UNIVERSIDADE CATÓLICA PORTUGUESA

Driving sustainable thinking in Portugal

A Semi-Systematic Review and the cases of Super Bock, Exponor, and ACP

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Católica Porto Business School

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A Semi-Systematic Review and the cases of Super Bock, Exponor, and ACP

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"The future belongs to those who believe in the beauty of their dreams."

- Eleanor Roosevelt

Abstract

A company's actions need evaluation, not only to comprehend its short-term results but also to sustain future decisions. Measuring enables higher quality conclusions to be drawn. Therefore, based on data, companies can make more suitable decisions. The same applies to sustainability. Companies should evaluate their business sustainability to conserve resources, implement eco-friendly practices, and provide ethical labour. Businesses should further report the findings, acting transparently and taking accountability. But firstly, it is essential to understand what they ought to measure. However, the discussion regarding the measurement of sustainability is ongoing. The complexity of this concept is often daunting, and smaller companies with limited resources might even put sustainability aside. We must encourage sustainable thinking as a first step to achieving sustainable development. Our research objective is to explore sustainability, its dimensions, how these interact, and which indicators are most appropriate to measure sustainability and drive sustainable thinking in Portugal. This research relies upon a semi-systematic literature review methodology, followed by in-depth interviews with managers actively involved in sustainability. We conclude that sustainability has mainly been understood as a concept of three dimensions by authors and experts alike. However, other authors include a fourth dimension to the sustainability assessment that has been discussed for some time now. Furthermore, our findings indicate that indicators from the social and environmental dimensions are the most agreed-upon. This research provides managers with means to comprehend sustainability and its assessment while connecting it to the SDG.

Keywords: sustainability, sustainability dimensions, sustainability indicators, GRI, UNSD Indicators, ISO Standards, United Nations.

Resumo

As ações de uma empresa devem ser avaliadas, não só como forma de compreender os resultados a curto prazo, mas também para sustentar decisões futuras. A medição permite tirar conclusões com uma qualidade superior. Assim, com base em informação, as empresas podem tomar decisões mais adequadas. O mesmo se aplica à sustentabilidade. As empresas devem avaliar a sustentabilidade do seu negócio para conservar recursos, implementar práticas amigas do ambiente e assegurar o trabalho ético. Devem ainda comunicar os resultados, atuando de forma transparente e assumindo a responsabilidade. Mas, em primeiro lugar, é necessário compreender o que devem medir. No entanto, o debate sobre a medição da sustentabilidade é atual. A complexidade deste conceito é muitas vezes assustadora e as empresas mais pequenas com recursos limitados podem inclusive colocar a sustentabilidade de lado. Devemos encorajar o pensamento sustentável como um primeiro passo para alcançar o desenvolvimento sustentável. O nosso objetivo de investigação é explorar a sustentabilidade, as suas dimensões, a forma como estas interagem e quais os indicadores mais adequados para medir a sustentabilidade e promover o pensamento sustentável em Portugal. Esta investigação baseia-se numa metodologia de revisão semi-sistemática da literatura, seguida de entrevistas in-dept a gestores ativamente envolvidos na sustentabilidade. Concluímos que a sustentabilidade tem sido entendida como um conceito de três dimensões por autores e especialistas. No entanto, outros autores incluem uma quarta dimensão na avaliação da sustentabilidade que tem vindo a ser debatida há algum tempo. Os nossos resultados indicam ainda que indicadores das dimensões social e ambiental são mais unanimes. Esta investigação fornece aos gestores meios para compreenderem a sustentabilidade e a sua avaliação, ligando-a aos ODS.

Palavras-chave: sustentabilidade, dimensões de sustentabilidade, indicadores de sustentabilidade, GRI, indicadores de desenvolvimento sustentável das Nações Unidas, normas ISSO, Nações Unidas.

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Abbreviations

CBM	Circular Business Models
CE	Circular Economy
CSD	Commission on Sustainable Development
DEV	Direct Economic Value
DJSI	Dow Jones Sustainability Indices
ESG	Environmental, Social and Governance
GRI	Global Reporting Initiative
ISO	International Organisation for Standardisation
JCR	Journal Citation Reports
MSCI	Morgan Stanley Capital International
RDED	Rio Declaration on Environment and Development
SASB	Sustainability Accounting Standards Board
SDG	Sustainable Development Goals
SP	Sustainable Procurement
SSLR	Semi-Systematic Literature Review
TBL	Triple Bottom Line
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCSD	United Nations Conference on Sustainable Development
UNECE	United Nations Economic Commission for Europe
UNSD	United Nations Sustainable Development

Introduction

Sustainable development and sustainability as a strategy are prevalent matters. However, the discussion regarding the measurement of sustainability is ongoing. In Marketing, measurement and evaluation are essential, not only as a way to comprehend current actions' results but also to justify and sustain future decisions. It allows marketers to evaluate the performance of marketing and its results, understanding the impact it yields on the company, its customers (Farris et al., 2015) and other stakeholders. It provides insights into how stakeholders perceive the brand and its communication efforts. Evaluating and reporting a company's sustainability is fundamental for promoting resource conservation, eco-friendly practices, and ethical labour (United Nations, 2012, items 4, 30, and 148) while battling the growing tendency of greenwashing (Henao-Rodríguez et al., 2024). The United Nations states in item 10 of the outcome document *"Future We Want"* from the UN Conference on Sustainable Development (UNCSD) or Rio+20, in Rio de Janeiro, Brazil (2012), that *"to achieve our sustainable development goals we need institutions at all levels that are effective, transparent, accountable and democratic"*. To accomplish sustainable development, companies ought to evaluate their sustainability and report the findings acting transparently and taking accountability.

The motivation for this research study arose from the author's internship at Mojobrands Lifestyle, Lda. This company is a creative agency that provides an extended range of services, branding, design, and strategy being a few of those services. For quite some time now, the agency has understood sustainability as a critical factor, recognising the need to comprehend it to innovate the services supplied and its business strategy. Sustainability becomes paramount for any industry. Companies depend on each other in today's economic climate, and sustainability becomes a requirement for business.

As a creative agency that often offers consultancy services, creating a tool to evaluate sustainability became a goal. Revolutionising sustainability assessment is not part of this goal, but rather creating a tool that encourages sustainable thinking in the Portuguese business setting, where around 90% of companies are micro-enterprises (Banco de Portugal, 2022).

Research is paramount at this point. Farris et al. (2015) recognize the difficulty in measuring something when not knowing exactly what to measure. To act on sustainability and to be a part of sustainable development, we must first understand it and comprehend what it entails. This thesis seeks to explore sustainability, its dimensions, how these interact, and which indicators are most appropriate to measure sustainability, driving sustainable thinking in Portugal. We aim to lay the foundations for the development of a measurement instrument that Mojobrands can use to further promote sustainable thinking and dynamize it throughout the country. Therefore, the research question that guides this study is: "What are the dimensions of sustainability, and which indicators are most appropriate to measure sustainability?".

This thesis structure is composed of four chapters apart from the introduction. Chapter 1 presents the theoretical background, where the main concepts are discussed and explained. Chapter 2 refers to the methodology adopted for this research, the reasoning, and its implementation. Chapter 3 encompasses the presentation and analysis of findings in terms of dimensions and indicators of sustainability. Chapter 4 discusses the findings. Lastly, a conclusion that covers theoretical and managerial implications, closing with the current study's limitations, is provided.

Chapter 1

Theoretical Background

1.1. How to Define Sustainability

It is essential to comprehend how sustainability is defined. The UN Brundtland Commission (1987) defines sustainability as *"meeting the needs of the present without compromising the ability of future generations to meet their own needs"* (United Nations, 2014). On the other hand, Elkington (1997) is more specific in this definition, addressing sustainability as a fork to what the author calls *"sustainability's triple bottom line"* or *"fork"*, in the book's foreword. The triple bottom line (TBL) approach includes three dimensions of sustainability: economic prosperity, environmental quality, and social justice (Elkington, 1997). The economic prosperity includes the financial aspects of sustainability, in which the author highlights the profitability of a business. Nevertheless, the author emphasises the importance of transcending profits and considering broader economic concepts regarding impacts on the social and environmental dimensions. The environmental quality regards companies' ecological impacts. The author remarks several examples of environmental capital that is used by enterprises and need to be considered, such as water regulation and pollution from greenhouse gases. Elkington recognises the need for environmental auditing focused on real-world environmental effects, highlighting areas such as *"compliance against regulations and other standards"* and *"eco-efficient technologies"* (Elkington, 1997, p. 82). The social justice bottom line incorporates a company's impact on people, whether these may be the company's stakeholders, communities, or society at large. In this dimension, the author introduces themes such as human rights, women's rights, labour rights, diversity and inclusion, and irresponsible marketing.

Such a term, TBL, has been widely used by many authors in agreement over the years, but other authors, such as Pope et al. (2004), believe this term is not enough to define sustainability. Pope et al. (2004) sought to define sustainability assessment, criticising the separation of dimensions in the TBL approach, which *"tends to emphasise potentially competing interests rather than the linkages and interdependencies between them"* (Pope et al., 2004, p. 610). The authors appoint a different approach to sustainability, the principles-based approach, which emphasises interrelations amid the key dimensions instead of encouraging trade-offs, avoiding some limitations of the TBL approach to sustainability (Gibson, 2001, as cited in Pope et al., 2004). Further, Sullivan et al. (2018) discuss the sustainable development as subjective, complex, and susceptible to conflicts of interests, factors the authors consider as possible barriers to its integration into a business strategy.

Apart from the three widely known dimensions of sustainability – environmental, economic, and social – governance is another concept worth mentioning, given the discussion it has led to over the years and its importance in corporate sustainability and responsible investment. During the United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro, Brazil, in 1992, the Rio Declaration on Environment and Development (RDED) was achieved, and the Agenda 21 was adopted. In both documents' *"Means of Implementation*", item 33.14 states that, regarding the *"Global Environment Facility"*, *"governance that is transparent and democratic in nature"* must be ensured (United Nations, 1992). The RDED recognises the importance of effective governance and international cooperation to achieve sustainable development (United Nations, 1992). Agenda 21 similarly highlights the importance of governance and institutional frameworks (United Nations, 1992). In Agenda 21, the need to strengthen the role of governments, society, and other stakeholders in decision-making processes and operations is emphasised, to

further promote public participation, transparency, and accountability (United Nations, 1992). In the United Nations Commission on Sustainable Development (CSD) in 1992, ensured the follow-up of the UNCED, and at the time, four dimensions of sustainability were considered: economic, environmental, social, and institutional (including governance) (Staniškienė & Stankevičiūtė, 2018). Governance seems to have always been considered by the UN as essential for sustainable development. In the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, the UN clearly stated the importance of this concept: "*Good governance within each country and at the international level is essential for sustainable development*." (United Nations, 2002, p. 2, item 4). In 2012, in the outcome document *"Future We Want"* from the UNCSD, the UN states that governance that is effective at all levels, from local to global, is comprehended as essential for sustainable development, in *"representing the voices and interests of all"* (United Nations, 2012, item 76). In this conference, an institutional framework is presented, and the institutional dimension gains notable emphasis, especially regarding governance, given the need for effective governance and institutional frameworks to support sustainable development efforts. Governance is further highlighted as important for *"effective, credible, accountable, and legitimate institutions"* (United Nations, 2012, item 92). More recently, in the Agenda 2030, governance is not a standalone dimension of sustainability, but rather addressed through goals and targets, such as Goal 16, *"Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels"*. Currently, governance is not considered as a separate dimension of sustainability by the UN, but rather a matter that intersects with and influences the three dimensions. However, a framework that includes governance as a dimension of sustainability is the ESG – environment, social, and governance. This framework evaluates organisations risk and opportunity management regarding sustainability and influences investment performance (Peterdy, 2023).

It is related to Corporate Social Responsibility (CRS) and highly connected to investment analysis and corporate reporting (Peterdy, 2023). Its growing importance has impacted the way investors decide on capital allocation (Peterdy, 2023), given that environmental, social, and governance factors will increasingly impact organisations' value, including their shares value, decreasing or increasing, consequently, the investment such organisations' receive from their investors (shareholders). In this framework, the governance dimension addresses the way a company is operated and governed (Peterdy, 2023).

1.2. CSR and Reporting

The UN has set several goals to achieve sustainable development and recognises the need for sustainability to be integrated into all organisations. As stated by Kofi Annan, the Secretary-General of the UN at the time, during the World Summit on Sustainable Development in Johannesburg, South Africa (2002), *"Sustainability is one of those goals. But it is also a prerequisite for reaching all of the others"*. In item 47 in the outcome document from the *"Future We Want"* (United Nations, 2012) the UN state the following: *"We acknowledge the importance of corporate sustainability reporting and encourage companies (…) to consider integrating sustainability information into their reporting cycle. We encourage industry, interested governments and relevant stakeholders (…) to develop models for best practice and facilitate action for the integration of sustainability reporting, taking into account experiences from already existing frameworks"*.

The term CRS, as defined in The China Business Model (2017), is a *"voluntary business initiative that represents a way of managing a business sustainable and ethical manner to achieve the triple bottom line – financial, environmental, and social"* (ScienceDirect, 2024). Measuring, evaluating, and reporting organisations' sustainability is paramount and a part of CSR.

Organisations' non-disclosure of sustainability-related data creates propitious circumstances and motivation for greenwashing (Hu et al., 2023). Hu et al. (2023) define greenwashing as the *"dissemination of deceptive information about environmentally friendly products, services, or practices, with the intention of portraying companies or organisations as environmentally responsible"* (Hu et al., 2023, p. 3). This organisational behaviour, which could be due to the pressures of sustainable development, displays the necessity of transparency and accountability. As Suárez-Serrano et al. (2023) state, enterprises must be committed to monitoring and disclosing precise and verifiable data regarding their activities to ensure genuine accountability.

1.3. Circular Economy and Supply Chain

Hofmann (2019) describes CE as maximising the use of extracted natural resources and employing reuse and recovery strategies to maintain the highest value of products. The UN Economic Commission for Europe (UNECE) identifies five factors to promote circularity related to waste management, sustainable and innovative procurement, traceability of value chains, standards and regulatory frameworks, and supply chains' efficiency (UNECE, 2024).

Incorporating circularity in CSR becomes a competitive advantage as it conveys transparency, trust, and legitimacy (Hofmann, 2019). However, as with sustainability, there is no international consensus on measuring circularity (Ibáñez-Forés et al., 2022). Circularity implies a sustainable supply chain strategy. Procurement, whether of products or services, is the starting point of every supply chain (Maignan et al., 2002 and Sharma et al., 2017, as cited in Lau et al., 2023). For long-term sustainable development, one must consider sustainable procurement (Lau et al., 2023) and companies will certainly be held accountable for their suppliers actions. For circularity to become a reality, all organisations, public or private, institutional or corporative, must cooperate.

