

Article

Sustainable Development Goals (SDGs) in Latin-American Universities

Paulo Guilherme Fuchs^{1,2}, Carla Patrícia Finatto², Robert Samuel Birch^{2,3} , Ana Regina de Aguiar Dutra² 
and José Baltazar Salgueirinho Osório de Andrade Guerra^{2,*}

¹ Federal Institute of Santa Catarina—IFSC, Florianópolis 88075-010, Brazil; paulo.fuchs@ifsc.edu.br

² Center for Sustainable Development (Greens), University of Southern Santa Catarina—UNISUL, Florianópolis 88015-010, Brazil; carlapatriciafinatto@gmail.com (C.P.F.); r.s.birch@liverpool.ac.uk (R.S.B.); ana.aguiar@animaeducacao.com.br (A.R.d.A.D.)

³ School of Engineering, University of Liverpool, Liverpool L69 3GH, UK

* Correspondence: jose.baltazarguerra@animaeducacao.com.br

Abstract: Higher education institutions (HEIs) are notable promoters of sustainable development (SD). Thus, it is understood that the sustainable development goals 2015–2030 (SDGs) need to be substantially operationalized in these institutions. Based on this idea, the QualEnv (quality and environment) consortium of universities stands out for having as its main objective the increase in contribution to sustainable development (SD) by universities through the implementation of systematic environmental practices and quality processes in line with the SDGs. The objective of this article is to present how the QualEnv consortium of HEIs adopts the SDGs and demonstrates their contribution to SD. For this purpose, a qualitative analysis was performed based on documentary research, a systematic review of the literature, and notes collected from participant observations. The results show that the adoption of the SDGs in the QualEnv consortium was enhanced by the contribution of the social relations within the partnership, which promoted the exchange of experiences and synergy between participants that promoted improvements in the necessary strategies. Along with the highlighted actions and concentration of different axes with dispersed interventions, a potential for central cohesion and focus on evolution in each SDG was noted. The adoption of the same indicators involves the unification of the actions planned for the SD and the common objective of involving communities more consistently, which impacts mainly SDG 04. This article discusses the practical implications in HEIs and the need to integrate the SDGs into their activities, as it demonstrates how universities belonging to the QualEnv consortium have been creating their own strategies to achieve the 2030 agenda and adopt the SDGs.

Keywords: education for sustainable development; sustainable development goals; higher education institutions; university consortium; partnership



Citation: Fuchs, P.G.; Finatto, C.P.; Birch, R.S.; de Aguiar Dutra, A.R.; de Andrade Guerra, J.B.S.O. Sustainable Development Goals (SDGs) in Latin-American Universities. *Sustainability* **2023**, *15*, 8556. <https://doi.org/10.3390/su15118556>

Academic Editors: Diego Monferrer and Rosabel Roig-Vila

Received: 8 March 2023

Revised: 19 May 2023

Accepted: 22 May 2023

Published: 25 May 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The challenges of implementing sustainable development (SD) can be overcome through an orderly series of interventions in society. For this reason, higher education institutions (HEIs) play a major role in incorporating the sustainable development goals 2015–2030 (SDGs) as set out in the 2030 agenda [1]. Thus, as promoters of collaboration between institutions and agents for the delivery of services and innovations to society, HEIs are obliged to disseminate SD into the new political agenda. Therefore, the establishment of links between their courses and the SDGs is a vital step to achieve this aim. There is also the need to promote active pedagogical practices and interventions to expand students' progress in strategic skills that are driven by education for sustainable development (ESD) [2,3].

Such teaching and training skills present a great challenge for HEIs, which must theorize and develop didactics and transdisciplinary methodologies that resolve the multiple

challenges inherent in the realization of SD in society [4]. ESD should include an inter- and transdisciplinary teaching approach [5], comprising a task of global relevance that aims to align the training of citizens to act, empowering them to modify, interfere, and collaborate with society [6]. Despite this, the organizing of HEIs does not facilitate an immediate and concise change, and, in light of SD, it is necessary to understand how SDGs can be incorporated into the courses and curricula of an institution [7].

On the other hand, characteristic mechanisms of sustainability are not limited to departments or curricular units and stimulate broader debates in HEIs, requiring the involvement of stakeholders to think and produce change [8]. The relevance of consolidating the relationship between universities and communities is highlighted, which provides joint learning, develops skills and new knowledge, and implies that communities who perceive the initiatives are not forced to participate in something they do not see as being relevant [9]. In this sense, education is emphasized as a promoter of positive social impact and long-term sustainability, which can create an integrative pathway to stimulate institutions into making curricular reforms and involving stakeholders to adopt resource allocation strategies based on indicators such as the SDGs [10].

The substitution of paradigm is considered fundamental for an experience with complete human and environmental value, since some current results show that undergraduate students have a worrying lack of attention, lack of literacy in sustainability, lack of common values related to nature, and lack of systemic thinking [11]. The scarcity of educational processes adhering to ESD is a limitation to the design of sustainable enterprises, which makes the task of producing with greater added value more difficult. Traditional teaching methods are usually prepared for routine functions and for habitual jobs, requiring the creation of new approaches capable of stimulating creativity and autonomy that are fundamental for the processes of innovation and sustainability [12].

Given this context, the universities need to understand the interdependence between SDGs in order to create learning opportunities through ESD to support interdisciplinary work and collaboration with stakeholders that SD presupposes [13]. Moreover, HEIs view SDGs not as more content to be incorporated into curricula, but as something that results and causes intervention throughout their mission via engagement with all their stakeholders [14]. In view of this reality, the Quality and Environment Consortium (QualEnv), comprising 14 Latin-American universities and approximately one million students, has significant scope to impact the SDGs in all activities. Therefore, the objective of this article is to present how the QualEnv consortium of HEIs adopt the SDGs and demonstrate their contribution to SD. Hence, the research question that seeks to be answered here is: How do the HEIs of the QualEnv consortium contribute to the achievement of these SDGs?

To answer the above question, other questions were raised to be answered throughout the article. Among them: What specific sustainable practices can HEIs adopt in their campus operations to support the SDGs? In what ways can HEIs engage students, faculty, and staff in activities that contribute directly to the SDGs? What strategies can HEIs employ to ensure interdisciplinary teaching, research, outreach, and innovation that align with the SDGs? These questions are not exhaustive and guide the study.

Therefore, Section 1 of this article provides the contextualization of the theme, objective, and literature review, while Section 2 presents the methodological procedures employed in the analysis. This is followed by Sections 3–6 which present the results, discussion, conclusions, and some recommendations in this area, respectively.

1.1. Education for Sustainable Development

Universities can and should be engines of social transformation and compliance with SDGs and, for this reason, need to work together with teachers, employees, and students, as well as their community of stakeholders and wider alumni, on ESD [6]. Given the recognized importance of HEIs in developing actions for sustainability, students, teachers, and employees should be involved with teaching, research, outreach, and other collective engagements to generate and support solutions for social problems and alleviate

socioeconomic inequalities [2,15]. Considering that they have knowledge that benefits communities, the HEIs are effective agents of change, and are capable of facing the adversities of SD and can influence the behavior of society by motivating people to adopt sustainable practices [16]. Therefore, students need to understand the importance of investigating all 17 SDGs and dealing with recurring issues in trying to overcome the complexities of SD [17].

An important strategy in this sense is to involve students in outreach projects with links to communities that benefit from ESD. In this way, students experience firsthand the consequences of their research and the attitudes they can bring to local and global communities, thus encouraging them to remain engaged with the SDG agenda in their professional careers [18]. On this bias, the implementation of ESD aims not only to increase students' awareness about the social and environmental effects of their decisions, but also to stimulate strategic thinking and the search for further solutions to global social and environmental problems [19]. This in turn strengthens the imperative role of HEIs in dealing with the disruptive changes facing our society in the 21st century [20]. HEIs need to expand their ideas and actions into society by generating knowledge, understanding, and the ability to solve everyday problems, and not limit them within their own borders [21]. HEIs also need to understand their function and commitment as important operators of SD through the formation of change agents [22].

To do this, HEIs need to legitimize several measures to become real actors in the transition to a sustainable future, incorporating sustainability in all the dimensions of teaching, research, outreach, and management [19]. The students also need to learn how to reconcile success in terms of environmental, social, and financial objectives. It is also necessary to include in the curricula the connections between economic, social, and environmental needs and SDGs. In this sense, it is very important that HEIs seek support from other actors in order to attract students to sustainable actions [23], and essential that they conceive a climate of learning and knowledge that adapts and instructs students as actors of social transformations in terms of SD [22].

1.2. Universities and SDGs

Careful planning is an extremely important element in the successful adoption of SDGs into HEI culture, since it provides a key foundation for both the SD synergy and development of partnerships focused on this commitment [15]. Partnerships between universities, government, and civil society can help to increase the quality of education by making a broader contribution to supporting economic, environmental, and social sustainability, i.e., a direct connection with SDGs 04 and 17 [20]. The implementation of the SDGs in university education depends not only on teaching and learning guidelines but also on the implementation of politics and strategies with the participation of internal employees and external stakeholders [6,24]. Similarly, given the particular and unique way each HEI operates, an institutional commitment to SDGs is required urgently as a unifying force, and not merely as a focus on the preparation and analysis of reports on SDGs but incorporating them as fundamental values of the institution [25]. In this context, although quality education is the focus of SDG 04, it is closely linked to all of the other SDGs and plays a crucial role in supporting their implementation. Quality education brings individuals, communities, and countries closer to SD while in turn generating better access to profitable jobs, a reduction in gender disparities, the generation of greater resilience in disasters, and more engaged citizens, among other aspects directly affected by the SDGs [26,27].

