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Universities' journey towards sustainability- systematic literature review

Abstract

Purpose: This research aims to identify a sustainable university's key features. It is an essential step in tracing the topics discussed in the context of a sustainable university and their evolution in the scientific discourse.

Design/methodology/approach: This paper relies on a systematic literature review (SLR) conducted using two scholarly databases: Emerald and Scopus. The timeframe selected by the authors for reviewing the available sources spans from 2001 to 2021.

Findings: The analysis distinguished seven sustainable university categories, each revealing critical features of sustainable higher education. Each of these categories represents an intriguing area for in-depth analysis. The systematic literature review (SLR) reveals gaps requiring further scientific exploration.

Originality: SLR is a cornerstone of research synthesis and helps integrate scientific evidence from qualitative and quantitative published studies. Conducted research presents knowledge about university sustainability and can help scientists find research gaps.

Research limitations/implications: The performed literature review was determined by the choice of entries (keywords) to identify the scientific papers in the selected databases. Moreover, since the authors aimed to focus on peer-reviewed sources, this SLR did not include books and doctoral dissertations dealing with the studied issues. The results of the analysis can be used practically by both researchers and practitioners in the field of sustainable development. Identified scientific gaps become a potential research field, and practitioners interested in the transition toward sustainable development (SD) may contribute by accompanying universities in this journey.

Collaboration and networking with business stakeholders are critical vectors for spreading the idea of SD.

Society's growing concern for climate change requires accurate and specific actions from institutions. As entities educating future generations, universities have a unique role in transforming toward SD. Our findings allow us to get acquainted with the existing main activities undertaken by HEIs in this field and understand the importance of this topic for researchers.

Keywords: university sustainability, sustainable university, ESD, sustainable campus

JEL: M14, Q01, Q56

Introduction

Due to the growing concern for the condition of our polluted planet, the world of the 21st century is moving towards sustainable development (SD) in almost every sphere of human life and activity. Respecting stakeholders' expectations, including future generations, and their social, economic, and environmental needs is increasingly essential. Public institutions, businesses, and non-governmental organizations engage in various initiatives and policies of SD and, at every step, try to draw the attention of stakeholders to their responsible behaviour. Corporate social responsibility (CSR), SD, and corporate sustainability (CS), the three main interrelated concepts behind this, have become valuable organizational evaluation parameters. Higher education institutions (HEIs) are broadly claimed to be leaders of this global change, bearing in mind their fundamental role in society and the economy (Giesenbauer and Müller-Christ, 2020). Universities can commit to this global transformation in many ways, through research, education, and by giving a good example. Universities, graduates, and professors are expected to be at the forefront of developments impacting people, the planet, and organizations (Adams, 2013).

The higher education sector in many countries is going through unprecedented changes. These changes result from external and internal operating environments, which are having a significant impact on universities. Externally, changing government policy, ongoing growth in student and stakeholder demand for quality, and international developments in higher education are factors driving university change. Internally, change in leadership, renewed institutional strategy, and financial sustainability are some of the internal factors contributing to the changes within universities. The university stakeholders group is vast and includes current and future generations of students and staff, more and more environmentally aware. In reality, for more than 30 years, universities, like other organizations, have continued addressing their needs by practicing CSR to fulfill their accountability to the large public. In recent years, a visible shift toward SD has been observed.

This research aims to identify the critical features of a sustainable university over the last 20 years (2001-2021). It is an essential step in tracing the topics discussed in the context of a sustainable university and their evolution in the scientific discourse. To achieve this goal, the authors decided to employ the systematic literature review (SLR) method to uncover whether it is possible to determine some 'universal' features of what is commonly understood as a sustainable university.

2. Background and research context

As with most socio-economic phenomena, meanings, and applications, a sustainable university is defined in many ways. Most definitions relate to the three pillars of the university: education, research, and campus arrangements (Lukman and Glavič, 2007; Beringer and Adomßent, 2008; Krizek et al., 2012). In world literature, since the appearance of the first regulations and declarations on SD, scientists can observe an increased interest in this issue and a gradual transition from the concept of sustainable higher education to a sustainable university (Velazquez et al., 2006; Amaral et al., 2015).

To organize knowledge, it is worth referring to the pioneering version of the concept of SD, the one from the Brundtland Report "Our Common Future" (Brundtland, 1987, p.25), where sustainability is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This statement opens the discussion about the sustainable dimension of the university.