1.4. International Frameworks

Sustainability has been frequently discussed for many years. However, no unique international framework to evaluate organisational sustainability has been defined. As such, various frameworks have been designed, such as the United Nations Sustainable Development (UNSD) Indicators, the Global Reporting Initiative (GRI), Dow Jones Sustainability Indices (DJSI), Sustainability Accounting Standards Board (SASB), Morgan Stanley Capital International (MSCI) ESG Ratings, and the Morningstar Sustainalytics ESG Risk Ratings.

The UNSD Indicators are directly related to the Sustainable Development Goals (SDG). In 1992, the CSD (United Nations, 1992) considered four dimensions of sustainability, given the Agenda 21 and the RDED: economic, environmental, social, and institutional. The institutional dimension focused on the effectiveness of institutions and governance systems in advancing towards sustainable development. However, currently, the 2030 Agenda (United Nations, 2015) revolves around three dimensions of sustainable development – economic, social, and environmental – which are deconstructed into *"areas of critical importance for humanity and the planet"*: people, planet, prosperity, peace, and partnership. The 17 SDG, 169 targets (several smaller objectives within the SDG) and their indicators are related to these five areas and three dimensions. The 2030 Agenda (United Nations, 2015) proposes 231 unique indicators, which are macro, aimed at measuring countries' sustainability concerning the SDG (United Nations, 2023). The GRI Standards make it possible for any organization to comprehend and report on their impacts on the economy, environment, and people comparably and credibly, making it relevant for many stakeholders such as investors and policymakers, and increasing transparency on the organization's contribution to sustainable development (Global Reporting, 2023). The DJSI evaluates companies based on ESG criteria and

provides important information for investors (Dow Jones, 2022). The SASB standards provide investors with pertinent sustainability-related issues in 77 different industries that guide them through their decision-making processes (SASB Standards Overview, 2023). The MSCI ESG Ratings is predominantly financial-directed, aiming to *"measure a company's management of financially relevant ESG risks and opportunities"* (MSCI, 2023). Morningstar Sustainalytics' ESG Risk Ratings assess a company's ability to manage industry-specific material ESG risks, as well as the company's exposure to these risks (Sustainalytics, 2023).

Name	Model Type	Dimensions	Other Information
UNSD Indicators	Framework	Environmental, Economic, Social with 5 areas of critical importance: people, planet, prosperity, peace, and partnership	SDG Indicators: 17 Goals and 169 targets. 231 unique indicators aimed at country-level assessment.
GRI	Framework	Economy, Environment, People	Assists companies to evaluate and report their impacts on the three dimensions of sustainability in a comparable and credible way. Directed to any organisation (public or private, large or small). GRI Indicators are divided into four series: 100 series regard universal standards, 200 series related to economic standards, 300 series include environmental standards, and the 400 series involve social standards.
ISO Standards	Guidelines and Certification	Environmental, Economic, Societal	Internationally agreed by experts. ISO standards function as guidelines *"that describe the best way of doing something"*. On the website, ISO provides a graph with all the Standards that apply to each SDG.

Note: All information was retrieved from the website (webpage and available documents) of each organization, displayed in Attachment 5: Information regarding the Internationally Recognised Sustainability Frameworks / Standards.

Table 1: Internationally recognised sustainability frameworks and/or standards

Besides frameworks, other institutions have developed guidelines to assist companies in the implementation of sustainable practices granting, in return, a sustainability certification. An example well known internationally is the

International Organisation for Standardisation, which provides standards and guidelines for various areas in line with an ISO certification.

Table 1 compiles some information on the UNSD Indicators, GRI, and ISO Guidelines, which are internationally recognised and the most discussed and mentioned models overall.

Chapter 2

Methodology

In this section, the research methodology is presented and detailed.

2.1. Research Approach and Data Collection Procedures

Given the purpose of this thesis to create a knowledge groundwork of sustainability indicators applicable to any company in any sector, this research relies upon two study phases. The first phase entailed a semi-systematic literature review methodology, followed by a series of in-depth interviews with managers actively involved in sustainability.

The semi-systematic literature review (SSLR) methodology is applied when themes are researched and understood differently across various disciplines, hindering a complete systematic literature review (Wong et al., 2013, as cited in Snyder, 2019). Snyder (2019) states that different methods apply to analyse and synthesise results from a semi-systematic review, for example, a thematic analysis. Braun & Clarke (2006) define thematic analysis as a method that enables the recognition, evaluation, and reporting of patterns within the data. When conducting a thematic analysis, the researcher fundamentally bundles a theme identified in the data that supports the research question(s) (Braun & Clarke, 2006). It is not random information but rather a pattern repeated throughout the data, exhibiting some order or connection (Braun & Clarke, 2006).

Additionally, expert in-depth interviews were performed to compare what is currently happening in the Portuguese business setting, to what researchers have proved effective. A diverse interview guide was designed with the

assistance of ChatGPT, by computing an explanation regarding the several types of questions desired and sustainability topics. The query input into ChatGPT can be found in Attachment 3: Query – ChatGPT. The AI proposed guide was further edited and improved according to the research objective. The interview guide, presented in Attachment 2: Interview Guide. addresses several topics, such as dimensions and indicators of sustainability, the main focus of this study, sustainability evaluation frameworks, and the role of the SDG. It is also important to note that, these being in-depth interviews semi-structured, the interview guide functioned as a guiding thread, having been personalised for each interview according to the expert and company.

2.2. Articles Selection

Through Science Direct's database, the following set of keywords with Boolean operators was applied: (measurement OR indicators OR evaluation) AND (sustainability OR sustainable) AND (company OR enterprise OR organisation). Table 2 displays the several inclusion and exclusion criteria applied.

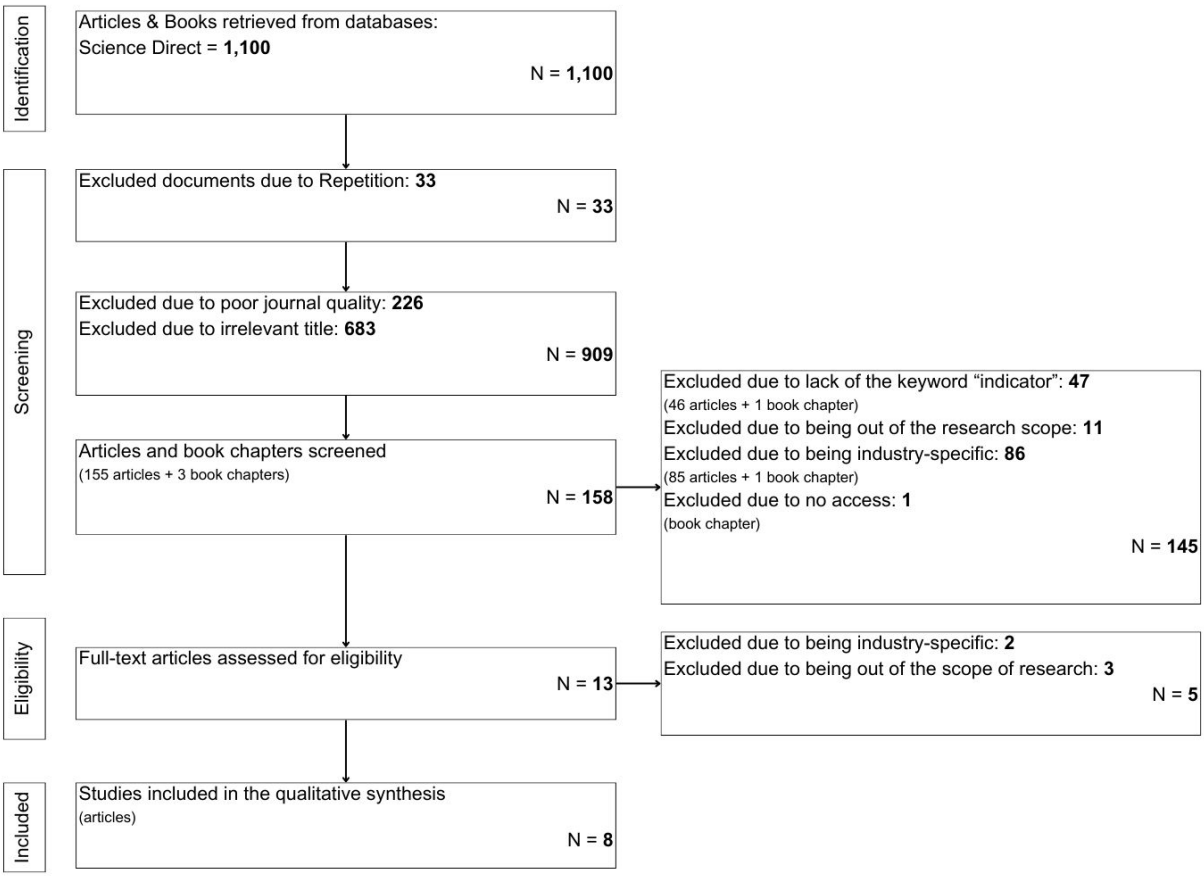
Inclusion / Exclusion Criteria	
Inclusion Criteria	From 2013 to 2023 Article or Book Chapter
Exclusion Criteria	Poor Journal quality Irrelevant title Lack of word “indicator” on the abstract Out of the research scope Industry-specific No access to the article / book chapter

Table 2: Inclusion and Exclusion Criteria

The PRISMA diagram (Moher et al., 2009) was implemented to filter the articles collected from Science Direct (Figure 1). In the identification phase, phase one, we endorsed 1100 papers (articles and book chapters) from 2013 to 2023, a ten-year gap which was considered reasonable. In the screening phase, we excluded 33 papers due to repetition, 226 articles due to poor journal quality

– only journals that had a JCR 2022 (Clarivate, 2023) impact factor were considered viable –, and 683 papers (articles and book chapters) due to irrelevant titles. Then, the abstract screening of 158 papers resulted in 13 articles selected for full-text reading as we excluded 47 articles/book chapters for the lack of the keyword "indicator" in their abstract, 11 articles for being out of the scope of research, one book chapter for lack of access to it, and 86 articles/book chapter for being industry-specific. In the next phase, "eligibility", the 13 articles were read and sorted. Out of these 13 articles, two were excluded for being industry-specific (transportation and manufacturing), three were excluded for being out of the scope of research and eight were accepted.

Figure 1: PRISMA Diagram



In Table 3, the final sample of the eight articles included in the qualitative synthesis is presented.

Authors	Year of Publication	Journal & 2022 IF	Title
Staniškienė, E. Stankevičiūtė, Ž.	2018	Journal of Cleaner Production (IF 11.1)	Social sustainability measurement framework: The case of employee perspective in a CSR-committed organisation
Hutchins, M. J., Richter, J. S., Henry, M. L., & Sutherland, J. W.	2019	Journal of Cleaner Production (IF 11.1)	Development of indicators for the social dimension of sustainability in a U.S. business context
Rossi, E., Bertassini, A. C., Ferreira, C. dos S., Neves do Amaral, W. A., & Ometto, A. R.	2020	Journal of Cleaner Production (IF 11.1)	Circular economy indicators for organizations considering sustainability and business models: Plastic, textile and electro-electronic cases
Calabrese, A. Costa, R. Gastaldi, M. Levialdi Ghiron, N. Villazon Montalvan, R. A.	2021	Journal of Cleaner Production (IF 11.1)	Implications for Sustainable Development Goals: A framework to assess company disclosure in sustainability reporting
Ibáñez-Forés, V., Martínez-Sánchez, V., Valls-Val, K., & Bovea, M. D.	2022	Journal of Environmental Management (IF 8.7)	Sustainability reports as a tool for measuring and monitoring the transition towards the circular economy of organisations: Proposal of indicators and metrics
Ibáñez-Forés, V., Martínez-Sánchez, V., Valls-Val, K., & Bovea, M. D.	2023	Sustainable Production and Consumption (IF 12.1)	How do organisations communicate aspects related to their social performance? A proposed set of indicators and metrics for sustainability reporting
Suárez-Serrano, E., González-Torre, P. L., & Covián-Regales, E.	2023	Environmental Development (IF 5.4)	A business prioritisation of the sustainable development goals indicators: Building bridges between academics and practitioners in the Spanish case
Lau, K. H. Yadlapalli, A. Abdulrahman M. D. A. Chhetri, P. Thai, V.	2023	Journal of Cleaner Production (IF 11.1)	Disclosure index development for sustainable procurement: An Australian perspective

Table 3: SSLR Final Sample

2.3. Interviews: Sampling and Procedures

Four sustainability experts from four different Portuguese companies were contacted through email. Three out of the four experts replied. We based the

selection of the interviewees on their company's impact on the Portuguese market and/or its recognition by the public. Additionally, these experts were specifically chosen based on their proximity and/or ease of access to the author. The experts interviewed represent the following companies: Super Bock, Exponor, and ACP (Automóvel Clube de Portugal) – and they are, in order, Graça Borges (Director of Communication, Institutional Relations and Sustainability), Diogo Barbosa (Executive Adviser to the Board and former Managing Director), and Bruno Silva Gomes (Head of Environment and Sustainability).

Upon agreeing on the date for each interview, the interview guide was made available to all experts by email. The interviews were arranged and conducted on the 12th and 19th of January 2024. Two of the interviews were performed online (Microsoft Teams) and the other one in person. A discloser was made at the beginning of each interview that included its purpose, the explanation of how it would be carried out, the request to record the interview for revision purposes, and the expression of gratefulness for participating in these interviews and supporting the development of this study. All participants agreed with the interview terms. It should be noted that given ACP's company confidentiality, some matters could not be discussed during the interview with Bruno Silva Gomes. For this reason, some information will be missing in the analysis of the interviews' results.

2.4. Data Extraction and Analysis

As previously stated, conducting a thematic analysis means identifying a common theme in the data that supports the research question(s) Braun & Clarke (2006). The common themes in the revised articles were the dimensions of sustainability and the indicators better suited to evaluate an organisation's sustainability. Further, to enhance uniformization of the data analysed, findings from articles were segmented into three groups of common topics. To support

the analysis of the data gathered from the semi-systematic literature review, a revision board was constructed to collect the following information about each article that compose the final sample: author(s) and year, dimensions, indicators of sustainability, and description and extracts. A similar revision board was understood as appropriate for the analysis of the in-depth interviews. In this case, the revision board's information is as follows: experts' names, positions and company, dimensions, indicators regarding experts' opinion and the company they represent, and description. Other information collected in the interviews regarding SDG and frameworks internationally used and recognised are included in the results.

Chapter 3

Findings

In this section, the findings derived from the research conducted are presented. This chapter is divided into two subchapters. Firstly, findings from the semi-systematic literature review regarding dimensions and indicators of sustainability are presented and compiled into Table 4. The same ensues for findings form interviews, presented in a second subchapter, and compiled into Table 5.