Regarding the implementation of the SDGs in their entirety, HEIs should provide students with the knowledge, skills, and motivation to understand and approach SDGs through the inclusion of the theme in curricula and the understanding of the structure of the SDGs themselves, and their purposes and uses [16,27]. Among the practices that can be adopted by HEIs in relation to the implementation of SDGs, highlights include the number of scholarships offered, including scholarships that cover food and housing in order to

ensure equal access for all men and women to technical, professional, and higher-quality education, at affordable prices, elimination of gender disparities in education, and ensuring equal access to all levels of vocational education and training for the most vulnerable, including people with deficiencies, indigenous peoples, and children in vulnerable situations (i.e., involving both SDG 01 and SDG 10) [14,15].

Another consistent action that emerges from the literature and is already applied by HEIs refers to SDG 03, especially with regard to the provision of health and well-being services on campus for employees, students, and the external community, and in the promotion of research and events on the subject [14,24,28]. On the other hand, SDG 05 can be included in HEIs in undergraduate curricula, addressing issues sensitive to inequalities, inclusion, and diversity [29,30]. University outreach is the main social impact action that permeates the role of HEIs in ensuring that the less favored have access to local integration mechanisms, ensuring means of guaranteeing their rights [13].

These programs essentially collaborate for the interaction of students, teachers, and the community, as well as corroborate SDGs 04, 05, and 10. This is because the practice of inclusive and sustainable education ensures not only a better educational environment but also a reduction in historical inequalities [14,16,20,23]. In turn, SDG 09 is also related to intelligent campus initiatives, increasing access to information and communication technology, especially with research on the use of advanced technologies for monitoring air quality [26]. Actions related to innovation on campus also contribute to SDG 04 and 08, and it is up to the HEI to provide students with the knowledge, skills, and motivation to understand and approach the SDGs through the inclusion of the theme in curricula and academic activities, stimulating the development of competencies such as leadership, critical thinking, and collective awareness [31].

The adoption of social and environmental practices for which HEIs are responsible also covers SDGs 06, 07, 13, and 15, either through research in the area or by outreach programs [32]. Furthermore, practices adopted internally by HEIs such as the use of disposable cups, water use awareness campaigns, and the use of renewable energy on campus are examples of actions that have a positive impact on HEIs [23,28]. Moreover, regarding SDG 17, given the role of HEIs as education centers, they can and should, as an organization, seek solid, responsible, ethical, and transparent partnerships [14,28]. In addition, partnerships between educators, public administrators, and all educational institutions, government, and communities, for the adoption of practices increasingly linked to social, environmental, and governance sustainability, are fundamental in helping educational institutions meet the SDGs [25,26].

It is admitted that, given the circumstances of an HEI, SDG 04 supports all other objectives, and it is a critical imperative to achieve it. This objective is, of course, actionable formally, but is not formally present at all levels of education and so, given their size and importance to the societies in which they are founded, HEIs have a particular role to play in its implementation and achievement [27]. Given the visible link between SDGs and HEIs, as well as the importance of the academic community in achieving SD, most authors point out that the implementation of SDGs in HEIs is still recent and slow-moving [15,17]. Mainly, this is because it addresses a wide range of social questions including economic, social, and environmental challenges [19,32].

From these elements, it was identified that the SDGs provide HEIs with a form of organization and integration of reports to show and enhance the effects and value they have for efforts in pursuit of collective well-being. Despite the distance from the launch of the SDGs in 2015, reporting is still an area that is being developed, and there are no explicit and universal directions for actions, especially on how organizations can report their impact on the SDGs. Therefore, presenting how QualEnv has been undertaking efforts to build SDG reports and other ideas on how HEIs can start to consider ESD institutionally, as well as the generation and dissemination of reports on their contributions to the SDGs, seeks to indicate direction and contribute to the discussions around the theme. The consortium

proposes ESD literacy and a framework for proposing new solutions, legitimizing the SDG mapping process and making the approaches used more understandable.

2. Methodology

The methodology used is a qualitative approach, based on documentary research, a systematic literature review, and participants' observation as members of the Quality and Environmental Consortium (QualEnv): Change the Climate. For the collection of data, three steps were followed: documentary research (Section 2.1); a systematic literature review (Section 2.2); and participant observation (Section 2.3). Data collection was separated into three stages, since different collection instruments and sources of evidence were used, with the objective of creating a rich database of scientific material and favoring the interpretation of the results and their discussion.

2.1. The Quality Environmental Consortium—QualEnv (Object of Study)

The QualEnv aims to support quality management, environmental management, and ESD, promoting the exchange of experiences between them, aiming at institutional improvement through the systematic implementation of environmental practices and quality processes in education with respect to the SDGs [33]. Its mission is to combine quality management and sustainability management as complementary dimensions of the same general objective, which is to improve the management and operations of HEIs, including its educational mission. Funded by the European Union through the Erasmus+ program, QualEnv is characterized as a consortium of universities whose objective is to address climate change whilst ensuring the quality of environmental strategies in higher education [33]. HEI members of the consortium are: Pontifical Catholic University of Rio Grande do Sul (PUCRS), Universidad Del Norte (UDN), Universidad de Costa Rica (UCR), Universidad Nacional de Costa Rica-Heredia (UNA), Universidad de Lima (Ulima), Universidad de La Sabana (UNISABANA), Universidad del Pacific (UP), Universidad de Guadalajara (UDG), Beneméira Universidad Autónoma de Puebla (BUAP), Federal University of Santa Catarina (UFSC), University of Southern Santa Catarina (UNISUL), Polytechnic Institute of Turin (POLITO), University of Gothenburg (GU), and University Institute of Lisbon (ISCTE) [33]. In addition, QualEnv promotes a reduction in the environmental impact of partner institutions in selected relevant areas through improved management and operations and the development of customized educational strategies and innovative educational resources aligned with the SDGs. In doing so, it also promotes future progress and continuous improvement of management systems and educational resources and seeks to extend the results of its project to other institutions of education [33].

More specific aims of QualEnv are to provide tools and guides for environmental impact analysis and mapping of SDGs in campus operations and educational activities and to implement an environmental management system in each university with the overall objective of reducing its environmental impact [33]. The focus is on the implementation of systematic environmental practices and quality processes in alignment with the SDGs while improving the management and operations of HEIs, whilst integrating them with stakeholders beyond the project partnership at local, regional, and national levels to achieve real behavior change for a sustainable future [33]. In short, it can be said that QualEnv believes that the alignment of HEIs with policies to encourage access and permanence in education play a role in promoting inclusion, innovation, and sustainability.

The SDG mapping tool developed by QualEnv, and associated documents used to develop it, was selected for this research and provided information from all partner universities according to their practices. In this tool, a variety of approaches have been considered to identify and map how universities contribute to the achievement of the SDGs through their teaching, research, and extension activities, as well as other considerations for selecting and improving their operations. Mapping is the basis for discussions within institutions and serves for the implementation and continuous use of institutional reports. All this

information has been collected in the Guide for Mapping Environmental Impact and SDGs that can be found on the QualEnv website [33].

It is noteworthy that this documentary instrument constitutes a database of what is already being done and makes it possible to identify key people, key stakeholders, and departments that are committed to contributing to the SDGs. In addition, it sought to identify areas of interest shared by universities and opportunities for internal collaboration and external partnerships, strengths, and gaps in university activities. Thus, the main effort of QualEnv has been aimed at building a business case for universities, through engagement for future activities and the involvement and training of workers, students, and others involved in the SDGs [33]. It contains information to report, communicate, and show the contribution of an HEI to the SDGs and can also function to establish a national or regional framework of expertise in this area, as well as identify national or regional gaps. Ultimately, this mapping was a major undertaking, as universities are often large and complex institutions that can contribute to the SDGs in various ways [33].

2.2. Systematic Literature Review

A systematic review was used to support the literature review, where five steps were used, as detailed in Figure 1.

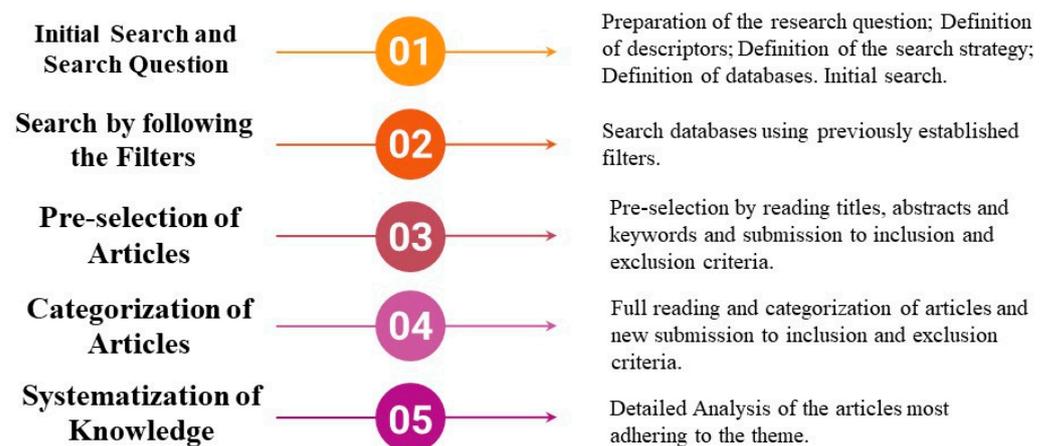


Figure 1. Steps of systematic literature review.

The literature review was conducted using the Emerald, Science Direct, Scopus, and Web of Science databases. The search strategy used was “Education for Sustainable Development” AND “Sustainable Development Goals” AND “Higher Education Institutions”. The collection of scientific findings in the databases was guided by the following research question: How can SDGs be adopted in HEIs?

