sustainability practices into their management systems and to meet a set of good practices and methodologies shared by recognized companies, within benchmarking common practices. All connections and synergies between these elements were exemplified by the practices developed by companies, summarized in Appendix A.

Thus, this SMSS model defends a more comprehensive role of IMS concerning the sustainability issue. It includes all the necessary elements for the development of a sustainable management model: the structures, such as process approach, PDCA cycle, continual improvement, helping to develop a sustainable business effectively and systematically, and looking into the future.

6.2. Limitations and Future Research

The study was based only on a qualitative approach, so the results are restricted to understanding, explaining, and demonstrating of how the IMS can be integrated into the business management model towards sustainable development. This work presented an integration process proposal, highlighting the potentialities and synergies between IMS and corporate sustainability. The SMSS model was built based on the practices developed by four important companies, presented as case studies, and considered as good references in the market. However, an overall perspective about the perception of managers about this potential integration, and if they would take advantage of

subsequent opportunities, was not presented. The authors intend to extend this study with a survey to assess such perception and analyze the integration across the supply chain in depth. These results do not answer the question about the impact of MSS on corporate sustainability performance. Thus, the future research line will attempt to understand the relationship between the maturity of IMS and corporate sustainability performance. Also, it will address the relationship of IMS and SMSS, linking the IMS results with the triple dimension of CSM and the satisfaction of the different stakeholders along the supply chain to promote an inter-organizational perspective.

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Appendix A

Table A1. Sustainable Practices in Integrated Management Systems (IMS).

PDCA Cycle	Requirements of Annex SL ISO	Company A: Practices/Methods	Company B: Practices/Methods	Company C: Practices/Methods	Company D: Practices/Methods
PLAN	4—Context of the organization: 4.2 Understand the needs and expectations of interested parts	At the level of manager stakeholders, the IMS coordinator highlights the employees, the group, customers, suppliers, investors, legal institutions, as the more relevant stakeholders. The communication management with stakeholders is made in several ways. For example, daily meetings are held with suppliers, “(...) we want to involve the suppliers in our practices, they visit our facilities to participate in our production process for them to understand our problems and be involved” (EC01).	This company identifies the stakeholders, as well as their needs and expectations in the Balanced Scorecard. Communication with stakeholders is managed through meetings, newsletters, internal communications, intranet, external meetings, and through the representation of Company B in associations with other companies.	Stakeholders’ management has been improved with the ISO imposition, being done now in a more systematic way. The communication with stakeholders is managed in several ways: the company communicates systematically with all customers through a digital magazine containing the news, and the standards that should be met are delivered to suppliers. Within the scope of social responsibility, sessions are held every year with the local community to assess stakeholders’ relevance. The analysis of the organizational context is implemented through sessions with external people. The company opens once a year to let the community understand what Company C does, demonstrating that there is nothing to hide. Also, customers come to Company C every month.	Company D seeks to have a close relationship with the local authority to have the lowest impact on the population and reduce the quarry’s visual impact. Together, they promote social activity seeking to achieve well-being, social and economic development. It organizes two events annually, namely the week of open doors for the population, universities and schools, and the Children’s Day, where various activities are carried out.

Table A1. Cont.

PDCA Cycle	Requirements of Annex SL ISO	Company A: Practices/Methods	Company B: Practices/Methods	Company C: Practices/Methods	Company D: Practices/Methods
	5—Leadership 5.1 Leadership and commitment 5.2 Policy	Definition of the Policy “The protection of natural resources and the prevention of environmental damage are the cornerstone of the mission and the business model”. The policies are available for consultation, “we have a kiosk with a computer where people can check, both in terms of safety, quality and the environment purpose” (EC01)	The interviewee states that sustainability is integrated into the vision. “Company B imagines a more efficient world with intelligent energies that promote sustainable mobility and encourage the progress of society”. Sustainability is one of Company B’s values: “build future mobility by focusing on innovative and environmentally friendly solutions, and we want to build a better world for future generations.” (EC03)	CSM is considered an important aspect integrated into the Company C business model and strategic management. It all starts with the certification in quality, environment and, more latter, to social responsibility, to encompass everything that surrounds the company. “The top management looks at these standards as a strategic management tool, which allows helping manage the company” (EC04) since the whole strategy involves quality, environment, research development, innovation, and social responsibility. The dissemination of the sustainability strategy, policies, and actions come from top management, considering aspects of social and environmental responsibility to prevent, mitigate, or minimize the negative impacts, promoting environmental protection.	Company D has as principles the prevention and minimization of environmental impacts and health and safety risks of its operations. Together with the education, training, and commitment of its employees and suppliers promote quality, environmental, health, safety, and social responsibility issues.
	6—Planning 6.1 Actions to address risks and opportunities	Risk management is an important tool for the analysis of the organization’s impact. The employees now have more awareness. It is carried out in a process approach. SWOT analysis is carried out to identify risks, opportunities, weaknesses, and strengths. “Following the process approach to identify the risks and opportunities, we have all the environmental, and social factors there, then we define actions and we are mitigating the impacts.” (EC01)	This company also performs SWOT analysis, identifying strengths, weaknesses, opportunities, and threats, which is discussed at the start of each year. “We have a map, a document, where it is divided by tasks, by business units, and we manage the risk for each of these tasks” (EC03). The interviewee agrees that the risk management approach promotes concern about the impacts of the organization’s activity from a long-term perspective, and, therefore, concerns future generations.	The tool used to manage risk is the SWOT analysis in all processes. The SWOT analysis starts with strategic management and, consequently, each of the areas—Quality, Environment, and Social Responsibility—is responsible for carrying out the corresponding SWOT. Risk management is an important tool for the analyzing of the organization’s impact and was the most important and worthwhile tool. The risk management approach promotes concern about the impacts of the organization’s activity in a long-term perspective, and, therefore, concerns future generations.	Risk management was already carried out by Company D through SWOT analysis. But, the development of this management area with the introduction of this clause IMS allows the company to act more responsibly. The company believes that risk management is an important tool for the analysis of the company’s impacts. Besides, this approach promotes concern about the impacts of the organization’s activity in a long-term perspective, and, in this way, with concern for future generations.