3.1. Semi-systematic literature review findings

3.1.1. Dimensions of Sustainability

The discussion surrounding what dimensions of sustainability to measure and their importance in an organisation is up for debate. In the reviewed literature, five out of eight articles agree with Elkington's (1997) TBL approach, recognising sustainability as the combination of three broad dimensions: environmental, economic, and social (Ibáñez-Forés et al., 2023; Calabrese et al., 2021; Rossi et al., 2020; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018). Part of these articles, which acknowledge the importance of the three dimensions of sustainability, only address the social dimensions in their studies (Ibáñez-Forés et al., 2023; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018). This emphasis on the social dimension arises from an observed imbalance in the attention towards the first two compared to the social dimension (Ibáñez-Forés et al., 2023; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018). Further, Ibáñez-Forés et al. (2023) address the GRI framework and the ISO's Social Responsibility Guide, among others, and acknowledges that the weights attributed to each dimension – economic, environmental, and social – vary widely in different sustainability reports.

Rossi et al. (2020) base their framework on the three dimensions of sustainability – social, economic, and environmental. However, the environmental dimension only accounts for materials. The authors ought to analyse sustainability in terms of circular economy, developing a framework that can be applied to Circular Business Models (CBM), which explains the specificity of the environmental dimension from a material perspective.

Staniškienė & Stankevičiūtė (2018), acknowledge two possibilities: sustainability as a three-dimensional concept (TBL approach) or a four-dimensional concept including the institutional dimension. Such consideration derives from the analyses of the GRI, *"based on the TBL approach"* (Staniškienė & Stankevičiūtė, 2018, p. 712), and the United Nations CSD framework, *"based on four sustainability dimensions"* (Staniškienė & Stankevičiūtė, 2018, p. 712).

Suárez-Serrano et al. (2023) and Lau et al. (2023) understand sustainability as a four-dimensional concept. Suárez-Serrano et al. (2023) study aligns with the UN 2030 Agenda and the SDG. The authors consider four dimensions of sustainability: people, planet, prosperity, and peace/partnership. According to the authors, peace/partnership represents the governance dimension, reason for the combination of both areas into one dimension. The authors segment the SDG per dimension of sustainability: *"people"* includes SDG from 1 to 5; *"planet"* incorporates SDG 6, 12 and 13; *"prosperity"* includes SDG 7 and 11; and *"peace and partnership"* includes SDG 16 for peace and 17 for partnership. Lau et al. (2023) consider the three dimensions of sustainability from the TBL approach – environmental impact, social responsibility, economic consideration – and a fourth dimension regarding governance – governance and transparency. The authors define the fourth dimension, governance and transparency, as the evaluation of *"the organisation's governance structure, policies, and procedures related to sustainable procurement, as well as the transparency and disclosure of relevant information to stakeholders"* (Lau et al., 2023, p. 3).

3.1.2. Indicators of Sustainability

Several indicators proposed by all eight studies included in the final screening were reviewed. Three common topics to several articles were derived: SDG and (or) GRI indicators (Lau et al., 2023; Suárez-Serrano et al., 2023; Calabrese et al., 2021), Social Dimension (Ibáñez-Forés et al., 2023; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018), and Circular Economy (Ibáñez-Forés et al., 2022; Rossi et al., 2020). Over 380 indicators were analysed from the final sample of the semi-systematic literature review.

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability	Description and Extracts
SDG and GRI Indicators	Suárez-Serrano et al. (2023)	People Planet Prosperity Peace and Partnership	Ind 9.5.1 - Research and development expenditure as a proportion of GDP. Ind 4.3.1 - Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex. Ind 11.6.1 - Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities. Ind 7.2.1 - Renewable energy share in the total final energy consumption. Ind 12.4.2 - (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment. Ind 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated. Ind 12.5.1 - National recycling rate, tons of material recycled. Ind 11.4.1 - Total per capita expenditure on the preservation, protection, and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal).	*"Choosing the 2030 Agenda as a starting point has avoided the need to validate the model"* (p. 13). Prioritising the *"consensus of preferences of academics and practitioners"* (p. 14), *"The study discards* (…) *of numerous indicators that do not fit or are superfluous for companies"* (Abstract).
	Lau et al. (2023)	Environmental Impact Social Responsibility	(302-1) - Energy consumption within the organisation (302-2) - Energy consumption outside of the organisation (302-3) - Energy Intensity (303-4) - Water discharge (305-1) - Direct (Scope 1) GHG emissions (305-2) - Energy indirect (Scope 2) GHG emissions (305-3) - Other indirect (Scope 3) GHG emissions (306-2) - Management of significant waste-related impacts (403-1) - Occupational health and safety management system (407-1) - Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk (414-1) - New suppliers that were screened using social criteria (417-1) - Requirements for product and service information and labelling	The authors connected GRI indicators to the UNSD Procurement Indicators, making it applicable to business entities. To uniformize the information collected, only the GRI indicators included in Lau et al. (2023) research were considered.

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability		Description and Extracts
		Economic Consideration	(204-1) - Proportion of spending on local suppliers (301-1) - Materials used by weight or volume (301-2) - Recycled input materials used (301-3) - Reclaimed products and their packaging materials (414-1) - New suppliers that were screened using social criteria (414-2) - Negative social impacts in the supply chain and actions taken		However, the revision board in Attachment 1: SSLR Complete Revision Table includes the UNSD Sustainable Procurement Indicators.
		Governance and Transparency	(102-22) - Composition of the highest governance body and its committees (102-41) - Collective bargaining agreements		
	Calabrese et al. (2021)		In comparison to Lau et al. (2023)	In comparison to Suárez-Serrano et al. (2023)	This framework allows the investigation of *"companies' level of engagement in reporting and monitoring their contributions to SDG"* (p. 1)
		Economic	(204-1) - Proportion of spending on local suppliers (417-1) - Requirements for product and service information and labelling	9.5.1. (201-1) - Direct economic value generated and distributed 11.4.1. (201-1)	
		Social	(102-22) - Composition of the highest governance body and its committees (102-41) - Collective bargaining agreements (403-1) - Occupational health and safety management system (407-1) - Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk (414-1) - New suppliers that were screened using social criteria (414-2) - Negative social impacts in the supply chain and actions taken	4.3.1. (404-1) - Average hours of training per year per employee	The authors conclude that the *"SDG8 (decent work and economic growth) corresponds to the largest number of internally actionable SDG indicators, for a total of 8 indicators aimed at 6 targets"* (p. 4).
		Environmental	(301-1) - Materials used by weight or volume (301-2) - Recycled input materials used (301-3) - Reclaimed products and their packaging materials (302-1) - Energy consumption within the organisation (302-2) - Energy consumption outside of the organisation (302-3) - Energy Intensity (303-4) - Water discharge (305-1) - Direct (Scope 1) GHG emissions (305-2) - Energy indirect (Scope 2) GHG emissions (305-3) - Other indirect (Scope 3) GHG emissions	6.3.1. (303-3) - Water withdrawal (303-4) - Water discharge (306-1) - Waste generation and significant waste-related impacts (306-2) - Management of significant waste-related impacts 7.2.1. (302-1) - Energy consumption within the organisation (302-2) - Energy consumption outside of the organisation 11.6.1. (306-2) 12.4.2.	

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability		Description and Extracts
			(306-2) - Management of significant waste-related impacts	(305-1) - Direct (Scope 1) GHG emissions (305-2) - Energy indirect (Scope 2) GHG emissions (305-3) - Other indirect (Scope 3) GHG emissions (305-6) - Emissions of ozone-depleting substances (ODS) (305-7) - Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions (306-1) (306-2) (306-3) - Waste generated (306-4) - Waste diverted from disposal 12.5.1. (301-2) - Recycled input materials used (301-3) - Reclaimed products and their packaging materials (306-2)	
Social Dimension	Hutchins et al. (2019)	Social	Employee Esteem Needs Ratio of lowest quintile for salary to highest quintile for salary Ibáñez-Forés et al. (2023): EO03 Staniškienė and Stankevičiūtė (2018): Equal Compensation Opportunities Employee Actualization Needs Annual percentage of employees receiving company-sponsored training for professional development (e.g., education reimbursement, cross-training opportunities, professional development seminars) Ibáñez-Forés et al. (2023): TP06 Staniškienė and Stankevičiūtė (2018): Equal Working Conditions Customer Safety/Security Needs Percentage of company products/services for which consumer health and safety impacts are understood across the life cycle and are less negative, relative to similar products/services Percentage of company products/services that are not toxic or harmful during use Percentage of company products/services with instructions for safe, healthy use that were reviewed by a consumer safety review board Ratio of disability adjusted life years (DALYs) associated with customer use of company products/services to average life span of non-users of the company products/services Ibáñez-Forés et al. (2023): HS06 Customer Affiliation Needs Percentage of customers that believe the company mission/vision is aligned with their beliefs Ibáñez-Forés et al. (2023): T02		The opinions regarding the indicators that result from this paper come from the consensus between sustainability experts derived from surveys.

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability	Description and Extracts
			Supplier Affiliation Needs Percentage of suppliers that the company collaborates with in R&D efforts or grant proposals Ibáñez-Forés et al. (2023): SM04 Percentage of company-supplier partnerships in which environmental or corporate social responsibility information is shared Ibáñez-Forés et al. (2023): T01 Community Esteem Needs Ratio of community/company partnerships in external activities (e.g., research and educational outreach) to company contracts with local entities Ratio of public forums, held by the company, to address potential community infrastructure changes (e.g., road construction) to community infrastructure changes led by the company Ibáñez-Forés et al. (2023): SA02 Public Safety/Security Needs Percentage of employees receiving training in policies and procedures concerning aspects of human rights that are relevant to operations Ibáñez-Forés et al. (2023): TP03	
	Staniškienė & Stankevičiūtė (2018)	Social	Employee Participation Employees' initiative to participate Employees share their personal problems with line managers Employees share the work-related problems with line managers Employees provide suggestions concerning the improvement of processes at the organisation Organisation's encouragement to participate Organisation encourages the employees to take responsibility for decisions Organisation encourages the employees to provide suggestions concerning the improvement of processes at the organisation Ibáñez-Forés et al. (2023): LR03 Employee Opportunities Equal compensation opportunities The compensation system is understandable to employees The compensation system is fair The employees are paid the same for the same work Ibáñez-Forés et al. (2023): EO03 Hutchins et al. (2019): Employee Esteem Needs Equal working conditions Organisation ensures equal personal development opportunities for employees Organisation ensures equal opportunities for all candidates during the selection process Organisation ensures equal opportunities for males and females to further their careers	Ibáñez-Forés et al. (2023) Employee Satisfaction Measurement (HS05) indicator is in line with the purpose of Staniškienė and Stankevičiūtė (2018) framework. The authors disclose Health and Safety as the most important factor in social sustainability.

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability		Description and Extracts
			Ibáñez-Forés et al. (2023): EO01 Hutchins et al. (2019): Employee Actualization Needs Employee development Organisation ensures possibilities for employees to develop general and professional competences Employee competence development is oriented to the future requirements Organisation ensures possibilities for employees to participate in fairs, internships Organisation applies different forms for employee development Organisation constantly encourages the employees to develop their competences Ibáñez-Forés et al. (2023): TP06 Health and Safety Safety conditions Organisation provides the necessary working equipment for the employees The workplaces fulfil safety requirements Organisation encourages the employees to give up bad habits Health conditions Organisation provides good conditions for rest for its employees Organisation provides wellness opportunities for its employees Organisation provides good working conditions for its employees Ibáñez-Forés et al. (2023): HS02, HS04 External Partnership Organisation cooperates with other organisations for innovation projects Ibáñez-Forés et al. (2023): SM04 Staniškienė and Stankevičiūtė (2018) Framework Ibáñez-Forés et al. (2023): HS05		
	Ibáñez-Forés et al. (2023)	Social	In comparison to Hutchins et al. (2019) Equal Opportunities (EO) EO03 - Cohesion and salary justice Training Programmes (TP) TP03 - Human rights training TP06 - Talent development actions Health and Safety (HS) HS06 - Health and safety protection (customers and society) Sustainability External Actions (SA) SA02 - Investment in local action	In comparison to Staniškienė and Stankevičiūtė (2018) Sustainable Management (SM) SM04 - Fair competition and cooperation between organisations Equal Opportunities (EO) EO01 - Gender equality politics EO03 - Cohesion and salary justice Labour Rights (LR) LR03 - Participation of the employees in decision-making	*"The proposed indicators are not sector-specific ones"* (p. 166). Equal Opportunities, Health and Safety, and Transparency were the most identified social aspects.

Common Topic	Authors and Year	Dimensions	Indicators of Sustainability		Description and Extracts
			Transparency (T) T01 - Transparency actions T02 - Communication and consultation with society and customers	Training Programmes (TP) TP06 - Talent development actions Health and Safety (HS) HS02 - Health and safety management system HS04 - Preventive measures to improve health and safety HS05 - Employee satisfaction measurement	
Circular Economy	Ibáñez-Forés et al. (2022)	Circular Economy with indicators for social, economic, and environmental dimensions	Inputs I03: Consumption of recycled material I04: Consumption of reused material (internal) I05: Consumption of reused material (external) I09: Renewable energy consumption (external) R&D in circularity R01: Investment in research projects R02: Patents related to circularity		Most of the reviewed frameworks by the authors *"neglected issues related to water and energy management"* (p. 14). This framework proposes *"circularity indicators (…) to measure progress (...) towards CE"* (p. 14).
	Rossi et al. (2020)	Environmental (from material perspective)	Renewability Renewable Energy (% of renewable energy sources used in the manufacturing processes) Ibáñez-Forés et al. (2022): I09 Recyclability Recycled materials (% of recycled materials in the composition of the product) Ibáñez-Forés et al. (2022): I03 Reuse Manufacturing Process (Quantity of material reused in the supply chain) Product (Quantity of reused material in the product) Ibáñez-Forés et al. (2022): I04, I05		The authors create a group of indicators that can be applied to CBM. The goal is to *"capture the innovations brought by CE whose conventional indicators do not measure"* (p.10).
		Economic	Circular Investment Innovation (Quantify investments from the innovation process) Ibáñez-Forés et al. (2022): R01, R02		
		Social	(*)		

(*) – The articles in the CE category did not propose any similar social indicators. However, Rossi et al. (2020) include the social dimension in their study.

Table 4: SSLR Revision Table

To draw more reasonable conclusions, the results presented in Table 4 compile indicators proposed by articles that share the same common topic. However, a complete version that combines all the indicators proposed by more than one article segmented per research team is presented in Attachment 1: SSLR Complete Revision Table.