A total of 120 scientific findings were found in the research using only the descriptors. In the second step, a filter was applied to retrieve the publications of the last five years (2018–2022) in order to obtain the most recent data. To refine the content, a filter was applied by document type, selecting only scientific articles (articles and review articles), which resulted in 88 studies being identified. In the third step, the titles, abstracts, and keywords were read, taking into account the inclusion and exclusion criteria, as well as the suppression of the repeated works and those that were not written in English. This resulted in 60 articles being selected. Table 1 demonstrates the inclusion and exclusion criteria used in the systematic review.

Table 1. Inclusion and exclusion criteria used in the systematic literature review.

Criterion	Inclusion Criterion	Exclusion Criterion
Focus	Discuss SD in HEIs in the context of implementing the SDGs from the ESD	Present ESD and/or the SDGs in HEIs on an occasional and superficial basis in the text
ESD and/or SDG in the HEIs	Present different typologies and theories about ESD and/or SDGs employed in HEIs in the context of SD	Not openly discuss the theme of ESD and/or the SDGs in HEIs, not presenting characteristics inherent to the theme
Characteristics of ESD and/or SDGs in HEIs	Discuss directly the characteristics inherent to ESD and/or SDGs in HEIs, their specificities, hues, and configurations	Not directly address the characteristics inherent to ESD and/or the SDGs in HEIs, their specificities, hues, and configurations
Access	Find the document file in full online. Be written in English	Not being able to access the document and not being written in English
Theoretical Framework	Conceptions of ESD and/or SDGs in the HEIs for SD in relation to parameters derived from the United Nations	Addressing ESD and/or the SDGs in HEIs in a generic manner
Analysis Unit	SD strategies from ESD and/or SDGs from the management vision, teams, and actors working in HEIs	Dealing with ESD and/or the SDGs in other contexts, with different actors and institutions

In the fourth step, 35 articles were read in full, with only those being considered that addressed sustainability practices in HEIs related to ESD and/or SDGs, which resulted in a final portfolio of 27 articles. Table 2 presents the results of a systematic literature review.

Table 2. Results of systematic literature review (according to Figure 1).

Base Date	Search Strategy	1st Step	2nd Step	3rd Step	4th Step	5th Step
Emerald	“Education for Sustainable Development” AND “Sustainable Development Goals” AND “Higher Education Institutions”	64	44	38	22	18
Science Direct	“Education for Sustainable Development” AND “Sustainable Development Goals” AND “Higher Education Institutions”	05	04	02	01	00
Scopus	“Education for Sustainable Development” AND “Sustainable Development Goals” AND “Higher Education Institutions”	35	28	18	11	08
Web of Science	“Education for Sustainable Development” AND “Sustainable Development Goals” AND “Higher Education Institutions”	16	12	02	01	01
TOTAL		120	88	60	35	27

Table 3 shows the 27 articles selected in the last step of the systematic literature review.

Table 3. Articles from systematic literature review.

Title	Year	Author(s)
Planning and implementing sustainability in higher education institutions: an overview of the difficulties and potentials	2018	[15]
Using Vertically Integrated Projects to embed research-based education for sustainable development in undergraduate curricula	2019	[18]
Implementation of SDGs at the university of South Africa	2019	[34]

Table 3. Cont.

Title	Year	Author(s)
Are the sustainable development goals being implemented in the Portuguese higher education formative offer?	2020	[2]
Sustainability at a Brazilian university: developing environmentally sustainable practices and a life cycle assessment case study	2020	[32]
Higher education in Japan: internationalization, the Sustainable Development Goals and survivability.	2020	[28]
SDG 4 in higher education: Challenges and opportunities	2020	[27]
Smart and learning campus as living lab to foster education for sustainable development: an experience with air quality monitoring.	2020	[26]
Assessment of the quality education awareness competence of pre-service educators using vignettes	2020	[35]
Competences for solving complex problems: A cross-sectional survey on higher education for sustainability learning and transdisciplinary	2020	[4]
The HESFS for higher education funding, employment, and sustainability	2020	[24]
Energy sustainability in teaching and outreach initiatives and the contribution to the 2030 Agenda	2020	[23]
Advancing SDG competencies in higher education: exploring an interdisciplinary pedagogical approach	2021	[3]
The state of the art in the incorporation of sustainable development goals in Nepalese Universities	2021	[20]
Education for sustainable development at Chemnitz University of Technology	2021	[7]
Provision of education for sustainability development and sustainability literacy in business programs in three higher education institutions in Brazil, Colombia, and Peru	2021	[6]
Smart practices in HEIs and the contribution to the SDGs: implementation in Brazilian university	2021	[21]
Fostering Knowledge of the Sustainable Development Goals in Universities: The Case of Sulitest	2021	[17]
Innovations and challenges in SDG integration and reporting in higher education: a case study from the University of South Florida	2021	[25]
Social marketing and higher education: partnering to achieve sustainable development goals	2021	[22]
Sustainable development in higher education in Nordic countries: exploring E-Learning mechanisms and SDG coverage in MOOCs	2021	[30]
Addressing education for sustainable development in the teaching of science: the case of a biological sciences teacher education program	2021	[29]
Protected areas and environmental conservation in KwaZulu-Natal, South Africa: on HEIs, livelihoods and sustainable development	2021	[36]
The transforming generation: increasing student awareness about the effects of economic decisions on sustainability	2021	[19]
The role of Education 5.0 in accelerating the implementation of SDGs and challenges encountered at the University of Zimbabwe	2021	[16]
The future we want: A learning experience to promote SDGs in higher education from the united nations and University of Valencia	2021	[13]
How management education is engaging students in the sustainable development goals	2021	[14]

As detailed above, and also by following the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines, relevant studies were identified. These studies were screened, selected, and critically appraised for their adherence to the theme. Data extraction and synthesis were performed to summarize the key findings, identify patterns, and assess the overall strength of the evidence. Finally, Figure 2 shows the PRISMA 2020 flowchart to present the article selection process throughout the systematic literature review.

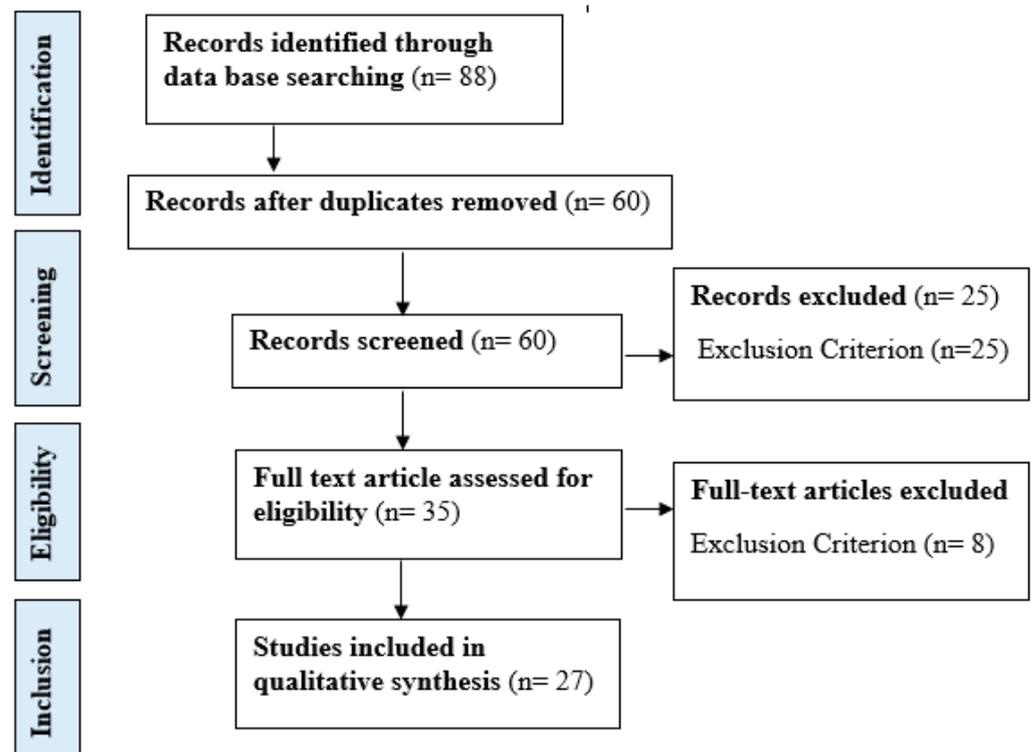


Figure 2. PRISMA flowchart, adapted.

2.3. Participant Observation

The use of participant observation took place actively as members of one of QualEnv's universities. Beginning with meetings under the coordination of the Polytechnic Institute of Turin/Italy and focusing on collective and individual orientations to recognize each category of Tables 4–8. After this, each university, via its responsible team, sought to collect the data in the same categories of these tables when performing lectures and webinars with students, teachers, and managers. The subsequent information gathered provided a picture to all those involved in the consortium. By this process, the partners developed further research methodologies that were applied by the Latin-American partners for their audit. Participant observation took place over two years in five meetings with QualEnv, involving an average of 20 people. At the same time, the participant observations of the social actors sought to raise, in a direct way, the technical and cultural aspects. Turning to the main objective of the research and adopting a systematized procedure, data were collected from field notes describing, detailing, and documenting specific observations of customs and practices. This allowed the identification of the meaning, orientation, and dynamics of the recorded circumstances experienced [37]. These field notes included descriptions of the social relationships between individuals who worked in QualEnv such as the locations (environment, context, date), behaviors, and attitudes of the subjects, understandings about SDGs, special events, consensus, discussions and interpretations about the phenomenon. The subjects were not described, they were only identified by name and university. Considerations about past experiences or about the constitution of the group were excluded. In addition, this exercise focused on the perception of those involved in relation to the SDGs in each context through notes made on the social relations between the consortium members. This process aimed to obtain a holistic view of the facts and provided added value, since the observations helped to understand the whole panorama experienced [38]. In addition, in collecting these data, it was intended to correlate the practices identified in the universities with the SDGs, to reveal particularities arising from the collective. Thus, a descriptive and exploratory observation was applied to the

investigation of technical and cultural elements with a focus on the qualification of the definition and analysis of the problem.