Table A1. Cont.

PDCA Cycle	Requirements of Annex SL ISO	Company A: Practices/Methods	Company B: Practices/Methods	Company C: Practices/Methods	Company D: Practices/Methods
Do	7—Support 7.3 Awareness	<p>“The employees’ training starts on the first day in the factory. The design of the training includes the transmission of safety, environment, and quality goals. There is a welcoming manual, and we have different visual information available for consulting of the people”. (EC01)</p> <p>Company A is concerned with involving employees in the sustainable actions implemented. The employee involvement in IMS policies is promoted through a system for recognizing suggestions for improvements, and every month there are recognition meetings. “We have a daily communication system, meetings on the shop floor to let know if there was a quality alert if there was a safety alert or an environmental alert” (EC01).</p>	<p>Company B is concerned with involving employees in the sustainable actions implemented, namely in beach cleaning events, reconstruction of abandoned houses, among other actions.</p>	<p>The company demonstrated its concern to involve employees in the sustainable actions implemented. It also has projects in the social responsibility area through active collaboration with the outside community. “(...) for example, some social organizations that have problems, we built a team with the Company C employees to help with whatever is necessary” (EC04). Employee involvement with the IMS is high, and this is promoted through the disclosure of policies and indicators.</p>	<p>According to the interviewee, Company D is concerned with involving employees in sustainable actions through a policy of transparency towards them.</p>
	8—Operation 8.1—Operational planning and control 8.3—Design and development of products and services (ISO 9001:2015)	<p>The design products/process phase (internal or with suppliers), always involves a staff coming from the safety and environment areas to try to comply with legal requirements.</p>	<p>Company B had to design its life cycle and subsequently analyze it for each product or service.</p>	<p>In the product design and development phase, Company C has two main concerns, environmental and quality. When implementing a new raw material in the design, Company C is concerned with environmental and social responsibility impacts. All waste of production is reused. “We are at that stage where we almost need to break material to incorporate it since we have already reused 100% Waste” (EC04). The company trains its customers in renovation context, encouraging them to reuse the broken pieces, giving specific indications of what can be done with them to prevent placing them in landfills.</p>	<p>In the development of new products, environmental awareness and social concerns are elements present in the projects, trying to meet the customer’s needs and the contribution of the lowest ecological footprint. Besides, the product life cycle is also considered at this stage.</p>

Table A1. Cont.

PDCA Cycle	Requirements of Annex SL ISO	Company A: Practices/Methods	Company B: Practices/Methods	Company C: Practices/Methods	Company D: Practices/Methods
CHECK	9—Performance Evaluation 9.1 Monitoring, measurement, analysis and evaluation	In terms of results, the quality manager affirms that the company has set goals that are broken down into indicators: quality, social, and environmental.	Company B uses the Balanced Scorecard, in which it has defined indicators and goals. The IMS also has a departmental BSC with safety, quality, and environment indicators. In the management review, the sustainability strategy and the results achieved are always analyzed and discussed.	The strategic group meets every three months to check if the objectives are being achieved. The information resulting from the IMS review is transmitted to all departments, communicating the information to employees in each area.	At Company D, the objectives are set yearly considering each of the standards—quality, environment and safety, and monitoring monthly. In the environmental dimension, this company has developed efficient techniques to control emissions into the atmosphere to guarantee legal compliance and a reduced impact. In the social vector, Company D streamlines and helps the local community, for example, through campaigns to collect caps for the pediatric hospital and participation in actions to support firefighters
ACT	10—Improvement 10.3 Continual Improvement	At the innovation level, the company has been investing in robotic systems to promote risk reduction. “Whenever some opportunity is detected, we proceed with viability study to implement innovative situations” (EC01)	The improvement actions promoted by IMS integrate actions that promote sustainable development. “We have an innovation department which requests transversal ideas for the three areas (QES), promote the competition, and the three best ideas win a prize and are implemented.” (EC03) The actions that B Energy develops in the area of sustainability include, for example, making gas stations more suitable for cyclists, installing large washing machines. The Bio section started with the net collection of used oils, which were incorporated into the biodiesel production.	The company has been invested in eco-innovation in the construction sector to contribute to a sustainable future, which means considering environmental protection, energy efficiency, preservation of health and well-being, and greater architectural integration. Company C had two projects to reduce water consumption: purchased equipment to dry rectification, i.e., do not use water on the product rectification stage, “This project is in a very advanced phase, and it aims at eliminating the water in this process. In other words, all this is sustainability; we are thinking about it” (EC04). The improvement actions promoted through the Company C IMS integrate actions that promote sustainable development, namely reducing the number of pallets. The packaging used is recycled and promotes the reduction of plastics.	The continual improvement promoted through the Company D IMS encompasses actions that promote sustainable development, namely a water management program.

Notes. PDCA: plan–do–check–act or plan–do–check–adjust; SWOT: Strengths, Weaknesses, Opportunities, and Threats; IMS: Integrated Management Systems; RDI: Research, Development, and Innovation, BSC: Balanced Score Card; QES:—Quality, Environment, and Safety; CSM: Corporate Sustainability Management; EC01, EC02, EC03, EC04, and EC05: companies’ interviewee codes used in the study.

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