The first common topic is SDG and (or) GRI indicators. Suárez-Serrano et al. (2023) framework derives from prioritising consensus between practitioners and academics. Several of the indicators proposed by this research paper match part of those proposed by Calabrese et al. (2021). Both research papers suggest indicators from SDG 4, 6, 7, 9, 11, and 12. Calabrese et al. (2021) propose a framework of SDG indicators divided by the dimension of sustainability and attribute to each one or a bundle of GRI indicators that measure the same property. The authors created such a connection to assist companies in identifying strategies to achieve the SDG. Lau et al. (2023) combine different approaches and propose a framework that includes GRI and UNSD indicators. The authors base their study on the UN global indicator framework for economic, environmental, and social indicators, and the MSCI ESG framework and other sources for governance indicators, further employing GRI indicators to make it *"applicable to business entities"* (Lau et al., 2023, p. 3). Calabrese et al. (2021) framework incorporates almost 70% of the GRI indicators proposed by Lau et al. (2023). From the intersection of all three articles, it is possible to derive the following indicators: Energy consumption within the organisation (302-1), Energy consumption outside of the organisation (302-1), Direct (Scope 1) GHG emissions (305-1), Energy indirect (Scope 2) GHG emissions (305-2), Other indirect (Scope 3) GHG emissions (305-3), Management of Significant Waste-related Impacts (306-2), Water withdrawal (303-4), Recycled input materials used (301-2), Reclaimed products and their packaging materials (301-3).

Three of the articles reviewed propose frameworks and measuring instruments to evaluate the social dimension solely (Ibáñez-Forés et al., 2023; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018). Staniškienė & Stankevičiūtė (2018) study centres around employee satisfaction. The authors conduct a survey and interviews. For the sake of this research goal, we only considered the survey indicators. General topics such as employee participation, opportunities, development, health and safety, and external partnership are present in one or both articles that share the same common topic. Hutchins et al. (2019) framework incorporates six groups of stakeholders – employees, customers, stockholders/owners, suppliers, community, and public – and centres around five categories – Basic Needs, Safety/Security Needs, Affiliation Needs, Esteem Needs, and Actualization Needs. The authors derive the framework from the consensus between sustainability experts. Ibáñez-Forés et al. (2023) research paper includes the highest number of common indicators among the three articles. The authors segment 42 indicators into nine categories: Sustainable Management, Equal Opportunities, Labour Rights, Internal Social Benefits, Training Programmes, Health and Safety, Human Rights, Sustainability External Actions, and Transparency. All Social Dimension articles share three categories – Equal Opportunities, Training Programs, and Health and Safety – and two indicators. Salary justice and talent development are these indicators' general topics.

Ibáñez-Forés et al. (2022) and Rossi et al. (2020) research articles focus on circular economy. Around 17% of Ibáñez-Forés et al. (2022) proposed indicators correlate with Rossi et al. (2020) framework. On the other hand, around 13% of Rossi et al. (2020) proposed indicators correlate with Ibáñez-Forés et al. (2022) framework. In general terms, both articles propose investment in the circular economy, consumption of recycled material, reused materials, and renewable energy.

3.2. Findings from Interviews

3.2.1. Dimensions of Sustainability

The experts interviewed shared the same view concerning what dimensions to regard when evaluating sustainability, and these are three: environmental, social, and economic (Table 5). Nevertheless, the way they comprehend them differs. Graça Borges (Super Bock) and Diogo Barbosa (Exponor) consider all dimensions equally paramount and acknowledge they should hold the same significance within an organisation. Both experts believe that when speaking of sustainability, the three dimensions depend on each other, and all are influenced by one another.

Diogo states that *"pure environmental objectives must have a social impact and, at the same time, guarantee the organisation's economic and financial sustainability"*, acknowledging that radicalism linked to one dimension of sustainability that does not include the other dimensions leads to the non-implementation of some strategies. The expert states that a strategy entirely centred on environmental factors that do not integrate the financial aspect, for example, could lead to failure or even inability to implement. However, Diogo states that the decision on what dimensions to evaluate and their weights *"depend on the manager's opinion based on the data* (the manager) *has access to"*.

Graça agrees with the Brundtland Report, 1987, and states that sustainability is *"satisfying our current needs without compromising the needs of future generations"*, believing that an organisation should work to generate value, *"whether it may be economic or not ... which has to contribute to a balanced, just and developed society, and without harming the environment"*. Graça regards the three dimensions as layers, *"all of them supported on each other"*, and disagrees with the TBL view regarding the intersection of dimensions, *"only in the middle can you achieve sustainability, and that is not sustainable for me"*. The expert believes that all

dimensions must be in constant connection as these are continuously influenced by each other and that the view that sustainability only happens when the three dimensions intersect is contradictory to the concept itself, as these must be thought of mutually.

Bruno Silva Gomes (ACP) shares the same outlook regarding sustainability as a *"vision of the future concept"*, stating that such a concept indicates that *"future generations have the same conditions that we have now or even better, and, at the same time, the planet"* is preserved. For Bruno, from a personal standpoint, the economic dimension does not share the same importance as the environmental and social dimensions. Bruno recognises his bias towards the environment, considering it the central dimension, with the social dimension *"beside it and a little below it"*, while the *"economic dimension supports both"*. *"The economic dimension must support without jeopardising all other actions that a company wants to develop on the environmental and social dimensions"*. Bruno believes that through the environmental dimension, one can reach all.

3.2.2. Indicators of Sustainability

During the interviews, participants were asked about sustainability indicators regarding their views and the current measures carried out by the companies they represent. Results derived from these interviews regarding sustainability indicators are compiled in Table 5.

3.2.2.1. Diogo Barbosa – Exponor

Diogo selected several indicators without dividing them into dimensions, stating that, initially, an indicator might appear bounded to one dimension while it can measure impact in all of them. He exemplifies this using the water consumption indicator: *"By reducing water consumption, you save money and reduce your impact on the environment and your community"*. The indicators the expert believes to be crucial when evaluating an organisation's sustainability

are water consumption, quantity of consumed resources, quantity of waste generated, product/service life cycle, employees' health and safety, and capacity for reutilising end-of-life products. Diogo states that the two most important indicators calculated in Exponor are the water consumption (every month) and the quantity of carpet used, as one of their primary resources for events, which *"almost always gets used for an event and thrown out in the end ... not reliable to be reused"*. Additionally, the company produces a yearly waste management report. The company's objective when measuring such indicators is to *"act on the numbers"* by *"understanding the impact and try to reduce it or at least maintain it in the year after"*.

Currently, Exponor does not have a sustainability certification. Diogo speaks on this being a future goal, mentioning ISO 20121 as a certification Exponor would like to accomplish. Diogo acknowledges the SDG as *"highly broad, ... and some are quite macro"* without *"much translation at the business level"*, considering this a priority, believing that *"as soon as the company understands them and wants to implement them, the challenges are economic and financial"*.

3.2.2.2. Graça Borges – Super Bock

Graça emphasises environmental and social indicators when articulating critical indicators organisations should measure. The expert expresses further concern regarding the first environmental indicator, soil, stating its importance for human life as the foundation of agriculture. Regarding social indicators, Graça considers *"organisations always had them"* and *"always carried social duties"*, making Super Bock an example. Since its creation, the company *"has provided its employees"* with health and safety measures, such as *"doctor's appointments"* and even *"entertainment"*, such as theatre. Regarding economic indicators, Graça appoints circular value generated as a critical measure to understand the organisation's circular economy state, confirming that Super Bock is currently testing it.

Super Bock evaluates several indicators in all three dimensions. These indicators are extracted from the 2022 Super Bock's Management and Sustainability Report. Water and energy consumption, greenhouse effect gases, wastewater, residues, post-consumer recycled plastic and glass bottles weight reduction, training, health, safety and hygiene, Revenues / Direct economic value generated, and Salaries and Employee Benefits are some of the main indicators. Further indicators are presented in Table 5.

The company does not currently hold a sustainability certification. Nevertheless, Graça remarks this as a future goal, including their ambition to reach value chain neutrality. Graça describes the SDG as *"a transversal language that is perfectly understood by everyone"*, acknowledging that *"it would be ideal that all organisations ... worked all the SDG because balance comes exactly from that"*. Graça further acknowledges the SDG as macro and considers *"there should be a translation that deconstructs the SDG into business reality"* and *"that contributes to (their) consolidation"*. Currently, at Super Bock, SDG evaluation is not performed. However, given its goals, the organisation can understand which SDG it is working on. Graça states that the challenge in aligning a business strategy with the SDG is the *"voluntary"* aspect and the *"need to deconstruct these goals at a business level"*. Additionally, Graça states that the GRI is employed as a basis for Super Bock sustainability evaluation, given the model's *"ambition and rigour"*, its *"internationality"*, and its *"alignment with the three dimensions' perspective"*.

3.2.2.3. Bruno Silva Gomes – ACP

Bruno selects different indicators for the three dimensions. Energy consumption, water consumption, waste production and management, and CO2 emissions are the indicators appointed by the expert as essential to evaluate the environmental dimension of an organisation. On the social dimension, the expert speaks on working conditions (health and security),

equal opportunities, interrelations, and communications transparency (transparent work culture). Regarding economic indicators, Bruno selects the weight of investments towards sustainability related to the total investment amount.

Due to confidentiality reasons, we could not discuss the indicators employed by the company, as ACP is currently developing its sustainability assessment system, which is not yet public. However, Bruno mentions the importance of a circular economy, believing that "companies need to know what to do with their waste", and states that ACP works with partners to guarantee that their tyres enter a closed cycle to be reused and recycled. Nevertheless, Bruno affirms that *"ACP's long-term vision is to achieve sustainability certification"* by ECOVADIS. The expert confirms the GRI as the model being employed by ACP since it is *"a highly complete model"*.

Regarding the SDG, Bruno considers their integration as *"crucial"*. The expert believes that with the SDG, the UN can *"encourage a sustainability vision"* and *"pressure change"*. He describes these goals as *"an orientation"*, therefore considering the connection between them and the business level relevant. Sustainability *"is like a puzzle in which the SDG are the instructions"*. The expert acknowledges that *"hardly a company can fulfil all the 17 goals"* and that *"this depends on the company's activity"*. Even so, Bruno considers that *"the goal is to have companies think about all the SDG, even if they cannot fulfil all"*. He states that in ACP, *"the sustainability strategy includes the SDG"* and that *"all measurements carried out will be in their favour"*. The expert also views the SDG as a way to *"reflect"*, stating that companies *"should not try to fulfil the goals, but rather look inside and comprehend what it can accomplish that aligns with the SDG"*, as these are *"something very transversal and holistic ... the point of arrival"*. *"It is not about changing everything, but consolidating what the company already does"*.

E/C/P (*)	Dimensions	Indicators EO (**)	Indicators EC (**)	Description
Diogo Barbosa Exponor Executive Adviser to the Board and former Managing Director	Environmental Social Economic	Water consumption Quantity of consumed resources Quantity of waste generated Product/service life cycle Employees' health and safety Capacity for reutilising end-of-life products	Water Consumption Carpet Consumption Waste Management	The indicators appointed by Diogo are in line with Exponor's activity and business. Some of them are already measured and thought of, others are a part of future developments. Water consumption and carpet consumption are critical indicators in Exponor, as these have a high impact on all dimensions of sustainability. The company produces a yearly waste management report.
Graça Borges Super Bock Director of Communication, Institutional Relations, and Sustainability	Environmental	Soil Conditions CO2 Emissions Water Consumption	Water Consumption Total water use Specific water use Groundwater Water from the public network Other water sources Energy Consumption Electricity consumption Fuel consumption Thermal energy consumption Specific electricity consumption Specific consumption of thermal energy Specific energy consumption Fuel consumption in cogeneration Consumption of other fuels Recovered biogas (m3) Greenhouse Effect Gases Direct CO2 emissions Indirect CO2 emissions Total CO2 emissions Refrigerant gas leaks Specific CO2 emissions Atmospheric Pollutants NOx SO2 COV NH3 Particles Wastewater (before and after treatment) Residues Hazardous waste Non-hazardous waste Recovered waste Disposed of waste Recovery rate	Super Bock's management and sustainability 2022 report includes a comparison between goals and results. Several indicators are evaluated in all dimensions with various sub indicators.

E/C/P (*)	Dimensions	Indicators EO	Indicators EC	Description
			Waste produced Specific waste generation	
			By-products	
			Quantity of post-consumer recycled plastic	
			Glass bottles weight reduction	
	Social	Training Employee support Talent retention Social Responsibility	Employees Number of Employees Number of Effective Employees Gender % Group Ages % Women	
			Training Per Position Per Gender Cost Online vs Offline	
			Health, Safety and Hygiene at Work Total Accidents by Area Days Lost (Working) by Area ITA (****) Accidents by Area Lost Time Accident Rate by Area	
			Community Development Increased water retention capacity Potential to absorb CO2 Expansion of arboreal area	
	Economic	Circular value generated	Revenues / Direct economic value (DEV) generated Payments to the State Operating Costs Payments to Capital Suppliers Salaries and Employee Benefits Direct economic value distributed Investments in the community Accumulated DEV	
Bruno Silva Gomes ACP	Environmental	Energy consumption Water consumption Waste production and management CO2 Emissions		(***)
Head of Environment and Sustainability	Social	Working conditions Equal Opportunities Interrelations Communication Transparency	Not disclosed	

E/C/P (*)	Dimensions	Indicators EO (**)	Indicators EC (**)	Description
	Economic	% Investments in sustainability / % Total investments		

(*) – E / C / P – Expert / Company / Position
(**) – EO: Experts Opinion / EC: Experts Company
(***) – Given the non-disclosure of information regarding ACP's sustainability indicators, no comments were provided in this section.
(****) – ITA regards the Absolute Temporary Incapacity

Table 5: Interviews' Revision Table

Graça Borges and Bruno Silva Gomes further instruct the way for sustainable thinking. In a very similar way, both experts recommend reflecting on the business, both internally and externally, as evidence by the series of steps they mentioned as key for the development of a company-specific sustainability framework:

Graça believes a company should follow three steps:

1. Analyse *"the business and think about its impact"*.
2. *"Reflect on and establish how the company wants to position itself in the future"*.
3. *"Look back and recognise the gaps and how to act"* to achieve the position defined.

Bruno, on the other hand, instructs on the following thought process:

1. *"What the company does that affects its external environment and society?"*
2. *"What external factors influence the company?"*
3. *"Analyse the company's process and understand it. Why are things the way they are?"*

In the following section, the findings are discussed in an integral manner regarding both study phases, connecting the researchers conclusions to the practitioners' experience.