2.4. Data Analysis

The data collection was interpreted through a hermeneutic analysis and resulted in the inductive development of relevant aspects from the categories and their descriptions. Initially, the documents used in the analysis represented the institution of the consortium in terms of the data, purposes, and objectives of the institutions and the collective as a whole and were the starting point of the investigation. However, it is noteworthy that this analysis took place in a supplementary way in two stages. The first stage was carried out during the collection phase (especially during the participant observation) when critical understandings and notes were reached for later use. In this first phase, Tables 4–8 were submitted to a team of experts, composed of researchers from the most important research groups related to sustainability and energy efficiency of the universities that are part of the consortium. This team agreed with respect to the adherence of each SDG, so that the categories corresponding to each of them could be analyzed from their descriptions within the scope of the consortium. In the second stage, based on all of the QualEnv, universities, a comprehensive analysis was made embodying the Guide for Mapping Environmental Impact and SDGs. Thus, the analysis comprised a detailed evaluation of these documents that aimed to give a proper treatment of the material and to store information from them in a more accessible, compact and socially contextualized way, that included an interconnection with the other sources of data.

Contributions from participant observation were important, as these increased the empirical validity of the data. This process started from introspection, considering a thorough comparison of observations and institutional documents with the theory as evidenced from the literature, and contributed greatly to the results and discussion. This document analysis transformed the information, making it coherent and relating to other participant observations and data in the literature. The participatory observation represented the opportunity to fill in the documentary analysis and provide answers about the practical reality not apparent in the documents. In addition, the specifics of the field notes allowed visibility into the practices and institutional trends of the different areas involved in the process. From the relevant literature investigating the actions of the universities and the instruments of evaluation of the SDGs in different institutions, it was possible to identify the focus of research in the QualEnv consortium. Additionally, the results from the analyzed literature enabled other comparisons to be made between universities, such as practical achievements and future trends. This was especially interesting for the Latin-American context, where the direct involvement and training provided through the experience of developing the consortium has prepared universities for significant advances in sustainability.

Thus, to reflect all of the uncovered elements and relate them further, the main resources used in the research of the SDGs in QualEnv's HEIs cover their common aspects, particularities, strengths, and weaknesses, while incorporating these into future perspectives. The contributions of HEIs are highlighted, indicating the achievements to stimulate and show that it is possible, with relatively simple actions, to achieve the SDGs and disseminate these achievements.

3. Results

The results covering the main information regarding the scope of the SDGs in the QualEnv consortium are presented here. The perspective that was judged to be linked most directly to the SDGs in this research corresponds to adherence to the five dimensions (pillars) of the SD [30], since the identification of the most appropriate development interventions for a given context is based on these dimensions: people (social), planet (environmental), prosperity (economic), peace, and partnerships. Figure 3, adapted from [39,40], shows these five dimensions and their interconnections in sustainability.



Figure 3. The five dimensions—“Ps”: people, planet, prosperity, peace, and partnership.

Thus, knowing and analyzing the adoption of the SDGs in the QualEnv consortium is convenient and useful to disseminate the implementation of SD in the different HEIs of the consortium and also to emphasize the positive aspect that cooperation and the exchange of practical experiences are capable of promoting as a collective entity. Following this, the adoption of SDGs in QualEnv’s HEIs is described from these five dimensions. Subsequently, the categories considered essential for the achievement of each SDG in the HEIs, i.e., their respective descriptions metrics, actions, and/or structures and the corresponding theoretical basis are presented in the following subsections.

3.1. People

Among the difficulties inherent to the formation of people in HEIs are the high cost of housing, food, transportation, and sometimes of education itself and other expenses, these being vital for the permanence and success of these students and minimum financial conditions for this type of support. Although not all of the HEIs surveyed provide financial assistance to their students, among those who offer it, the population receiving significant help due to extreme poverty ranged from 6.5% (Ulima) to 53.63% (UCR). In addition to financial assistance for students and employees, the other actions developed a focus on promoting training to provide access to basic services for all stakeholders and training to strengthen low-income enterprises, which directly impacts SDGs 01 and 10.

In addition, the strengthening of strategies to reduce inequalities are perceived in the consortium, either through the development of anti-discrimination and anti-harassment policies, or by efforts to provide access to study and work at the university for people with disabilities, refugees, and other less favored groups. The offer of student housing (UFSC) was also identified. In addition, the HEIs analyzed promoted programs and training related to diversity, equity, inclusion, and human rights, which also relates directly to SDGs 01 and 10 [15,17]. Regarding SDG 02, QualEnv HEIs promote the provision of sustainable, healthy, and relatively affordable food options for students and employees, as well as

prioritizing the purchase of local products and the development of projects with local farmers and food producers. A university even reported having an affordable university restaurant (UFSC), also contributing to SDGs 01 and 10. In the case of universities that have outsourced restaurants on campus, UNISUL stands out and reported that the price of food is not accessible to all students. Therefore, there is a perceived need for innovative financing resources and participation in cooperation to provide jobs for students, which can lead to progress in SD and acting to reduce inequalities and unemployment rates among young people [24].

Some of the universities have actions and partnerships that favor local communities, focusing efforts on improving the quality of life, providing farmers with access to the information generated by the university, and promoting sensitivity in reducing waste. For example, this is the case for UDN which, through partnerships with local suppliers, aims to promote a conscious, healthy, and responsible lifestyle. With regard to SDG 03, highlighted is the existence of outreach programs in almost all HEIs analyzed, which promote health and well-being, where they serve the external community and offer health services, also recounting local health institutions to improve the results, to the extent that students of health courses do mandatory internships in local hospitals and community health centers.

Similarly, it was noticed that SDG 05 is a point of action of the HEIs of the consortium, which, for the most part, have non-discrimination policies and maternity and paternity policies, with support for the participation of women. The UDN, for example, shows an excellent gender balance in the student population (52% of the students who start the first grade are female), but this shows differences between the disciplines and is contrary to the norm (36% of the students in science, technology, engineering, and mathematics and 20% in humanities). However, there was no reference to the existence of daycare centers, neither for students nor for employees in any university belonging to the consortium, which demonstrates an opportunity for growth in this area.

Other examples regarding P1 in terms of actions and strategies are the implementation of new policies for access to educational resources for those who do not study at HEIs; strengthening technological resources for teaching in a virtual environment; offering ESD courses/programs; holding educational events open to the general public, and encouraging student scholarships; promoting the provision of courses and programs for special segments such as the elderly, micro-entrepreneurs without a university degree, entrepreneurs, social economy, etc.; and informing the general public more about the possibility to take advantage of campus resources and facilities and carrying out different out-of-campus awareness activities.

Finally, as regards SDG 04, as already mentioned, there is no treatment in isolation, and its compliance implies the performance of all other SDGs. This is the case, for example, regarding research groups, teaching, and outreach projects, and other activities that also have a direct or indirect relationship with SDG 04, considering that they are linked to the education provided by the university [13,23,30]. Table 4 presents the categories, descriptions, and theoretical basis in relation to P1—people.

Table 4. Categories, descriptions, and theoretical basis of P1—people.

No.	SDG	Category	Category Description	References
1	No Poverty	University initiatives to reduce internal shortages	Basic financial conditions are provided so that disadvantaged students can complete their courses and not drop out.	[14,15,17,19,25,28,30,36,39,41]
		University initiatives to reduce community shortages	Activities are developed with the community to provide assistance and access to essential services for citizenship	
2	Zero Hunger	Option for healthy foods	It is related to the availability and access to healthy foods and dietary restrictions for all people.	[16,19,21,25,30,36,39,41]
		Action and development with food producers for sustainability	It consists of establishing partnerships with local producers for the transfer of knowledge and technology, taking advantage of university structures, and encouraging sustainable production and consumption.	

Table 4. Cont.

No.	SDG	Category	Category Description	References
3	Good Health and Well-being	Actions for human health	It is related to partnerships with institutions connected to community health care, also counting on the help of outreach programs, involving all topics of human health. Promotion of sports and leisure activities, development of anti-smoking policies, and others related to mental and psychological health. Assistance to young people, giving instructions related to sexuality and reproductive life.	[14,19,21,22,24,26,28,30,34,39,41]
4	Quality Education	Knowledge, opportunities, and access for all	It consists of opening the university's doors to people who do not have a formal bond with it, so they can participate in the development of different activities and also participate in specific events aimed at formal education. It is also related to community and volunteer service, where universities expand their activities by promoting training and events addressing sensitive issues for the communities in which they operate outside their facilities.	[13,14,16,19,21,23,26,30,32,39,41]
5	Gender Equality	Representation of women	Levels of representation of women in collective and collegiate bodies, as well as policies associated with the participation of women in all sectors.	[19,20,23,24,29,30,39,41]
		Diversity and motherhood	Development of policies for non-discrimination of women, trans, and homosexuals. Provision of daycare centers and associated services for employees who are new parents.	
10	Reduced Inequalities	Affirmative Actions for Discrimination	It consists of the structuring by the university of a sector responsible for protecting people's rights, and offering programs and affirmative actions aimed at raising awareness on topics such as inclusion, diversity, tolerance, and support for people with disabilities. This support ranges from physical accessibility conditions to social inclusion and the provision of specialized services so that people with disabilities have access to all university services.	[14,15,19,21,22,24,25,27,30,36,39,41]

3.2. Planet

The concern with the environment and education focused on SD is a characteristic present in virtually all of the universities of the consortium. Among the HEIs analyzed, activities such as encouraging research in green campus initiatives and awareness campaigns on the use of natural resources are commonplace. Furthermore, some (such as the UCR) have rainwater collection and water treatment systems, which have processes to prevent polluted water from entering the water system that includes accidental releases from the university's operations. Another example is UNISABANA, which acquired a sanitary treatment plant with state-of-the-art technology known as a BMR (biological membrane reactor) plant, in which wastewater is treated and reused for sanitary units in the university's buildings. There is also a system that provides free drinking water for students, staff, and visitors and allows water to be reused. In turn, UFSC has a water quality recovery program and a hydrological control and monitoring project. On the other hand, in reference to SDG 13, Ulma and UNISUL were the only universities that declared as having a climate action plan.