Chapter 4

Discussion

4.1. Dimensions of Sustainability

The TBL is the most prevalent approach when selecting the dimensions considered in sustainability assessment. Five of the eight articles reviewed (Ibáñez-Forés et al., 2023; Calabrese et al., 2021; Rossi et al., 2020; Hutchins et al., 2019; Staniškienė & Stankevičiūtė, 2018) and the experts interviewed recognise the three dimensions of the TBL approach – environmental, economic, and social – as integral parts of sustainability understanding and assessment and agree with how each dimension is comprehended. However, there are a few disagreements with how these dimensions interrelate. Graça Borges dissents from the view that sustainability is achieved in the middle, where all the dimensions intersect, and regards the dimensions as layers in constant interaction. This argument aligns with Pope et al. (2004) research that criticises the dimensions separation, which can lead to trade-offs encouragement, given the lack of interrelations it emphasises. Likewise, Diogo Barbosa states that objectives related to one dimension must consider and positively affect the other two. The expert further acknowledges the lack of consideration of all dimensions as a probable impediment to the implementation of several strategies. Similarly, Sullivan et al. (2018) indicate the susceptibility of sustainable development to conflicts of interest as a possible barrier to its integration into a business strategy.

Additionally, to the three dimensions of sustainability, another is introduced, generally known as governance (Lau et al., 2023; Suárez-Serrano et al., 2023). Suárez-Serrano et al. (2023) propose governance as peace/partnership, and Lau et al. (2023) introduce the governance and transparency dimension. The

institutional dimension, which encompasses governance, was first introduced by the United Nation in the UNCED, in 1992. However, currently, in the Agenda 2030, only the three dimensions of sustainability are considered. Both articles are the most recent from the eight reviewed, and the inclusion of governance as a dimension worth considering in any industry by any organisation, apart from its importance in corporate sustainability and investment performance (Peterdy, 2023), might indicate a new approach to dimensions of sustainability, moving from three central dimensions to four.

Given the arguments discussed, we believe the dimensions of sustainability require interconnection to achieve sustainable development. Organisational decision-making must consider all dimensions to anticipate impacts and identify opportunities that positively encompass all of these dimensions and the organisation's stakeholders. Considering all possibilities – seeing the big picture – might change organisational perspectives and lead to competitive advantages that result from sustainability advances or innovations (Cantele & Zardini, 2018).

4.2. Indicators of Sustainability

In this sub-section, common categories of indicators per dimension of sustainability are discussed. The information presented is compiled into dimension-specific tables available in Attachment 4: Common Categories of Indicators per Dimension of Sustainability.

4.2.1. Economic Dimension

Regarding the economic dimension, we classified indicators into four categories: investment in sustainability, economic value generated and distributed, investment and the development of the community and society, and others. The Investment in Sustainability category includes any indicators related to the investment of resources (financial, personnel, or material) to

achieve sustainability at a certain level, such as *"Investment in research projects"*, *"Research and development expenditure as a proportion of GDP"*, and the quantification of *"investments from the innovation process"* related to circularity investment. Suárez-Serrano et al. (2023), Ibáñez-Forés et al. (2022), Rossi et al. (2020), and the expert Bruno Silva Gomes propose indicators in this category. The Economic Value Generated and Distributed category represents indicators regarding the economic value generated and distributed and the receiving entities or projects, such as *"Direct economic value generated and distributed"*, *"Payments to Capital Suppliers"*, and *"Salaries and Employee Benefits"*. Calabrese et al. (2021), Suárez-Serrano et al. (2023), and Super Bock (2022) propose indicators in this category. The Investment and the Development of the Community and Society category incorporates economic indicators that contribute to society and promote the community's economic growth, such as *"Proportion of spending on local suppliers"* and *"Investments in the community"*. Calabrese et al. (2021) and Lau et al. (2023) propose the same indicator in this category. Ibáñez-Forés et al. (2023) and Super Bock (2022) also proposed indicators in this category. Lastly, the Others category incorporates indicators that do not fit the other categories, such as *"Circular Value Generated"* proposed by Graça Borges or *"Operating Costs"* measured by Super Bock (2022).

4.2.2. Environmental Dimension

Regarding the environmental dimension, we classified the indicators into seven categories: waste production and management, renewable energy, emissions, resource consumption, reused materials, recycled materials, and others. The Waste Production and Management category includes indicators regarding the amount and type of waste produced by an organisation and its management, such as "Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities", "Hazardous waste", and "Quantity of waste generated". Suárez-Serrano

et al. (2023), Lau et al. (2023), Calabrese et al. (2021), Bruno Silva Gomes, Diogo Barbosa propose indicators in this category. Exponor and Super Bock measure indicators in this category. The Renewable Energy category includes indicators related to the amount of renewable energy utilised in an organisation's operations, such as "% of renewable energy sources used in the manufacturing processes" and "Renewable energy share in the total final energy consumption". Suárez-Serrano et al. (2023), Ibáñez-Forés et al. (2022), and Rossi et al. (2020) propose indicators in this category. The Emissions category encompasses indicators regarding greenhouse gases and other pollutants an organisation releases, directly or indirectly, or retrieves from the atmosphere, such as "Direct (Scope 1) GHG emissions", "Indirect CO2 emissions", and "Recovered biogas (m3)". Lau et al. (2023), Calabrese et al. (2021), Bruno Silva Gomes, and Graça Borges propose indicators in this category. Super Bock measures indicators related to this category. Indicators in the Resource Consumption category regard the consumption of water and energy resources. Some of these indicators are "Energy consumption within the organisation", "Total water use", and "Fuel consumption". Lau et al. (2023), Calabrese et al. (2021), and all the experts propose indicators in this category. Exponor and Super Bock evaluate indicators related to this category. The Reused Materials category regards indicators that measure the reuse of materials in different stages of an organisation's activity, such as "Quantity of material reused in the supply chain" and "Quantity of reused material in the product". Lau et al. (2023), Ibáñez-Forés et al. (2022), Calabrese et al. (2021), Rossi et al. (2020), and Diogo Barbosa propose indicators in this category. Similarly, the Recycled Materials category encompasses indicators regarding the recycling of materials in different stages of an organisation's activity, such as "% of recycled materials in the composition of the product" and "National recycling rate, tons of material recycled". Suárez-Serrano et al. (2023), Lau et al. (2023), Ibáñez-Forés et al. (2022), Calabrese et al. (2021), and Rossi et al. (2020) propose indicators in this category. Super Bock

evaluates one indicator related to this category, "Quantity of post-consumer recycled plastic". Lastly, the Other category incorporates indicators that do not fit the remaining categories, such as "Materials used by weight or volume" and "Glass bottles weight reduction". Lau et al. (2023), Calabrese et al. (2021), and Diogo Barbosa propose indicators in this category. The indicator mentioned in last place, is measured by Super Bock.

4.2.3. Social Dimension

Regarding the social dimension, we classified the indicators into six categories: health and safety, equal opportunities, training and talent development, stakeholder engagement and participation, supply chain management, and others. The Health and Safety category includes indicators regarding stakeholders' physical and mental well-being within an organisation or in contact with its products/services, such as *"Percentage of company products/services with instructions for safe, healthy use that were reviewed by a consumer safety review board"*, *"Preventive measures to improve health and safety"*, and *"Percentage of company products/services that are not toxic or harmful during use"*. Ibáñez-Forés et al. (2023), Lau et al. (2023), Calabrese et al. (2021), Hutchins et al. (2019), Staniškienė & Stankevičiūtė (2018), Super Bock, and all the experts propose indicators in this category. The Equal Opportunities category regards indicators that promote diversity, inclusivity, and fairness within the organisation, such as *"Organisation ensures equal opportunities for males and females to further their careers"*, *"The compensation system is understandable to employees"*, and *"Gender equality politics"*. Ibáñez-Forés et al. (2023), Hutchins et al. (2019), Staniškienė & Stankevičiūtė (2018), Super Bock, and Bruno Silva Gomes propose indicators in this category. The Training and Talent Development category encompasses indicators related to initiatives directed to employees' development of competencies and knowledge, such as *"Average hours of training per year per employee"*, *"Percentage of employees receiving training*

in policies and procedures concerning aspects of human rights that are relevant to operations", and *"Organisation ensures possibilities for employees to develop general and professional competences"*. Suárez-Serrano et al. (2023), Ibáñez-Forés et al. (2023), Calabrese et al. (2021), Hutchins et al. (2019), Staniškienė & Stankevičiūtė (2018), Super Bock, and Graça Borges propose indicators in this category. The Stakeholder Engagement and Participation category includes indicators related to the communication, interaction, and inclusion of the organisation's stakeholders' perspectives and opinions, such as *"Employees provide suggestions concerning the improvement of processes at the organisation"*, *"Ratio of public forums, held by the company, to address potential community infrastructure changes (e.g., road construction) to community infrastructure changes led by the company"*, and *"Employee Satisfaction Measurement"*. Ibáñez-Forés et al. (2023), Hutchins et al. (2019), Staniškienė & Stankevičiūtė (2018), and Bruno Silva Gomes propose indicators in this category. The Supply Chain Management category encompasses indicators that measure the management of social issues within the organisation's supply chain, such as *"New suppliers that were screened using social criteria"* and *"Negative social impacts in the supply chain and actions taken"*. Lau et al. (2023) and Calabrese et al. (2021) propose the same indicators in this category. Lastly, the Others category includes indicators that do not fit the remaining categories, such as *"Increased water retention capacity"* and *"Potential to absorb CO2"*. Graça Borges proposes two generalised indicators, and Super Bock measures three specific indicators directed at community development.

4.2.4. Governance Dimension

Regarding the governance dimension, we classified the indicators into three categories: governance structure and practices, stakeholder engagement and communication, partnerships and collaborations. The Governance Structure category includes indicators regarding an organisation's governance structure, such as board diversity and composition. *"Composition of the highest governance*

body and its committees" is the only indicator within this category derived from the GRI Standards (formerly coded as 102-22 and currently coded as 2-9 by the GRI). Lau et al. (2023) and Calabrese et al. (2021) propose this indicator. The Stakeholder Engagement and Communication category regards indicators related to stakeholder engagement practices and communication that ensure transparency and accountability, such as *"Percentage of company-supplier partnerships in which environmental or corporate social responsibility information is shared"* and *"Collective bargaining agreements"* (formerly coded as 102-41 and currently coded as 2-30 by the GRI). Ibáñez-Forés et al. (2023), Lau at al. (2023), Calabrese et al. (2021), Hutchins et al. (2019) and Bruno Silva Gomes propose indicators in this category. Lastly, the Partnerships and Collaborations category encompasses indicators related to the collaboration of organisations with external entities for innovation and progress towards sustainable development, such as *"Percentage of suppliers that the company collaborates with in R&D efforts or grant proposals"* and *"Ratio of community/company partnerships in external activities (e.g., research and educational outreach) to company contracts with local entities"*. Staniškienė & Stankevičiūtė (2018), Hutchins et al. (2019), and Ibáñez-Forés et al. (2023) propose indicators in this category.

4.2.5. Further Discussions

There is greater alignment between the various sources concerning environmental and social indicators. Such might be due to our sample of reviewed articles. Three of the eight reviewed articles focus on the social dimension, while two focus on the circular economy, highly connected to the environmental dimension. We, therefore, expected a higher proportion of correlated environmental and social indicators among the various sources of information. From all the indicators reviewed, the category 'Health and Safety' is the most agreed upon, followed by 'Training and Talent Development'. 'Waste Production and Management' and 'Resource Consumption' follows as the third

most agreed upon categories between reviewed literature and interviews performed. It is important to note that several indicators that were included into a certain dimension of sustainability could have been part of other dimensions. Indicators related to participation of employees in the decision-making process of an organisation, for example, could be seen as part of the social dimension, reflecting principals of social cohesion and employee well-being, or part of the governance dimension, reflecting principals of democratic and participatory governance, promoting transparency, accountability, and inclusivity. This goes in line with the statement made by Diogo Barbosa that several indicators can measure impact in all dimensions, depending on the perspective.

Two of the articles reviewed incorporate the GRI framework into their study (Lau et al., 2023; Calabrese et al., 2021). Such framework is also addressed by other authors (Ibáñez-Forés et al. (2023); Staniškienė & Stankevičiūtė, 2018). The experts Graça Borges and Bruno Silva Gomes point out this framework's rigour and completeness and favour it for its internationality. The UNSD Indicators framework is also included in three of the reviewed articles (Suárez-Serrano et al., 2023; Lau et al., 2023; Calabrese et al., 2021). Indicators from five of the 17 SDG are approached in the results, and the correlation between the GRI and UNSD Indicators is prevalent (Suárez-Serrano et al., 2023; Calabrese et al., 2021), as it allows companies to identify strategies to achieve the SDG (Calabrese et al., 2021) and move towards sustainable development. Furthermore, Ibáñez-Forés et al. (2023) and the interviewed experts also address the ISO Standards as a significant guidelines' model and certifier of sustainability. We conclude on the importance of these three models, understanding these as essential sustainability tools that companies should seek to comprehend. It is important to note that, as stated by the experts, given the macro aspect of the SDG, these need to be translated into the business level, and this is where the GRI framework becomes even more significant, as the

connection between these two allows companies to identify strategies to assist in the sustainable development (Calabrese et al., 2021). The SDG Compass (2015) and the Linkage of SDG and GRI Standards (Global Reporting, 2022) provided by the GRI assist companies in understanding their impact on sustainable development.

Conclusion

Sustainability and what it entails can sometimes be complex to comprehend, and it might even become impossible if not with the needed resources. Around 90% of the Portuguese business setting consists of micro-enterprises (Banco de Portugal, 2022) with limited resources. In this research, we explored the dimensions of sustainability and the most appropriate indicators to measure sustainability and drive sustainable thinking in Portugal. We explore sustainability, what it is, what it entails, and how companies can evaluate it. We further conclude on what internationally recognised models are used for sustainability assessment or certification.

From our findings, we conclude that sustainability has been understood as a concept of three dimensions – environmental, economic, and social – by authors and experts alike. However, recent research seems to have included a new dimension to the sustainability assessment not geared towards a specific industry, business activity, or audience, known as governance (Suárez-Serrano et al., 2023; Lau et al., 2023). Our findings indicate that all dimensions must be thought of holistically to achieve sustainability. Regarding indicators, we observe a higher proportion of correlated environmental and social indicators among the various sources of information. 'Health and Safety' is the most unanimous category, followed by 'Training and Talent Development', 'Waste Production and Management', and 'Resource Consumption'.

This research allows a deeper understanding of the current sustainability assessment scenario. It shines a light on the sustainable thinking of Portuguese sustainability managers and critical literature conclusions regarding dimensions and indicators of sustainability. It provides insights into the sustainability assessment of two important Portuguese companies – Super Bock and Exponor. With this research, managers can comprehend sustainability and

its assessment and connect it to the SDG, even with limited resources. Further, our findings allow future research to develop and test an evaluation instrument Mojobrands can employ to drive sustainable thinking in Portugal.