However, most HEIs promote only local environmental education programs and campaigns on climate change. The lack of planning instruments constitutes a strong restriction for the improvement of the strategic initiatives of SD in HEIs. Since this foundation is essential for SD to be effective [15], it is appropriate to include the management and adaptation to climate change as a structuring axis in the committees where the environmental management of universities is decided and implemented. For example, this might include promoting new strategies for mobility to reduce emissions from the transportation of students and employees and identifying opportunities to reduce energy consumption or for the installation of solar panels. The simple installation of energy-saving and push-type faucets in all public areas of institutions is a simple, feasible, and an economical action that can be implemented by HEIs in the search for clean and sustainable technologies. Thus, a strengthening of the university climate action plan can be achieved by combining educational and infrastructure strategies that improve the production and/or energy consumption of low-carbon sources. Therefore, it is up to the HEIs to monitor and control resources such as the consumption of drinking water to reduce the pressure on the resource, in addition to conducting awareness campaigns for responsible water use by the university community as well as providing drinking water for students, staff, and visitors (i.e., SDGs 6 and 14).

Other examples in relation to P2 were identified, such as the maintenance of conservation units for studies and carbon offsetting, with tree planting and protection of water resources. Promotion of events on the conservation of marine resources and basic sanitation, strategies for planning campus expansions, and policies and projects that focus on preserving local biodiversity. On the other hand, strategies such as ESD campaigns and events with policymakers to raise awareness of the importance of biodiversity and SDGs were indicated, in addition to reviews of existing policies and actions on biodiversity to assess results, promoting research aimed at protecting flora and fauna, and promoting basic sanitation.

Finally, it is worth noting that the acceptance of support in university education depends not only on teaching and learning guidelines but also on the effective implementation of policies and strategies with the participation of internal employees and external stakeholders [23,26,28]. This is often a challenge for achieving more visible and feasible changes in HEIs and is necessary to implement environmental management systems and promote interim projects with the government or private companies involving care for the climate and environment. Table 5 presents the categories, descriptions, and theoretical basis in relation to P2—planet.

Table 5. Categories, descriptions, and theoretical basis of P2—planet.

No.	SDG	Category	Category Description	References
6	Clean Water and Sanitation	Water-related matters	It is related to the measurement and recording of consumption, disposal, use, and reuse of water. It involves the problem of the consumption of disposable plastic and the use of water. It is also related to the water resource in the community and how to use the resource in the best way and without waste.	[16,19,28,30,32,39]
13	Climate Action	Carbon footprint and renewable energy	It consists of measuring and recording the consumption of low-energy sources, according to carbon sources, as well as calculating your carbon footprint.	[19,21,23,24,26,28,30,32,39]
		Awareness for climate change mitigation	It aims to disseminate basic information and train those who are involved in the risks of climate change, through educational campaigns and projects aimed at mitigating and adapting to these risks.	
			It considers the existence of a climate action plan or guiding document extended to communities and with participation in the execution of planned actions.	
14	Life Below Water	Aquatic ecosystems and the impact on conservation	Raising awareness of communities about ecosystems and the importance of sustainable management of tourism, fisheries, and aquaculture through local training.	[19,28,30,36,39]
		Water pollution	It involves taking care of solid waste (mainly plastic) that can affect marine life as well as other pollutants discarded in this environment.	
		Support for regional ecosystems	It consists of providing support to programs and initiatives that collaborate to maintain aquatic life	
15	Life on Land	Land ecosystems and their impact on conservation	It consists of the inclusion of studies to minimize the impact on biodiversity and the environment in any project or urban intervention to be developed at the university.	[28,30,39,41]

3.3. Prosperity

For the most part, the HEIs surveyed have a common incentive to use renewable energies, promote research applied to improve clean energy, and establish processes for carbon management and reduction in CO₂ emissions. UNISUL, for example, is looking for ways to reduce energy consumption using LED lamps, sensors, and photovoltaic plates, positively impacting SDG 07 [28]. Further to this, in 2015, photovoltaic plates were installed over UNISUL's main library to reduce carbon dioxide emissions and boost the use of green energy. In addition, of the HEIs analyzed, most have strong connections with their local

communities and offer free public access to open and green spaces within campuses as well as libraries, museums, art galleries, and other places of interest. Clearly, this positive impact on the local community affects SDG 11 [23,25,29]. In turn, with regard to SDG 09, the greater relationship with research occurs when considering goal 9.5 (related to the improvement of scientific research, encouraging innovation, and substantially increasing the number of researches), and goal 9.6 (referring to support in the development of national technology, research, and innovation in developing countries) [19,30]. On this point, the HEIs in this analysis all have groups and lines of research on these themes. Regarding SDG 12, the consortium's HEIs also have programs for the collection and final proper disposal of waste generated on campuses, including hazardous waste, as well as policies responsible for the ethical supply of food and products. It should be emphasized here that UDN aims to seek opportunities to move to more sustainable products that have a good cost–benefit and feasible ratio, in addition to having a policy of ethical supply of food and supplies, plastics, and disposal of items and waste. Furthermore, Ulma implements strategies for minimizing plastic, education programs for more conscious food consumption, and rationalization of water use on campus, and promotes a zero paper culture to prevent deforestation. In the same sense, both UNISUL and UFSC have specific policies on waste disposal and the minimization of disposal items, as well as on ethical replenishment, with specific policies for the minimization of plastic waste. In this respect, UFSC also stands out with regard to SDG 08, which has a Department of Projects, Contracts, and Agreements that presents a spreadsheet of contracts each month in order to disclose and give transparency to the formally designated servers, to monitor the execution of administrative contracts signed.

Other examples in relation to P3 were identified as free public access to buildings and cultural or natural heritage sites within the campus, and strategies for sustainable displacement; encouraging sustainable and accessible experimental energy programs; sustainable public procurement policies, with criteria that promote SD in acquisitions and hiring; support for start-up acceleration programs with training and awards; encouraging the creation of patents by offering writing and patent courses; reinforcing innovation and entrepreneurship laboratories to support students and professors in creating their businesses; the use of a challenge approach to stimulate research, interdisciplinarity for innovation and co-creation; stimulating collaborative work with organizations, government, and society for the development of research projects and activities that promote scientific development and the generation, application, and transfer of knowledge; and the constitution of systematic workspaces for entrepreneurship within the HEI and area of influence to stimulate innovation. Table 6 presents the categories, descriptions, and basis for P3—prosperity.

Table 6. Categories, descriptions, and theoretical basis of P3—prosperity.

No.	SDG	Category	Category Description	References
7	Affordable Clean Energy	Energy use and the future	It establishes policies that ensure that new university buildings are designed including energy efficiency, as well as the upgrading of existing buildings. It considers the existence of a guideline for the total measurement of the energy used and plans to reduce consumption and monitor carbon emissions.	[16,21,23,25,28,30,32,39]
		Energy and the community	It consists of actions that the HEI promotes to contribute to the industries and the communities to improve clean energy use and to provide sustainable technologies. It recognizes the effort to establish goals and indicators and it disseminates them to the communities.	
8	Decent Work and Economic Growth	Follow-up of workers	It covers the concern with a fair salary, relationships with employees' unions and associations, gender equality, non-discrimination policies, and labor rights.	[19,20,23,24,30,39,41]

Table 6. *Cont.*

No.	SDG	Category	Category Description	References
9	Industry, Innovation, and Infrastructures	Intellectual property	It is related to companies (spin-offs) and/or patents originating from the university itself in which the intellectual property is recognized and exploited.	[19,21,30,39]
11	Sustainable Cities and Communities	Cultural artistic heritage	It consists of offering the university's spaces to the public, including libraries, monuments, exhibitions, museums, and works of art, as well as the organization of events aimed at promoting local arts.	[19,21,23,25,26,30,39]
		Displacements	It consists of establishing metrics to improve your goals and adapt to routines with less impact in terms of displacements.	
12	Responsible Consumption and Production	Operations	It is related to the ethical consumption of food and supplies, as well as the use and disposal of hazardous materials, plastic, and disposables in general.	[17,21,22,24,30,39]
		Waste	Measurement and monitoring of generated waste, separated into recyclable, reject, and organic waste.	

3.4. Peace

The pursuit of world peace represented by SDG 16 is a concern of the academic community, governmental bodies, and senior councils. Initiatives of HEIs, encompassing all segments of representation, are presented as a means to improve the relationship between institutions, their own structures, and their delegates. Overall, in relation to this goal, all universities comprise the categories of the academic community in their own intermediate and higher councils. Although this denotes elements of effective, accountable, and inclusive governance systems, the actions of universities on the boards of governing entities are seen as timid. However, it is fundamental for HEIs to step up the search for sustainable solutions and innovations aimed at solving the needs of communities [25,26].

This governance and the integrity demonstrated by the periodic presentation of financial data annually, plus the recognition of student institutions, leads to an increase in the interrelations between all involved. Publications on organized crime, corruption, and bribery were less evident, and accountability in relation to the SDGs is scant. In this respect, the need to generate more formal education programs focused on knowledge of public policies, government communication, accountability, and institutional governance, among others, was identified. UFSC and UNISABANA identified the promotion of access to free legal assistance for the underprivileged involved in legal disputes as being relevant within their local communities.

Other examples regarding P4 in terms of actions and strategies are the development of policies, procedures, and plans to ensure that the campus is safe for all staff, students, and visitors; ensuring that all staff and students have access to justice and information about their rights; engagement with staff, students, and key stakeholders in university governance decisions; providing skills and capacity building for policy makers and legislators on climate change; and organizing events with policy makers on the climate emergency and increasing the number of projects with municipalities and government. Table 7 presents the categories, descriptions, and basis for P4—peace.

Table 7. Categories, descriptions, and theoretical basis of P4—peace.

No.	SDG	Category	Category Description	References
16	Peace, Justice, and Strong Institutions	Governance	It is related to the representation of all sectors in the collegiate bodies of the universities, publication of financial data and documents in order to improve resource administration and management, supporting the central student union and establishing its relationships, and the publication of institutional relationships through governance.	[20,30,39]
		Collaboration with public policies	Training aimed at public policymakers and politicians on topics sensitive to the international community.	

3.5. Partnership

Regarding SDG 17, the HEIs of the QualEnv consortium still lack specific publications of reports involving partnerships to promote the SDGs. However, there are good results in rankings that assess the sustainability of universities, such as UFSC, for example, which ranked 15th overall among the 30 Brazilian universities that participated in the *Times Higher Education* impact ranking, which evaluates universities in relation to the 17 SDGs of the UN 2030 agenda. In terms of community representation and local effort, UNISUL is a signatory of the Movement of SDGs in Santa Catarina (SDGs SC), which seeks to facilitate the incorporation of SDGs in the daily lives of people and in the practice of Santa Catarina organizations. In addition, the HEIs of the consortium have several partnerships with members of civil society and government in order to achieve the SDGs through outreach programs, internal partnerships, agreements of all kinds, and terms of technical cooperation.

In addition, the QualEnv universities analyzed work in partnership with the communities where they are established, thus strengthening their participation in different networks and community associations. Moreover, considering that the HEIs should, as an organization, seek solid, responsible, ethical, and transparent partnerships with suppliers and employees [24,26], it is noted that the HEIs of the QualEnv consortium are advancing in the construction of practices increasingly linked to sustainability.

Other examples regarding P5 in terms of actions and strategies are the publication of university reports on the SDGs with the need for integration; encouraging the creation of technical commissions from sectors that work with SDGs; implementing sustainability policies, strengthening the commitment of the university community; creating support programs for projects that add value to the SDGs; strengthening the alliances and agreements promoted by the universities to ensure the achievement of objectives; and participating in different networks and associations. Table 8 presents the categories, descriptions, and theoretical basis for P5—partnership.

Table 8. Categories, descriptions, and theoretical basis of P5—partnership.

No.	SDG	Category	Category Description	References
17	Partnership for the Goals	Information about sustainability	It consists of the institutional documents that publish the results obtained in partnerships made to advance global sustainability.	[14,22,24,26,28,39]

3.6. Synthesis of the Five “Ps”

Based on the five sustainability dimensions addressed, Table 9 presents a synthesis of the respective SDGs and their actions carried out within the scope of QualEnv’s HEIs.

Table 9. The five Ps, their respective SDGs, and actions in QualEnv.

“P”	SDGs	Actions
People      	No Poverty (1), Zero Hunger (2), Good Health and Well-Being (3), Quality Education (4), Gender Equality (5), and Reduced Inequalities (10)	Financial aid programs for the underprivileged; training for access to basic services by the community and to strengthen low-income enterprises; production and consumption of healthy and regionally produced foods; wellness and health initiatives carried out in events open to the community and during training in the courses; programs and training slated for diversity, equity, inclusion, and human rights; development of non-discrimination policies and maternity and paternity policies; research groups, teaching, and outreach projects

Table 9. Cont.

"P"	SDGs	Actions
Planet 	Clean Water and Sanitation (6), Climate Action (13), Life Below Water (14), and Life and Land (15)	Green campus initiatives and awareness campaigns on the use of natural resources; rainwater collection and water treatment systems; development of new clean and sustainable technologies; programs involving water quality and hydrological monitoring; climate action plans
Prosperity 	Affordable and Clean Energy (7), Decent Work and Economic Growth (8), Industry, Innovation, and Infrastructure (9), Sustainable Cities and Communities (11), and Responsible Consumption and Production (12)	Encouraging the use of renewable energies, promoting research to improve clean energy; carbon management and reduction in CO ₂ emissions; free public access to open and green spaces within the campus, libraries, museums, art galleries, and other places of interest; collection and final adequacy disposal of waste; ethical supply of food and products; minimization of disposal items; transparency
Peace 	Peace, Justice, and Strong Institutions (16)	Improving the relationship between institutions, their own structures, and their delegates; governance systems; transparency; institutional communication
Partnership 	Partnership for the Goals (17)	Partnerships with members of civil society and government in order to achieve SDGs, either through outreach programs, internal partnerships, agreements of all, terms of technical cooperation, and others

4. Discussion

Associating the experience of QualEnv with other perspectives, it is perceived that the disposition of the SDGs in the five Ps to address the social, economic, and environmental dimensions of sustainability is useful, but not exhaustive, mainly in the understanding of the interdependence between the SDGs of the 2030 agenda. In this sense, for a greater integration of these objectives, ESD needs the identification, incorporation, development, and evaluation of the competencies necessary for SD [35], and therefore, the effort of the institutions in mapping their SDGs, and especially the initiatives built in the consortium, is valued. HEIs need to produce learning opportunities to form an understanding of the individual point of view and social relations so that life on our planet is sustainable [13].

In this context, HEIs can adopt various sustainable practices in their campus operations to engage students and support the SDGs. Among them are energy efficiency, renewable energy, waste management, water conservation, sustainable transportation, sustainable procurement, green building design, curriculum integration, community engagement, and monitoring and reporting. Each institution can tailor their initiatives based on their specific circumstances and priorities while keeping the overall goal of sustainability in mind.

Thus, it is evident that the basic factors for advances in ESD require the integration of specific teaching knowledge and skills with transformative learning processes, where curricular renovations towards sustainability demand a large financial volume due to the need for supervision and learning with a holistic perspective and in spaces where students understand the interconnection between approaches [42]. Although HEIs continue to developing new degree programs related to sustainability, the implementation and delivery of ESD programs continues to be hampered by the lack of sustained funding for education programs of this type [43].

To improve this, HEIs can employ strategies such as establishing interdisciplinary programs, fostering collaboration and networking, supporting research clusters or centers, encouraging interdisciplinary research funding, providing professional development

opportunities, engaging external partnerships, and developing recognition and reward systems within the institution that value and acknowledge interdisciplinary contributions. HEIs can create a conducive environment that supports interdisciplinary teaching, research, and innovation aligned with the SDGs. It encourages collaboration, enhances creativity, and enables a holistic approach to addressing complex global challenges.

Again, the lack of planning is evident, which, combined with the lack of financial support for sustainability actions, makes it clear that HEIs depend mainly on some key people, causing constant disruptions and difficulties in the continuity of processes (there is a need for resilience to staff changes and institutional transformations) [15]. It is believed that the campus can vary according to the social component that lives in it, leading to a constant evolution of its identity. This relationship between campus and community enables the development of actions in projects that can leverage processes of sustainable valorization of local resources [38]. The experience in partnership within QualEnv demonstrated how important this component is to enhance the resources, knowledge, and skills of the group.

In this way, HEIs can create a culture of sustainability, foster active participation, and make a tangible contribution to the global sustainability agenda. HEIs can engage students, faculty, and staff in activities that directly contribute to the SDGs in several ways. Among them are raising awareness about the SDGs among the campus community, organizing volunteering opportunities that directly contribute to the SDGs, and empowering students to take the lead in initiating projects and activities that contribute to the SDGs.

In this context, different active pedagogical configurations that approach the SDGs from an interdisciplinary perspective can pave the way for the development of students' strategic competencies, fundamental for the progress of SD [3]. There is much to be learned to understand and qualify sustainability in higher education, such as compatible supervision, regulation and evaluation, ranging from cooperation between traditional curricular units to strong links with the deepest academic transformations [8]. Further exploration of innovative approaches is essential to overcome sustainability challenges, which is why the demand for robust curriculum reform and further development of sustainability teaching projects is overdue [23].

The experience of QualEnv shows that it is possible to carry out complex interventions and that a comprehensive diagnosis on sustainability is decisive for the design of thinking and acting in the different training paths and institutional actions. In this regard, it is noted that a true curricular reform is still only within the scope of the ESD plans of the universities analyzed. These plans represent the opportunity for improvement and effective targeting of structural changes. Nevertheless, measuring progress in achieving the SDGs becomes crucial to properly manage the transformation to sustainable actions and the development of implementation strategies [38].

On the other hand, considering the strategies in HEIs in relation to the SDGs, the systems that provide the sustainability reports provide the institutions with guidance on how to report sustainability (as in the case of QualEnv), but do not have the information technology tools to produce integrated sustainability reports that examine all stakeholders and qualify the strategic analyses for the future [44]. If sustainability efforts and the SDGs emanate from academic affairs, student affairs, infrastructure, and/or operations, as seen, it is urgent that there be an integrating body, group, or unifying policy for SD, where there is commitment to achieving efficiency in the work and resources employed [25].