The chosen analysis procedure regarding the indicators might have hindered the analysis of more common indicators between the reviewed literature and interviews performed. However, a complete table with all the indicators proposed by more than one article reviewed is made available in Attachment 1: SSLR Complete Revision Table. The sample of interviews is small to represent the sustainable thinking of enterprises in Portugal. Besides, our sample includes service providers and manufacturers, but the size of these companies does not represent the Portuguese business setting. However, our research was designed to provide insights into what well-established companies are currently doing in sustainability and encourage sustainable thinking in smaller companies. We must further express that this study gathered insights on sustainability indicators not specific to any industry or activity. However, future research must consider the different sizes, industries, and activities of Portuguese enterprises to develop the sustainability evaluation instrument for Mojobrands, as these variables will impact the perception of sustainability. As part of out research objective, we ought to define indicators capable of measuring sustainability. However, we must appoint, as another limitation, the presentation at times of categories of indicators instead of the indicators themselves, given the information collected. Finally, regarding the research of Ibáñez-Forés et al. (2023), we have only considered the proposed indicators by the authors. However, in their research, the authors provide metrics commonly used in sustainability reports that might enhance the understanding of the proposed indicators.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author used ChatGPT in order to have assistance in the generation of questions for the interview guide – displayed in Attachment 2: Interview Guide – as to enhance the chance of attaining key answers from the interviewees. After using this tool, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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Attachments

Attachment 1: SSLR Complete Revision Table

Authors and Year	Dimensions	Indicators of Sustainability
Suárez-Serrano et al. (2023)	People Planet Prosperity Peace and Partnership	Ind 9.5.1 - Research and development expenditure as a proportion of GDP. Ind 4.3.1 - Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex. Ind 11.6.1 - Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities. Ind 7.2.1 - Renewable energy share in the total final energy consumption. Ind 12.4.2 - (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment. Ind 6.3.1 - Proportion of domestic and industrial wastewater flows safely treated. Ind 12.5.1 - National recycling rate, tons of material recycled. Ind 11.4.1 - Total per capita expenditure on the preservation, protection, and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal).
Lau et al. (2023)	Environmental Impact Social Responsibility Economic Consideration	**UN SP Indicators** Prevention of Pollution "Requirements about the proper use, storage, movement and disposal of environmentally hazardous materials and chemicals" Environmental GRI: Water discharge (303-4) Sustainable resource use "Requirements on design and production to use recycled, recyclable, biodegradable, re-used, reusable, renewable or compostable materials" Economic GRI: Recycled input materials use (301-2) "Requirement for a take-back programme/end-of-life management system" Social GRI: Management of significant waste-related impacts (306-2) "Requirement for reduced or bulk packaging of the product (SRU3)" Economic GRI: Materials used by weight and volume (301-1); Reclaimed products and their packaging material (301-3). Climate change mitigation and adaptation "Requirement to report regularly and publicly on greenhouse gas emissions (e.g., Carbon Disclosure Project, etc.)" Environmental GRI: Direct (Scope 1) GHG emission (305-1); Energy indirect (Scope 2) GHG emissions (305-2); Other indirect (Scope 3) GHG emissions (305-3)

Authors and Year	Dimensions	Indicators of Sustainability
		"Requirement to use low-carbon/ energy-efficient technologies, minimum energy performance, and low power mode equipment" Environmental GRI: Energy consumption within the organisation (302-1); Energy consumption outside of the organisation (302-2); Energy intensity (302-3) Human rights and Labour issues "Requirement to adhere to the Universal Declaration of Human Rights and the fundamental principles and rights at work as referred to in ILO's core conventions (freedom of association and the effective recognition of the right to collective bargaining, the elimination of all forms of forced labour, the effective abolition of child labour and the elimination of discrimination in respect of employment and occupation)" Social GRI: Operations and suppliers at significant risk for incidents of forced or compulsory labour (409-1) "Requirement to abide by relevant industry's collective labour agreements" Social GRI: Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk (407-1) "Requirement of a health and safety management system (e.g., ISO, 18001 or equivalent)" Social GRI: Occupational health and safety management system (403-1); New suppliers that were screened using social criteria (414-1) "Requirement for ethically or fairly traded goods (e.g., Fairtrade certification or equivalent)" Social GRI: Requirements for product and service information and labelling (417-1) Local communities and SMEs "Requirement for suppliers to source the main elements for the product or service locally" Economic GRI: Proportion of spending on local supplier (204-1) Promoting sustainability throughout the supply chain "Requirement for the prime contractor to extend all sustainability requirements of the contract to its tier 2 suppliers and to report on the status" Economic GRI: New suppliers that were screened using social criteria (414-1); Negative social impacts in the supply chain and actions taken (414-2).
		MSCI ESG rating framework Indicators
	Governance and Transparency	"Board Independence - Weighted average percentage of board members that meet MSCI ESG Research criteria for board independence" Governance GRI: Composition of the highest governance body and its committees (102-22 absorbed in structure) "Board Diversity - Weighted average percentage of women on the boards of index constituents" Governance GRI: Composition of the highest governance body and its committees (102-22)

Authors and Year	Dimensions	Indicators of Sustainability
		Indicators from other sources
		Structure Governance: "Governance structure of the organisation, including committees of the highest governance body, committees responsible for decision-making on economic, environmental, and social topics" Remuneration / GRI: Remuneration policies (102-35) Board composition / GRI: Composition of the highest governance body and its committees (102-22) Stakeholder Engagement Governance: "Stakeholder engagement - An organisation's approach to stakeholder engagement" Approach to stakeholder engagement / GRI: Approach to stakeholder engagement (102-43) Collective bargaining rights / GRI: Collective bargaining agreements (102-41)
Calabrese et al. (2021)	Economic	(201-1) – Direct economic value generated and distributed (202-1) – Ratios of standard entry level wage by gender compared to local minimum wage (202-2) – Proportion of senior management hired from the local community (204-1) – Proportion of spending on local suppliers (205-2) – Communicating and training about anti-corruption policies and procedures (417-1) – Requirements for product and service information and labelling
	Environmental	(301-1) – Materials used by weight or volume (301-2) – Recycled input materials used (301-3) – Reclaimed products and their packaging materials (302-1) – Energy consumption within the organisation (302-2) – Energy consumption outside of the organisation (302-3) – Energy Intensity (302-5) – Reductions in energy requirements of products and services (303-4) – Water discharge (303-5) – Water consumption (304-4) – IUCN Red List species and national conservation list species with habitats in areas affected by operations (305-1) – Direct (Scope 1) GHG emissions (305-2) – Energy indirect (Scope 2) GHG emissions (305-3) – Other indirect (Scope 3) GHG emissions (306-2) – Management of significant waste-related impacts (306-3) – Waste generated
	Social	(102-22) – Composition of the highest governance body and its committees (102-41) – Collective bargaining agreements (403-1) – Occupational health and safety management system (403-2) – Hazard identification, risk assessment, and incident investigation (403-5) – Worker training on occupational health and safety (404-1) – Average hours of training per year per employee (404-2) – Programs for upgrading employee skills and transition assistance programs (405-1) – Diversity of governance bodies and employees (405-2) – Ratio of basic salary and remuneration of women to men

Authors and Year	Dimensions	Indicators of Sustainability
		(407-1) – Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk (408-1) – Operations and suppliers at significant risk for incidents of child labour (409-1) – Operations and suppliers at significant risk for incidents of forced or compulsory labour (414-1) – New suppliers that were screened using social criteria (414-2) – Negative social impacts in the supply chain and actions taken Sustainable Development Goals Goal 4 - Indicator 4.3.1 Goal 6 - Indicator 6.3.1 Goal 7 - Indicator 7.2.1 Goal 9 - Indicator 9.5.1 Goal 11 - Indicators 11.4.1 and 11.6.1 Goal 12 - Indicator 12.4.2 and 12.5.1
Hutchins et al. (2019)	Social	Employee Esteem Needs Ratio of lowest quintile for salary to highest quintile for salary Employee Actualization Needs Annual percentage of employees receiving company-sponsored training for professional development (e.g., education reimbursement, cross-training opportunities, professional development seminars) Customer Safety/Security Needs Percentage of company products/services for which consumer health and safety impacts are understood across the life cycle and are less negative, relative to similar products/services Percentage of company products/services that are not toxic or harmful during use Percentage of company products/services with instructions for safe, healthy use that were reviewed by a consumer safety review board Ratio of disability adjusted life years (DALYs) associated with customer use of company products/services to average life span of non-users of the company products/services Customer Affiliation Needs Percentage of customers that believe the company listens to their needs Customer Esteem Needs Ratio of products/services that are certified by a governmental, non-governmental, or industrial group (e.g., organic, fair trade, sustainable forestry initiative) to products/services that are eligible for certification Supplier Affiliation Needs Percentage of suppliers that the company collaborates with in R&D efforts or grant proposals Percentage of company-supplier partnerships in which environmental or corporate social responsibility information is shared

Authors and Year	Dimensions	Indicators of Sustainability
		Supplier Actualization Needs Percentage of suppliers that the company audits for their environmental and social responsibility (e.g., workplace conditions) Community Affiliation Needs (*) Percentage of company employees from the local community Community Esteem Needs (*) Percentage of company board members that are from the community Ratio of community/company partnerships in external activities (e.g., research and educational outreach) to company contracts with local entities Ratio of public forums, held by the company, to address potential community infrastructure changes (e.g., road construction) to community infrastructure changes led by the company Public Safety/Security Needs Percentage of employees receiving training in policies and procedures concerning aspects of human rights that are relevant to operations
Staniškienė & Stankevičiūtė (2018)	Social	Employee Participation Employees' initiative to participate Employees share their personal problems with line managers Employees share the work-related problems with line managers Employees provide suggestions concerning the improvement of processes at the organisation Organisation's encouragement to participate Organisation encourages the employees to take responsibility for decisions Organisation encourages the employees to provide suggestions concerning the improvement of processes at the organisation Equal opportunities Equal compensation opportunities The compensation system is understandable to employees The compensation system is fair The employees are paid the same for the same work Equal working conditions Organisation ensures equal personal development opportunities for employees Organisation ensures equal opportunities for all candidates during the selection process Organisation ensures equal opportunities for males and females to further their careers Employee development Organisation ensures possibilities for employees to develop general and professional competences Employee competence development is oriented to the future requirements Organisation ensures possibilities for employees to participate in fairs, internships Organisation applies different forms for employee development

Authors and Year	Dimensions	Indicators of Sustainability
		Organisation constantly encourages the employees to develop their competences Health and safety Safety conditions Organisation provides the necessary working equipment for the employees The workplaces fulfil safety requirements Organisation encourages the employees to give up bad habits Health conditions Organisation provides good conditions for rest for its employees Organisation provides wellness opportunities for its employees Organisation provides good working conditions for its employees External partnership Organisation cooperates with other organisations for innovation projects
Ibáñez-Forés et al. (2023)	Social	Sustainable Management SM04 Fair competition and cooperation between organisations SM05 Selection of suppliers based on sustainability criteria and impacts on the supply chain Equal opportunities EO01 Gender equality politics EO03 Cohesion and salary justice EO06 Diversity in jobs Labour Rights LR01 Freedom of association and collective bargaining LR03 Participation of the employees in decision-making Training programmes TP02 Health and safety training TP03 Human rights training TP04 Anti-bribery training TP06 Talent development actions TP07 Employee performance evaluation Health and Safety HS02 Health and safety management system HS03 Identification of hazards at work and risk analysis HS04 Preventive measures to improve health and safety HS05 Employee satisfaction measurement HS06 Health and safety protection (customers and society) Human Rights HR01 Protection of human rights HR02 Child labour HR03 Forced or compulsory labour

Authors and Year	Dimensions	Indicators of Sustainability
		Sustainability external actions SA02 Investment in local action SA03 Location under consideration of local protection (heritage, people, living conditions, resources …) Transparency T01 Transparency actions T02 Communication and consultation with society and customers T03 Good marketing practices and labelling
Rossi et al. (2020)	Environmental (Material)	Renewability Renewable Energy (% of renewable energy sources used in the manufacturing processes) Recyclability Recycled materials (% of recycled materials in the composition of the product) Reuse Manufacturing Process (Quantity of material reused in the supply chain) Product (Quantity of reused material in the product) Stakeholder structure and diversity Structure (Qualitative) Stakeholder (Qualitative)
	Economic	Financial Results Revenue generation (This indicator could be measured by: a) Competitive advantage: percentage of market share of the circular business model compared with the competitors. b) Risks: map the risks associated with the circular business models. c) New revenues: new revenues from circular business models.) Circular Investment Innovation (Quantify investments from the innovation process)
	Social	Client Mindset Communication (Qualitative) Involvement of stakeholders in decision-making processes (Qualitative)
Ibáñez-Forés et al. (2022)	CE with indicators all three dimensions	Design D01: Product design/Circular services D02: Application of sustainability criteria for the product Suppliers S01: Sustainable suppliers Inputs I01: Total material consumption I03: Consumption of recycled material

Authors and Year	Dimensions	Indicators of Sustainability
		I04: Consumption of reused material (internal) I05: Consumption of reused material (external) I06: Good practices regarding the use of packaging (within the organisation) I07: Energy consumption I09: Renewable energy consumption (external) I011: Total water consumption Outputs O01: Total waste generation (absolute value) O03: Total water discharge (absolute value) Environmental Impact EI01: Carbon footprint R&D in circularity R01: Investment in research projects R02: Patents related to circularity

(*) – Related to GRI 202-2: Proportion of senior management hired from the local community.

Table 6: SSLR Complete Revision Table

Attachment 2: Interview Guide

1. Dimensions & Indicators of Sustainability

- Could you elaborate on the various dimensions of sustainability that should be considered in assessments?
- How do these dimensions interrelate in evaluating overall sustainability?
- What, in your view, are the most crucial indicators when assessing sustainability, no matter the industry or company?
- Do you currently measure any indicators in your company?

Yes:

- Which are the most important indicators measured by your company?
- How do you prioritise or weigh these indicators in evaluating sustainability?

- Which, if any, do you believe to be the most important dimension of sustainability?
- In your company, which dimension of sustainability weighs the most?
- Should all dimensions of sustainability be given the same importance in an organisation?

No:

- Which, if any, do you believe to be the most important dimension of sustainability?
- Should all dimensions of sustainability be given the same importance in an organisation?

2. Significance of SDG (Sustainable Development Goals)

- How do you perceive the importance of aligning sustainability efforts with the UN's Sustainable Development Goals (SDG)?

If 1 Yes:

- Are the sustainability measures used in your company in line with the SDG, and is it possible to derive any conclusions on how your company is doing regarding the SDG based on the sustainability evaluation conducted?
- In your opinion, what challenges do companies face when trying to integrate and address multiple SDG?

If 1 No:

- In your opinion, what challenges do companies face when trying to integrate and address multiple SDG?

3. Translating SDG to the Company Level

- How crucial is it for companies to translate SDG into actionable goals at the company level?
- What would you say are the challenges companies encounter while aligning their strategies with SDG?