Some reflections were raised, especially regarding quality education (SGD 4), which permeates all SDGs, especially in the context of this QualEnv initiative on SDGs, which was to design and apply a personalized tool to map and diagnose, in each Latin-American university, the activities that have a negative and/or positive impact, identifying the contribution of each university to the SDGs. It is understood that to achieve this goal, the in-depth knowledge of the natural, social, economic, and cultural aspects of the context is fundamental to be able to act and design in an innovative and sustainable way. Only through these types of analyses is it possible to know the campus and identify real and

latent needs, and strengths and weaknesses, thus offering new knowledge for the creation of sustainable solutions [38].

Initiatives with developing countries, such as those in Latin America of QualEnv, which have been very well trained by European partners, undoubtedly contribute significantly to the development of these institutions as a whole. However, it is noteworthy that the work was carried out together in this particular experience. It is also noted that important technical knowledge and points studied collectively contributed to the improvement of the tools used in research on the SDGs throughout QualEnv. These efforts to open up universities indicate the need for resources to finance constructive partnerships such as the one presented, which promote confidence for structural changes in HEIs.

5. Conclusions

The global demand for natural resources, driven mainly by population growth and rapid urbanization, has led to a depletion of the Earth's supply capacity. The SDGs represent urgent needs to be pursued by all organizations, especially by HEIs. These institutions play a significant role in promoting SD, as well as in implementing the SDGs, through actions that involve teaching, research, management, and outreach activities, and carry great potential to transform, in addition to building new partnerships, and accessing new sources of funding. HEIs around the world are increasingly taking a leading role in the process of developing and implementing sustainable practices and initiatives, and are important actors in creating individuals with the skills to fulfill these goals.

From this research, it can be concluded that HEIs in Latin America stand out through the efforts of the QualEnv consortium, whose members have worked collaboratively on the project "Change the Climate: Assuring the Quality of Environmental Strategies in Latin-American Higher Education", with the objective of increasing the contribution of Latin-American universities to SD, through the implementation of systematic environmental practices and quality processes aligned with the SDGs. This article shows the urgency of seeking partnerships between HEIs, the local community, and private and public sectors in the search for SD, as well as the need to bring academic knowledge about ESD beyond the classroom, and it is up to HEIs to provide elements and activities to achieve this. In fact, the HEIs in the QualEnv consortium already contribute to global improvements in various ways and will certainly contribute to achieving the goals of the SDGs of the 2030 agenda. In this context, the theoretical categories of this study become tools that help to visualize the effectiveness of the actions performed by HEIs and direct future decisions that can be used as a starting point for a comprehensive diagnosis.

In terms of practical implications, the exploration of the SDGs has reproduced a way of thinking systematically about the interconnections and trade-offs between divergent objectives and needs to be covered by university governance. It is desirable for HEIs to have viable plans, committed teams, and shared objectives with a transparent vision and with a structure for accountability. Thus, mapping the contribution of universities to the SDGs helps us to understand the structures, practices, and cultures that articulate the academic communities [33]. Limitations can be identified in HEIs which, in some cases, stated that they do not have the instruments, actions, metrics, or possibilities to adopt some of the SDGs. The application of this research reflects only the evidence from a sample of HEIs and may not reflect entirely the global reality of all cases. Despite this, the effort of making the mapping process was comprehensively effective and achieved the intended results. In view of the analyses, the main limitations consist of the difficulties of making associations between the data due to the different types of implementation units identified by each university. As a result, the greatest limitation is the lack of an integrative tool for the SDGs.

As the mapping used several tools and not a single platform, the management of several questionnaires and spreadsheets entailed a manual and exhaustive analysis. The integration of the data required a significant effort and tended towards generalizations and specific indications. On the other hand, although the structures and realities of HEIs are very different, universal initiatives, in terms of SDGs in universities, have been identified,

highlighting initiatives in terms of management and governance, but not necessarily requiring large financial resources.

Finally, in this work the authors sought to see the problems around implementing SDGs in HEIs as a deficiency of execution or a disconnect between collective consciousness and actions, since universities are still key institutions in society. However, systemic planning and practices of universities can lead to new ways of operating and are essential to the expansion of knowledge and its dissemination, leading to significant changes in the societies in which they are installed [33].

6. Recommendations

In view of all the aspects raised in this research, it can be noted that HEIs need to adapt more clearly the SDGs into the university curriculum in order to favor the training of professionals committed to sustainability. From this idea, several strategies and actions were presented that go beyond the scope of only the SDGs, in being combined into course projects. The different roles of the universities toward their communities are not only to train professionals but also to insert them in the labor market through practical performance in the activities of outreach, research, and innovation. In turn, HEIs can and should function as beacons of sustainability by aligning academic activities with the principles of SD. This can be achieved by monitoring the socio-environmental problems of the communities, giving public projection to unsustainable practices, and by mobilizing students for social intervention through new ideas and projects of ESD.

The research presented here demonstrates and guides how HEIs can adopt the SDGs and highlights the importance of planning, measuring, and evaluating the structural and organizational aspects of HEIs in order to incorporate SD practices. As recommendations, investment in outreach programs are emphasized, to involve students in their local communities. These interventions ensure efforts from all stakeholders and enhance their benefits. The focus on transparency and the global vision of SD in each HEI of the consortium is paramount, since providing a unifying and responsible structure for the processing of information is fundamental and can be indicated individually. The SDGs are an efficient starting point for discussing the need for a university to share and create knowledge for sustainable futures. For curricula to be aligned with the SDGs, it is indicated that the regulations are reviewed, discussed, and amended while paying attention to these objectives. Preferably, these changes may consider a transdisciplinary approach that promotes integrated and transformative practices beyond the classroom and between disciplines. In the future, it is desirable to create platforms that allow HEIs, based on the SDGs, to be able to integrate the different sources of data expressing interconnected results, and that will allow the automatic treatment of the information produced. Due to the complexity and financial commitment, special attention should also be directed to the planning by the institutions for the adoption and integration of the SDGs in all of their activities.

Author Contributions: Conceptualization, A.R.d.A.D., R.S.B. and J.B.S.O.d.A.G.; methodology, P.G.F., C.P.F. and A.R.d.A.D.; formal analysis, P.G.F., C.P.F. and A.R.d.A.D.; investigation, P.G.F., C.P.F. and J.B.S.O.d.A.G.; resources, P.G.F., C.P.F. and J.B.S.O.d.A.G.; writing—original draft, P.G.F. and C.P.F.; writing—review and editing, R.S.B. and A.R.d.A.D.; visualization, A.R.d.A.D. and R.S.B.; project administration, J.B.S.O.d.A.G. All authors have read and agreed to the published version of the manuscript.

Funding: We gratefully acknowledge the contributions of several institutions in the successful completion of this study. The research was carried out by the Centre for Sustainable Development (Greens) in collaboration with the Graduate Program in Administration at the University of Southern Santa Catarina (Unisul) as part of the Greens 10 × 10 project. We also extend our appreciation to the Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina (FAPESC), Ânima Institute (AI), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), and the National Council for Scientific and Technological Development (CNPq) for their invaluable support and assistance throughout the research process.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: The authors would like to acknowledge support from the European Commission, Education Audiovisual and Culture Executive Agency, Erasmus+, in the context of the Qualenv Project: Change the Climate: Assuring the Quality of Environmental Strategies in Latin-American Higher Education—Project 609863-EPP-1-2019-1-PT-EPPKA2-CBHE-JP. The European Commission's support for the production of this publication does not constitute an endorsement of the content, which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Finally, we also thank each university participating in this process: Pontifical Catholic University of Rio Grande do Sul (PUCRS), Universidad Del Norte (UDN), Universidad de Costa Rica (UCR), Universidad Nacional de Costa Rica-Heredia (UNA), Universidad de Lima (Ulima), Universidad de La Sabana (UNISABANA), Universidad del Pacific (UP), Universidad de Guadalajara (UDG), Beneméira Universidad Autónoma de Puebla (BUAP), Federal University of Santa Catarina (UFSC), University of Southern Santa Catarina (UNISUL), Polytechnic Institute of Turin (POLITO), University of Gothenburg (GU), and University Institute of Lisbon (ISCTE).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. United Nations Sustainable Goals. Take Action for the Sustainable Development Goals. Available online: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed on 8 December 2022).
2. Aleixo, A.M.; Azeiteiro, U.; Leal, S. Are the sustainable development goals being implemented in the Portuguese higher education formative offer? *Int. J. Sustain. High. Educ.* **2020**, *21*, 336–352. [CrossRef]
3. Alm, K.; Melén, M.; Aggestam-Pontoppidan, C. Advancing SDG competencies in higher education: Exploring an interdisciplinary pedagogical approach. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1450–1466. [CrossRef]
4. Risopoulos-Pichler, F.; Daghofer, F.; Steiner, G. Competences for Solving Complex Problems: A Cross-Sectional Survey on Higher Education for Sustainability Learning and Transdisciplinarity. *Sustainability* **2020**, *12*, 6016. [CrossRef]
5. United Nations Educational, Scientific and Cultural Organization (UNESCO). Education for Sustainable Development Goals. 2017. Available online: <http://unesdoc.unesco.org/images/0024/002474/247444e.pdf> (accessed on 11 November 2022).
6. Cavalcanti-Bandos, M.F.; Quispe-Prieto, S.; Paucar-Caceres, A.; Burrowes-Cromwel, T.; Rojas-Jiménez, H.H. Provision of education for sustainability development and sustainability literacy in business programs in three higher education institutions in Brazil, Colombia and Peru. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1055–1086. [CrossRef]
7. Albert, M.; Uhlig, M. Education for sustainable development at Chemnitz University of Technology. *Int. J. Sustain. High. Educ.* **2021**, *23*, 1229–1249. [CrossRef]
8. Kohl, K.; Hopkins, C.; Barth, M.; Michelsen, G.; Dlouhá, J.; Razak, D.A.; Bin Sanusi, Z.A.; Toman, I. A whole-institution approach towards sustainability: A crucial aspect of higher education's individual and collective engagement with the SDGs and beyond. *Int. J. Sustain. High. Educ.* **2021**, *23*, 218–236. [CrossRef]
9. Shabalala, L.P.; Ngcwangu, S. Accelerating the implementation of SDG 4: Stakeholder perceptions towards initiation of sustainable community engagement projects by higher education institutions. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1573–1591. [CrossRef]
10. Gupta, U.G.; Cooper, S. An integrated framework of UN and AACSB principles for responsible management education. *J. Glob. Responsib.* **2021**, *13*, 42–55. [CrossRef]
11. Lengyel, A.; Szőke, S.; Kovács, S.; Dávid, L.D.; Bába, B.; Müller, A. Assessing the essential pre-conditions of an authentic sustainability curriculum. *Int. J. Sustain. High. Educ.* **2019**, *20*, 309–340. [CrossRef]
12. Ávila, L.V.; Beuron, T.A.; Brandli, L.L.; Damke, L.I.; Pereira, R.S.; Klein, L. Barriers to innovation and sustainability in universities: An international comparison. *Int. J. Sustain. High. Educ.* **2019**, *20*, 805–821. [CrossRef]
13. Vázquez-Verdera, V.; Domingo, J.; Dura, E.; Gabaldón-Estevan, D.; López-Baeza, E.; López, S.M.; Meco-Tébar, F.; Rueda, S.; Serrano-Lara, J.J.; Signes-Soler, I.; et al. The Future We Want: A Learning Experience to Promote SDGs in Higher Education from the United Nations and University of Valencia. *Sustainability* **2021**, *13*, 8550. [CrossRef]
14. Weybrecht, G. How management education is engaging students in the sustainable development goals. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1302–1315. [CrossRef]
15. Filho, W.L.; Pallant, E.; Enete, A.; Richter, B.; Brandli, L.L. Planning and implementing sustainability in higher education institutions: An overview of the difficulties and potentials. *Int. J. Sustain. Dev. World Ecol.* **2018**, *25*, 713–721. [CrossRef]
16. Togo, M.; Gandidzanwa, C.P. The role of Education 5.0 in accelerating the implementation of SDGs and challenges encountered at the University of Zimbabwe. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1520–1535. [CrossRef]
17. Décamps, A.; Allal-Chérif, O.; Gombault, A. Fostering Knowledge of the Sustainable Development Goals in Universities: The Case of Sulitest. *Sustainability* **2021**, *13*, 13215. [CrossRef]

18. Strachan, S.M.; Marshall, S.; Murray, P.; Coyle, E.J.; Sonnenberg-Klein, J. Using Vertically Integrated Projects to embed research-based education for sustainable development in undergraduate curricula. *Int. J. Sustain. High. Educ.* **2019**, *20*, 1313–1328. [[CrossRef](#)]
19. Sierra, J.; Suárez-Collado, Á. The transforming generation: Increasing student awareness about the effects of economic decisions on sustainability. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1087–1107. [[CrossRef](#)]
20. Adhikari, D.R.; Shah, B.B. The state of the art in the incorporation of sustainable development goals in Nepalese Universities. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1373–1401. [[CrossRef](#)]
21. Gasperina, L.D.; Mazutti, J.; Brandli, L.L.; Rabello, R.D.S. Smart practices in HEIs and the contribution to the SDGs: Implementation in Brazilian university. *Int. J. Sustain. High. Educ.* **2021**, *23*, 356–378. [[CrossRef](#)]
22. Hübscher, C.; Hensel-Börner, S.; Henseler, J. Social marketing and higher education: Partnering to achieve sustainable development goals. *J. Soc. Mark.* **2021**, *12*, 76–104. [[CrossRef](#)]
23. Salvia, A.L.; Brandli, L.L.; Filho, W.L.; Rebelatto, B.G.; Reginatto, G. Energy sustainability in teaching and outreach initiatives and the contribution to the 2030 Agenda. *Int. J. Sustain. High. Educ.* **2020**, *21*, 1607–1624. [[CrossRef](#)]
24. Son-Turan, S. The HESFS for higher education funding, employment and sustainability. *Int. J. Sustain. High. Educ.* **2020**, *22*, 100–119. [[CrossRef](#)]
25. Hansen, B.; Stiling, P.; Uy, W.F. Innovations and challenges in SDG integration and reporting in higher education: A case study from the University of South Florida. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1002–1021. [[CrossRef](#)]
26. Mazutti, J.; Brandli, L.L.; Salvia, A.L.; Gomes, B.M.F.; Damke, L.I.; da Rocha, V.T.; Rabello, R.D.S. Smart and learning campus as living lab to foster education for sustainable development: An experience with air quality monitoring. *Int. J. Sustain. High. Educ.* **2020**, *21*, 1311–1330. [[CrossRef](#)]
27. Ferguson, T.; Roofe, C.G. SDG 4 in higher education: Challenges and opportunities. *Int. J. Sustain. High. Educ.* **2020**, *21*, 959–975. [[CrossRef](#)]
28. Edwards, S.; Ashida, A. Higher education in Japan: Internationalization, the Sustainable Development Goals and survivability. *Int. J. Comp. Educ. Dev.* **2020**, *23*, 104–119. [[CrossRef](#)]
29. Hogan, D.; O’flaherty, J. Addressing Education for Sustainable Development in the Teaching of Science: The Case of a Biological Sciences Teacher Education Program. *Sustainability* **2021**, *13*, 12028. [[CrossRef](#)]
30. Hueske, A.-K.; Pontoppidan, C.A.; Iosif-Lazar, L.-C. Sustainable development in higher education in Nordic countries: Exploring E-Learning mechanisms and SDG coverage in MOOCs. *Int. J. Sustain. High. Educ.* **2021**, *23*, 196–211. [[CrossRef](#)]
31. Manzoor, S.R.; Ho, J.S.Y.; Al Mahmud, A. Revisiting the ‘university image model’ for higher education institutions’ sustainability. *J. Mark. High. Educ.* **2020**, *31*, 220–239. [[CrossRef](#)]
32. Barros, M.V.; Puglieri, F.N.; Tesser, D.P.; Kuczynski, O.; Piekarski, C.M. Sustainability at a Brazilian university: Developing environmentally sustainable practices and a life cycle assessment case study. *Int. J. Sustain. High. Educ.* **2020**, *21*, 841–859. [[CrossRef](#)]
33. QualEnv. Change the Climate: Assuring the Quality of Environmental Strategies in Latin-American Higher Education. 2022. Available online: <https://qualenv.ucr.ac.cr/> (accessed on 21 December 2022).
34. Mawonde, A.; Togo, M. Implementation of SDGs at the University of South Africa. *Int. J. Sustain. High. Educ.* **2019**, *20*, 932–950. [[CrossRef](#)]
35. Renta-Davids, A.I.; Camarero-Figuerola, M.; Tierno-García, J.M. Assessment of the quality education awareness competence of pre-service educators using vignettes. *Sustainability* **2020**, *12*, 10203. [[CrossRef](#)]
36. Moyo, I.; Cele, H.M.S. Protected areas and environmental conservation in KwaZulu-Natal, South Africa: On HEIs, livelihoods and sustainable development. *Int. J. Sustain. High. Educ.* **2021**, *22*, 1536–1551. [[CrossRef](#)]
37. Spradley, J.P. *Participant Observation*; Waveland Press: Long Grove, IL, USA, 2016.
38. Dewalt, K.M.; DeWalt, B.R. *Participant Observation*; Rowman Altamira: Walnut Creek, CA, USA, 2002.
39. Sow, S.C. Sustainable Development—What Is There to Know and Why Should We Care? UNSSC | United Nations System Staff College. 2016. Available online: <https://www.unssc.org/news-and-insights/blog/sustainable-development-what-there-know-and-why-should-we-care> (accessed on 12 November 2022).
40. Mello-Oliveira, V.; Navega, F. *National Report on the Implementation of the 2030 Agenda for Sustainable Development, on the Occasion of the Voluntary National Review at the United Nations High-Level Political Forum on Sustainable Development*; Ministry of Foreign Affairs (Portuguese Republic): Lisbon, Portugal, 2017.
41. THE. Times Higher Education University Impact Rankings 2020 Metrics. 2020. Available online: https://www.timeshighereducation.com/sites/default/files/breaking_news_files/sdg_poster_p1_2020_s_updated_latest.pdf (accessed on 2 December 2022).
42. Gutierrez-Bucheli, L.; Kidman, G.; Reid, A. Sustainability in engineering education: A review of learning outcomes. *J. Clean. Prod.* **2021**, *330*, 129734. [[CrossRef](#)]
43. Babalola, A.; Olawuyi, D.S. Advancing Environmental Education for Sustainable Development in Higher Education in Nigeria: Current Challenges and Future Directions. *Sustainability* **2021**, *13*, 10808. [[CrossRef](#)]
44. Scholtz, B.; Calitz, A.; Haupt, R. A business intelligence framework for sustainability information management in higher education. *Int. J. Sustain. High. Educ.* **2018**, *19*, 266–290. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.