4. Diversity of Frameworks

- The number of frameworks currently available for sustainability measurement and evaluation are numerous, which ones do you know, and which ones do you believe to be the most appropriate currently?
- Do you use any of those frameworks in your company?

Yes:

- How did you choose such a framework? What was the process of the decision and why?
- What are, in your view, the pros and cons of using standardised frameworks versus customised ones for sustainability evaluation?

No:

- What are, in your view, the pros and cons of using standardised frameworks versus customised ones for sustainability evaluation?

5. Divergence in Company Reports

- Why do you think there is often a divergence in sustainability reports among companies, even within the same industry?
- What steps should be taken to ensure higher uniformity and transparency in sustainability reporting?

6. Need for an International Generic Model

- Do you believe that there is a necessity for a universal sustainability measurement framework applicable to any company? And do you believe it to be viable?
- Are you familiar with the GRI framework?

Yes:

- Do you think that the SDG combined with the GRI indicators should be used as the starting point for any company and personalized by each regarding the specific activity and industry? Or do you believe that any other framework combined with the SDG could be more appropriate?

No:

- Are you familiar with any framework that combined with the SDG has the potential to be used as the starting point for any company and personalized by each regarding the specific activity and industry?

7. Complexity of Evaluating Sustainability

- Could you discuss the complexities in accurately evaluating a company's sustainability efforts?
- How can companies simplify the evaluation process without compromising on comprehensiveness?

8. Industry Variations and Influences on Indicators

- How do differences between industries impact the selection and prioritisation of sustainability indicators?
- Can you provide me with some examples of how specific industry characteristics influence the choice of evaluation tools?

9. Company-Specific Influences on Measurement Tools

- How does the unique nature of a company influence the selection and effectiveness of a sustainability measurement tool?
- What considerations should a company take in when adopting or customising such tools?

10. Adoption of Sustainable Practices

- What strategies can companies use to encourage the widespread adoption of sustainable practices throughout their supply chains?

11. Balancing Short-Term Gains with Long-Term Sustainability

- How can companies balance short-term financial gains and long-term sustainability objectives?

12. Integration of Sustainability in Business Strategies

- How can companies seamlessly integrate sustainability into their core business strategies rather than treating it as a separate initiative?

13. Role of Technology in Sustainability Reporting

- What role does technology play in improving the accuracy and efficiency of sustainability reporting and evaluation?

14. Engagement and Accountability

- How do you suggest companies engage stakeholders and ensure accountability regarding their sustainability commitments and reporting?

Attachment 3: Query – ChatGPT

"Hello. Could you generate a 15 to 20-question questionnaire for an interview with sustainability experts? I want to ask about indicators of sustainability, the importance of the SDGs, the dimensions of sustainability taken into account, the weights of the indicators, the diversity of models to evaluate the sustainability and the divergence in company reports, the importance of translating the SDGs (which are more focused on country-level) to company level for companies to comply with such goals, the complexity of evaluating sustainability and the need for an international generic model that can be used by any company as a starting point to internationalize the habit to report on sustainability achievements, the balance between short-term profits and long-term sustainability, the differences between industries and companies within the same industry that might influence the indicators used, and therefore, influence the tool of measurement used, adoption of sustainable practices throughout the supply chain, as well as the engagement in sustainability and accountability, the role of technology, and the integration of sustainability in the business strategy. Some questions examples are as follows: What are the dimensions of sustainability that should be considered in assessments? What are the most important indicators when assessing sustainability?"

Attachment 4: Common Categories of Indicators per Dimension of Sustainability

Economic Dimension – Common Categories of Indicators

General Indicator Category	Definition	Authors / Expert / Company	Specification
Investment in Sustainability	Any investment of resources – financial, personnel, or materials – to achieve sustainability at a certain level.	Rossi et al. (2020)	Quantify investments from the innovation process (Circular Investment)
		Ibáñez-Forés et al. (2022)	R01: Investment in research projects R02: Patents related to circularity
		Suárez-Serrano et al. (2023)	Ind. 9.5.1. - Research and development expenditure as a proportion of GDP.
		Bruno Silva Gomes (2024)	% Investments in Sustainability / % Total Investments
Economic Value Generated and Distributed	Economic value generated and distributed and the receiving entities or projects.	Calabrese et al. (2021)	201-1: Direct economic value generated and distributed
		Suárez-Serrano et al. (2023)	Ind. 11.4.1.: Total per capita expenditure on the preservation, protection, and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal)
		Super Bock (2022)	Revenues / Direct economic value generated Payments to Capital Suppliers Salaries and Employee Benefits Direct economic value distributed
Investment and the Development of the Community and Society	Contribution to society and promotion of the community's economic growth.	Calabrese et al. (2021)	204-1: Proportion of spending on local suppliers.
		Lau et al. (2023) Ibáñez-Forés et al. (2023)	SA02: Investment in local action
		Super Bock (2022)	Payments to the State Investments in the community
Others	Indicators that do not fit the other categories.	Graça Borges (2024)	Circular Value Generated
		Super Bock (2022)	Operating Costs Accumulated direct economic value

Table 7: Common Categories of Indicators – Economic Dimension

Environmental Dimension – Common Categories of Indicators

General Indicator Category	Definition	Authors / Expert / Company	Specification
Waste Production and Management	Amount and type of waste produced by the organisation and its management.	Calabrese et al. (2021)	306-1: Waste generation and significant waste-related impacts 306-3: Waste generated 306-4: Waste diverted from disposal 306-2: Management of significant waste-related impacts
		Lau et al. (2023)	
		Suárez-Serrano (2023)	Ind. 11.6.1: Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities. Ind. 12.4.1.: (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment. Ind. 6.3.1.: Proportion of domestic and industrial wastewater flows safely treated.
		Bruno Silva Gomes (2024)	Waste production and management
		Diogo Barbosa (2024)	Quantity of waste generated
		Exponor	Waste Management
		Super Bock (2022)	Wastewater (before and after treatment) Residues Hazardous waste Non-hazardous waste Recovered waste Disposed of waste Recovery rate Waste produced Specific waste generation By-products
Renewable Energy	Amount of renewable energy utilised in an organisation's operations.	Rossi et al. (2020)	% of renewable energy sources used in the manufacturing processes
		Ibáñez-Forés et al. (2022)	I09: Renewable energy consumption (external)
		Suárez-Serrano et al. (2023)	Ind. 7.2.1: Renewable energy share in the total final energy consumption.
Emissions	Greenhouse gases and other pollutants an organisation	Calabrese et al. (2021)	305-6: Emissions of ozone-depleting substances (ODS)

General Indicator Category	Definition	Authors / Expert / Company	Specification
	releases, directly or indirectly, or retrieved from the atmosphere given its business activity.	Calabrese et al. (2021)	305-7: Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions
		Lau et al. (2023)	305-1: Direct (Scope 1) GHG emissions 305-2: Energy indirect (Scope 2) GHG emissions 305-3: Other indirect (Scope 3) GHG emissions
		Bruno Silva Gomes (2024)	CO2 Emissions
		Graça Borges (2024)	
		Super Bock (2022)	Recovered biogas (m3) Greenhouse Effect Gases Direct CO2 emissions Indirect CO2 emissions Total CO2 emissions Refrigerant gas leaks Specific CO2 emissions Atmospheric Pollutants NOx SO2 COV NH3 Particles
Resource Consumption	Consumption of water and energy resources.	Calabrese et al. (2021)	303-3: Water withdrawal
		Lau et al. (2023)	302-1: Energy consumption within the organisation 302-2: Energy consumption outside of the organisation 302-3: Energy Intensity 303-4: Water discharge
		Bruno Silva Gomes (2024)	Energy consumption Water consumption
		Graça Borges (2024)	Water Consumption
		Diogo Barbosa (2024)	Water consumption Quantity of consumed resources
		Exponor	Water consumption Carpet consumption
		Super Bock (2022)	Water Consumption Total water use Specific water use Groundwater Water from the public network Other water sources Energy Consumption Electricity consumption

General Indicator Category	Definition	Authors / Expert / Company	Specification
			Fuel consumption Thermal energy consumption Specific electricity consumption Specific consumption of thermal energy Specific energy consumption Fuel consumption in cogeneration Consumption of other fuels
Reused Materials	Reuse of materials in different stages of an organisation's activity, minimizing waste and promoting circularity.	Rossi et al. (2020)	- Quantity of material reused in the supply chain - Quantity of reused material in the product
		Ibáñez-Forés et al. (2022)	I04: Consumption of reused material (internal) I05: Consumption of reused material (external)
		Calabrese et al. (2021)	301-3: Reclaimed products and their packaging materials
		Lau et al. (2023)	
		Diogo Barbosa (2024)	Capacity for reutilizing end-of-life products
Recycled Materials	Recycling of materials in different stages of an organisation's activity, minimizing waste and promoting circularity.	Rossi et al. (2020)	% of recycled materials in the composition of the product
		Ibáñez-Forés et al. (2022)	I03: Consumption of recycled material
		Calabrese et al. (2021)	301-2: Recycled input materials used
		Lau et al. (2023)	
		Suárez-Serrano et al. (2023)	Ind. 12.5.1.: National recycling rate, tons of material recycled.
		Super Bock (2022)	Quantity of post-consumer recycled plastic
Others	Indicators that do not fit the other categories.	Calabrese et al. (2021)	301-2: Materials used by weight or volume
		Lau et al. (2023)	
		Diogo Barbosa (2024)	Product/service life-cycle
		Super Bock (2022)	Glass bottles weight reduction

Table 8: Common Categories of Indicators – Environmental Dimension

Social Dimension – Common Categories of Indicators

General Indicator Category	Definition	Authors / Expert / Company	Specification
Health and Safety	Physical and mental well-being of stakeholders within an organisation or in contact with its products/services.	Staniškienė & Stankevičiūtė (2018)	- Organisation provides the necessary working equipment for the employees - The workplaces fulfil safety requirements - Organisation encourages the employees to give up bad habits - Organisation provides good conditions for rest for its employees - Organisation provides wellness opportunities for its employees - Organisation provides good working conditions for its employees
		Hutchins et al. (2019)	- Percentage of company products/services for which consumer health and safety impacts are understood across the life cycle and are less negative, relative to similar products/services - Percentage of company products/services that are not toxic or harmful during use - Percentage of company products/services with instructions for safe, healthy use that were reviewed by a consumer safety review board - Ratio of disability adjusted life years (DALYs) associated with customer use of company products/services to average life span of non-users of the company products/services
		Calabrese et al. (2021) Lau at al. (2023)	403-1: Occupational health and safety management system 417-1: Requirements for product and service information and labelling
		Ibáñez-Forés et al. (2023)	HS02: Health and safety management system HS04: Preventive measures to improve health and safety HS06: Health and safety protection (customers and society)
		Bruno Silva Gomes (2024)	Working Conditions
		Graça Borges (2024)	Employee Support

General Indicator Category	Definition	Authors / Expert / Company	Specification
		Diogo Barbosa (2024)	Employees' Health and Safety
		Super Bock (2022)	Total Accidents by Area Days Lost (Working) by Area ITA Accidents by Area Lost Time Accident Rate by Area
Equal Opportunities	Promotion of diversity, inclusivity, and fairness within the organisation.	Staniškienė & Stankevičiūtė (2018)	- The compensation system is understandable to employees - The compensation system is fair - The employees are paid the same for the same work - Organisation ensures equal personal development opportunities for employees - Organisation ensures equal opportunities for all candidates during the selection process - Organisation ensures equal opportunities for males and females to further their careers
		Hutchins et al. (2019)	Ratio of lowest quintile for salary to highest quintile for salary
		Ibáñez-Forés et al. (2023)	EO01: Gender equality politics EO03: Cohesion and salary justice
		Bruno Silva Gomes (2024)	Equal Opportunities
		Super Bock (2022)	- Gender - % Group Ages - % Women
Training and Talent Development	Initiatives directed to the development of competencies and knowledge of employees.	Staniškienė & Stankevičiūtė (2018)	- Organisation ensures possibilities for employees to develop general and professional competences - Employee competence development is oriented to the future requirements - Organisation ensures possibilities for employees to participate in fairs, internships - Organisation applies different forms for employee development - Organisation constantly encourages the employees to develop their competences
		Hutchins et al. (2019)	- Annual percentage of employees receiving company-sponsored training for professional development (e.g., education reimbursement, cross-training opportunities, professional development seminars)

General Indicator Category	Definition	Authors / Expert / Company	Specification
		Hutchins et al. (2019)	- Percentage of employees receiving training in policies and procedures concerning aspects of human rights that are relevant to operations
		Calabrese et al. (2021)	404-1: Average hours of training per year per employee
		Ibáñez-Forés et al. (2023)	TP03: Human rights training TP06: Talent development actions
		Suárez-Serrano et al. (2023)	Ind. 4.3.1.: Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
		Graça Borges (2024)	Training
		Super Bock (2022)	Training Per Position Per Gender Cost Online vs Offline
Stakeholder Engagement and Participation	Communication, interaction, and inclusion of the organisation's stakeholders perspectives and opinions.	Staniškienė & Stankevičiūtė (2018)	- Employees share their personal problems with line managers - Employees share the work-related problems with line managers - Employees provide suggestions concerning the improvement of processes at the organisation - Organisation encourages the employees to take responsibility for decisions - Organisation encourages the employees to provide suggestions concerning the improvement of processes at the organisation
		Hutchins et al. (2019)	- Percentage of customers that believe the company mission/vision is aligned with their beliefs - Ratio of public forums, held by the company, to address potential community infrastructure changes (e.g., road construction) to community infrastructure changes led by the company
		Ibáñez-Forés et al. (2023)	HS05: Employee Satisfaction Measurement LR03: Participation of the employees in decision-making
		Bruno Silva Gomes (2024)	Interrelations Communication

General Indicator Category	Definition	Authors / Expert / Company	Specification
Supply Chain Management	Management of social issues within the organisation's supply chain.	Calabrese et al. (2021) Lau at al. (2023)	407-1: Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk 414-1: New suppliers that were screened using social criteria 414-2: Negative social impacts in the supply chain and actions taken
Others	Indicators that do not fit the other categories.	Graça Borges (2024) Super Bock (2022)	Talent Retention Social Responsibility Employees Number of Employees Number of Effective Employees Community Development Increased water retention capacity Potential to absorb CO2 Expansion of arboreal area

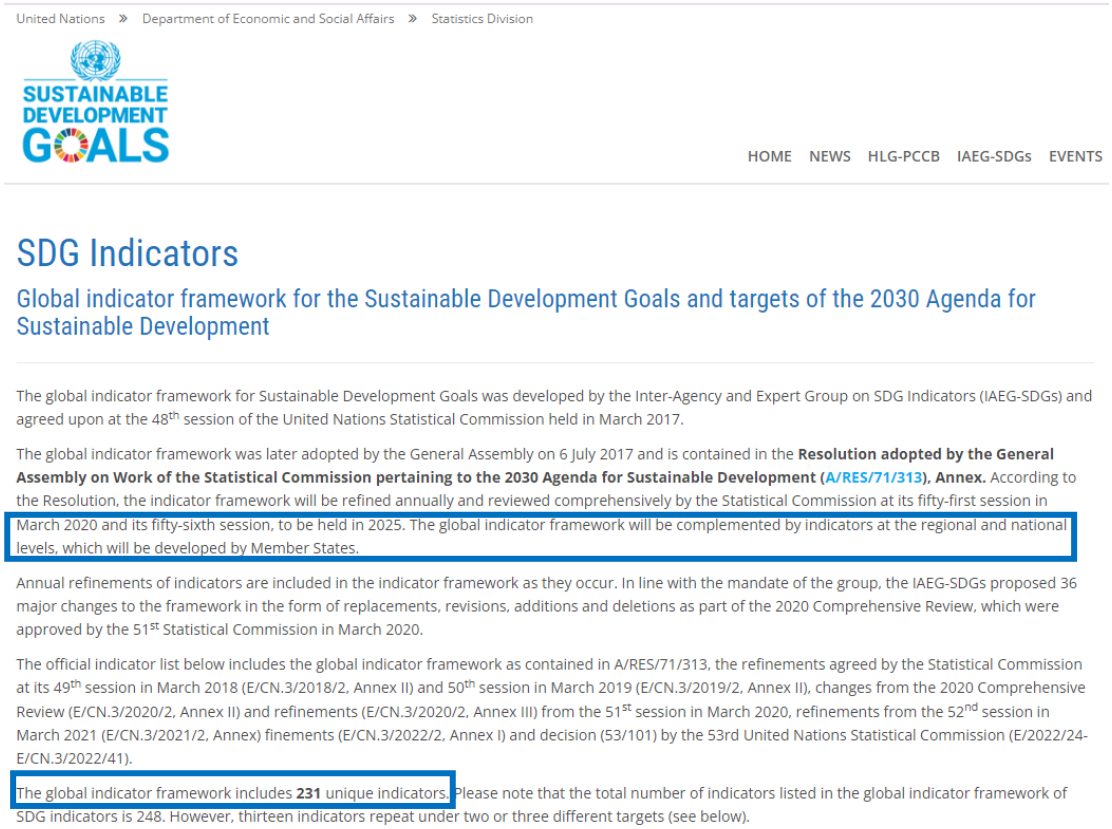
Table 9: Common Categories of Indicators – Social Dimension

Governance Dimension – Common Categories of Indicators

General Indicator Category	Definition	Authors / Expert / Company	Specification
Governance Structure and Practices	The structure and practices of governance within an organisation.	Calabrese et al. (2021)	
		Lau at al. (2023)	102-22: Composition of the highest governance body and its committees
Stakeholder Engagement and Communication	Stakeholder engagement practices and communication that ensure transparency and accountability.	Hutchins et al. (2019)	- Percentage of company-supplier partnerships in which environmental or corporate social responsibility information is shared
		Calabrese et al. (2021)	
		Lau at al. (2023)	102-41: Collective bargaining agreements
		Ibáñez-Forés et al. (2023)	T01: Transparency actions T02: Communication and consultation with society and customers
		Bruno Silva Gomes (2024)	Transparency
Partnerships and Collaborations	Collaboration with external entities for innovation and progress towards sustainable development.	Staniškienė & Stankevičiūtė (2018)	- Organisation cooperates with other organisations for innovation projects
		Hutchins et al. (2019)	- Percentage of suppliers that the company collaborates with in R&D efforts or grant proposals - Ratio of community/company partnerships in external activities (e.g., research and educational outreach) to company contracts with local entities
		Ibáñez-Forés et al. (2023)	SM04: Fair competition and cooperation between organisations

Table 10: Common Categories of Indicators – Governance Dimension

Attachment 5: Information regarding the Internationally Recognised Sustainability Frameworks / Standards



United Nations » Department of Economic and Social Affairs » Statistics Division

SUSTAINABLE DEVELOPMENT GOALS

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SDG Indicators

Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development

The global indicator framework for Sustainable Development Goals was developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) and agreed upon at the 48th session of the United Nations Statistical Commission held in March 2017.

The global indicator framework was later adopted by the General Assembly on 6 July 2017 and is contained in the **Resolution adopted by the General Assembly on Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313), Annex.** According to the Resolution, the indicator framework will be refined annually and reviewed comprehensively by the Statistical Commission at its fifty-first session in March 2020 and its fifty-sixth session, to be held in 2025. The global indicator framework will be complemented by indicators at the regional and national levels, which will be developed by Member States.

Annual refinements of indicators are included in the indicator framework as they occur. In line with the mandate of the group, the IAEG-SDGs proposed 36 major changes to the framework in the form of replacements, revisions, additions and deletions as part of the 2020 Comprehensive Review, which were approved by the 51st Statistical Commission in March 2020.

The official indicator list below includes the global indicator framework as contained in A/RES/71/313, the refinements agreed by the Statistical Commission at its 49th session in March 2018 (E/CN.3/2018/2, Annex II) and 50th session in March 2019 (E/CN.3/2019/2, Annex II), changes from the 2020 Comprehensive Review (E/CN.3/2020/2, Annex II) and refinements (E/CN.3/2020/2, Annex III) from the 51st session in March 2020, refinements from the 52nd session in March 2021 (E/CN.3/2021/2, Annex) finements (E/CN.3/2022/2, Annex I) and decision (53/101) by the 53rd United Nations Statistical Commission (E/2022/24-E/CN.3/2022/41).

The global indicator framework includes **231** unique indicators. Please note that the total number of indicators listed in the global indicator framework of SDG indicators is 248. However, thirteen indicators repeat under two or three different targets (see below).

Figure 2: UNSD – Country-level Indicators and Number of Unique Indicators

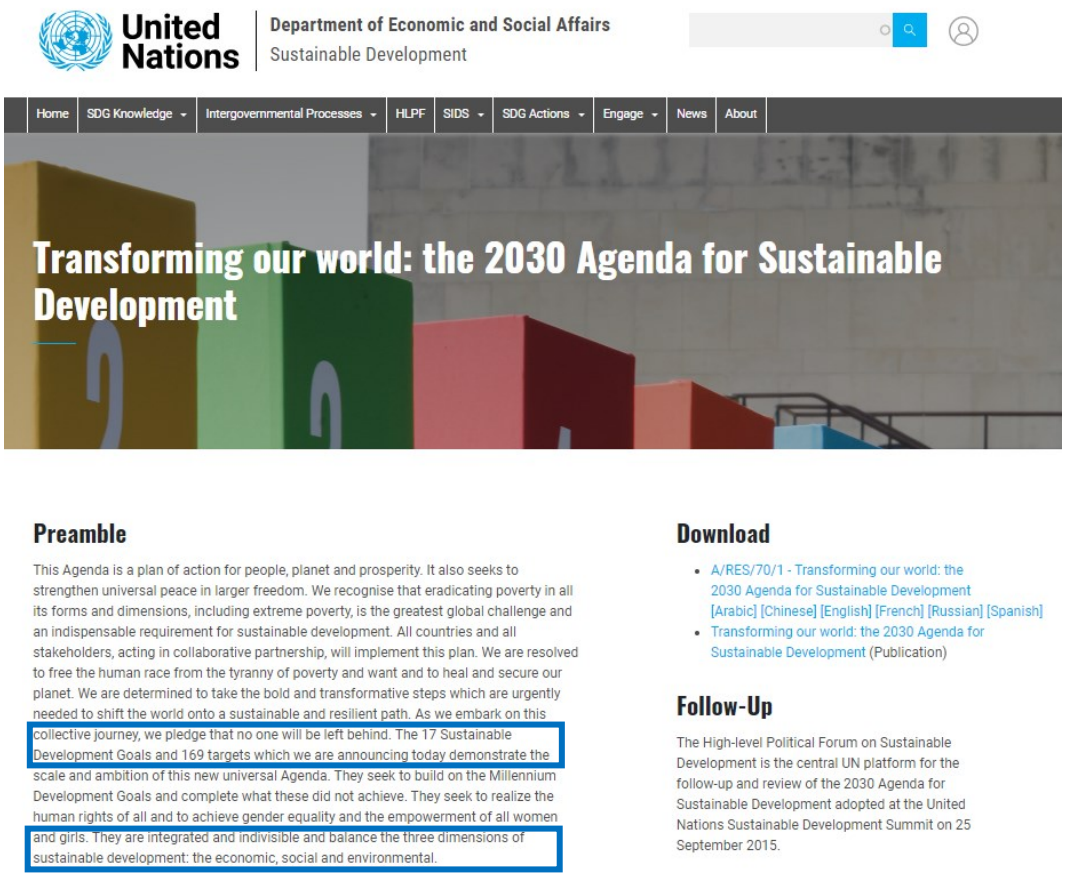


Figure 3: UN' 2030 Agenda – SDG, targets and dimensions

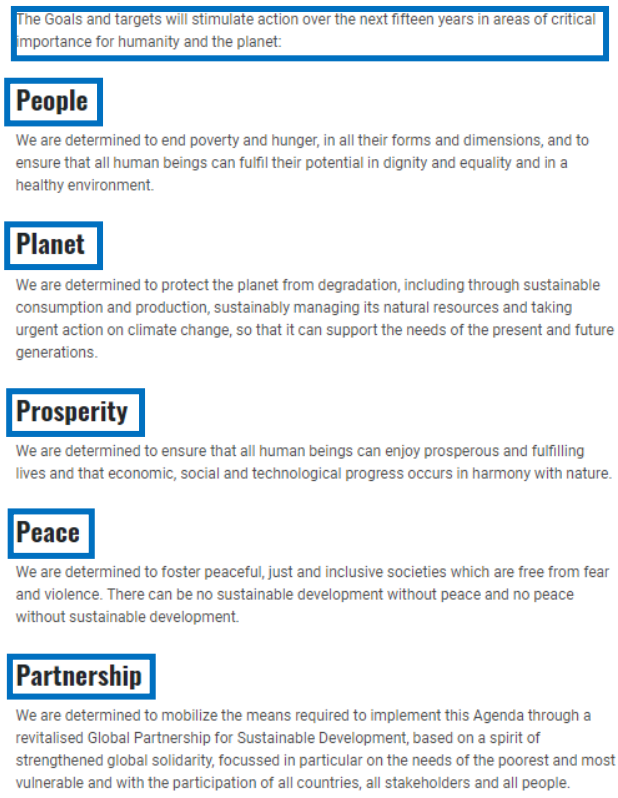
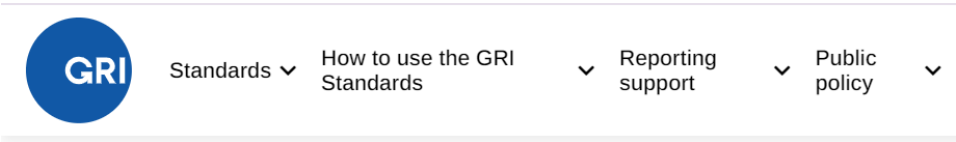


Figure 4: UN' 2030 Agenda – Five areas of critical importance



The global standards for sustainability impacts

The GRI Standards enable any organization – large or small, private or public - to understand and report on their impacts on the economy, environment and people in a comparable and credible way, thereby increasing transparency on their contribution to sustainable development. In addition to companies, the Standards are highly relevant to many stakeholders - including investors, policymakers, capital markets, and civil society.

Figure 5: GRI - Organisations' size, dimensions of sustainability, and ability of the framework

Figure 6: GRI Standards organisations into series

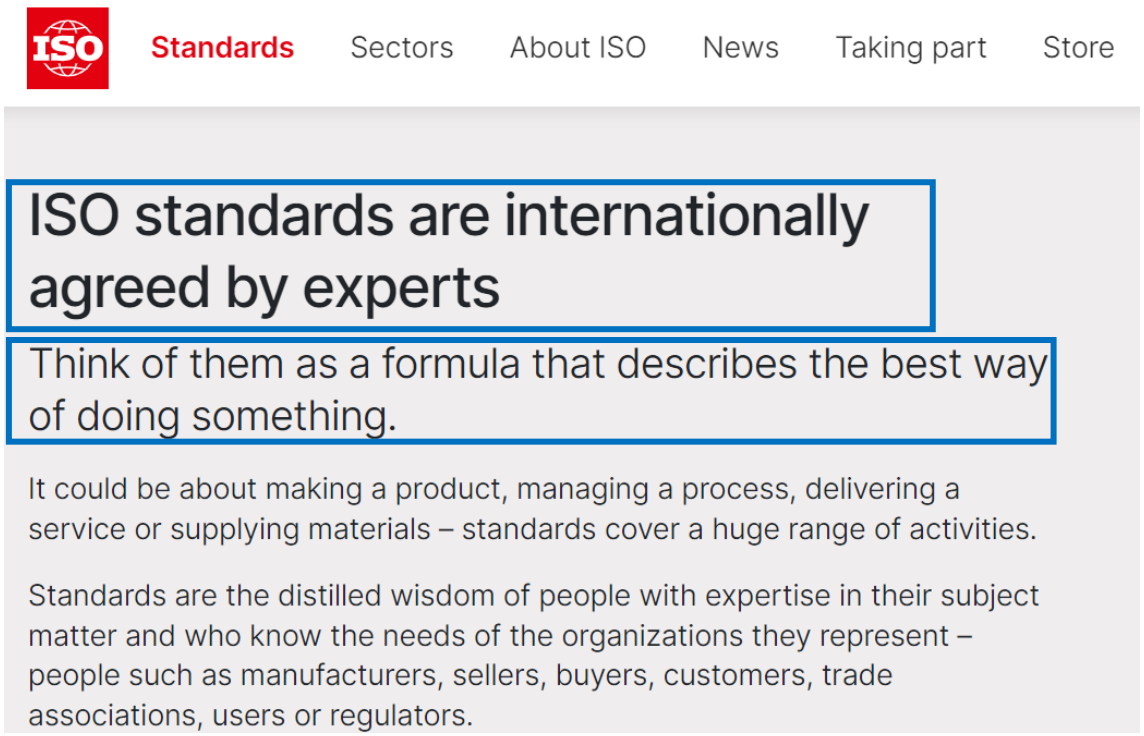


Figure 7: ISO Standards

Figure 8: ISO Standards contribution to the SDG

Special Report

On the road to sustainability

Environment, economy, society

by Roger Frost

ISO's current portfolio of nearly 19 000 standards provides solutions in all three dimensions of sustainable development – environmental, economic and societal.

economies. These include both public and private sector organizations, large and small, in manufacturing and services, in developed

Figure 9: ISO Standards – Dimensions of Sustainability