According to Velazquez et al. (2006, p.812), a sustainable university is one "that addresses, involves, and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles." Lozano (2006), followed by Lukman and Glavič (2006), identifies five dimensions of sustainable universities: SD education and research, operations, the external environment, evaluation, and reporting. Fischer et al. (2015) distinguish four critical fields of the impact of universities looking for sustainability achievements: community involvement, research, education, and operations. Evangelinos et al. (2009) argue that promoting sustainability in the context of universities can be achieved through teaching and research by diffusing knowledge about the importance of a sustainable economy, improving environmental management, and transferring knowledge to society in general. Labanauskis (2017) tries to answer whether a sustainable university results from SD or, instead, the SD construct comes from HEIs considerations. He concludes that a university's SD requires both top-down actions and those arising from bottom-up initiatives. In the top-down configuration, the emphasis is put on the aware leaders who can strongly influence a process of change in mindsets, practices, and curricula to incorporate sustainability into higher business education institutions (Lee and Schaltegger, 2014). The transformation toward a sustainable university does not occur similarly for all institutions, and there is no single path to sustainability (Kapitulčinová et al., 2016). Change leaders are needed to start and lead this process (Verhulst and Lambrechts, 2014), as most of the barriers in this area are related to the resistance of the people involved in the process. For Sterling (2013, p. 23), a sustainable university is one that, through its guiding ethos, perspectives and aspirations, management, research, curriculum, social connections, campus management, monitoring, and modus operandi, seeks to discover, develop, incorporate and manifest - critically and instinctively - the types of values, concepts, and ideas, challenges and approaches that emerge from the global discourse on SD.

One of the essential declarations directly involving universities in actively participating in activities for the benefit of the SD is the Talloires Declaration (1990). This declaration has been signed by 519 rectors and chancellors of universities from 58 countries on five continents.[1] This

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[1] As for February 2021, http://ulsf.org/96-2/

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crucial step has been followed by other vital indications and associations, including the Halifax Declaration (1991), Swansea Declaration (1993), Environmental Association for Universities and Colleges (EAUC) (1996), Association for the Advancement of Sustainability in Higher Education (AASHE) (2006), International Sustainable Campus Network (ISCN) (2007), and Nagoya Declaration (2014)[2]. The most relevant document creating broad context and, at the same time, calling for urgent universal involvement is the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015[3]. It contains 17 sustainable development goals (SDGs) and 169 tasks. HEIs are one of the critical stakeholders of this strategy. So far, few countries (Sweden, Denmark, and Finland) have achieved three-quarters of the UN's goals (Arora and Mishra, 2019). The Agenda 2030 guidelines have been considered in the renewed agenda for higher education (EC Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions on a renewed EU agenda for higher education, 2017), where leaders referring to the UN SDG 4 underlined the role of the HEIs in assuring inclusive and quality education for all. A recent report on the SDGs index based on the monitoring of the Sustainable Development Solutions Network (SDSN) has revealed that no country is in line to achieve the targets of 2030. The slowest progress has been noted on environmental goals (Sachs et al., 2019). Only a few countries (Sweden, Denmark, and Finland) have achieved three-quarters of the UN's goals (Arora and Mishra, 2019). The Agenda 2030 guidelines have been considered in the renewed agenda for higher education (EC, 2017), where leaders referring to the UN SDG 4 underlined the role of the HEIs in assuring inclusive and quality education for all.

Meanwhile, according to numerous studies, signing a declaration or joining an ongoing initiative does not necessarily lead to the implementation of the principles of sustainability (Clugston et al., 1999; Wright, 2002; Lidgren et al., 2006, Bekessy, 2007; Alshuwaikhat and Abubakar, 2008). In general, universities often feel unable to implement the declaration's principles and therefore do not make efforts toward their implementation (Grindsted, 2011). On the other hand, such declarations are treated as a political signal to the decision-making academics (Lidgren et al., 2006; Alshuwaikhat and Abubakar, 2008) and contribute to raising universities leaders' awareness of SD (Wright, 2002) and indicate increased attention paid by universities to sustainability in their education and research.

Bearing all that in mind, it is worth underlining that HEIs have an essential role in SD. They significantly influence future leaders, teachers, and future generations' parents. This influence goes directly through education, research, and knowledge transfer and indirectly through the example a university sets by managing and being accountable for its sustainability performance. Therefore, it is crucial to understand better HEIs' involvement, disclosure, and contribution to transforming our world to achieve SDGs. This paper aims to uncover and discuss SD through the lenses of university engagement. SD will continue to be a substantial international interest and concern. The results achieved over the past 20 years have been significant, but there are still many gaps and needs that need to be met- universities should play an essential role in this process.

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[2] Nagoya Declaration on Higher Education for Sustainable Development (2014), http://i.unu.edu/media/ias.unu.edu-jp/project/5800/HE_Declaration_FINAL_EN.pdf
[3] https://sdgs.un.org/goals

3. Research methods

This standalone systematic literature review (SLR) began by specifying the research questions for the study. The research protocol was established in the following step to ensure reproducibility, accountability, and transparency (Pickering and Byrne, 2014; Okoli and Schabram, 2010). Since the SLR should be considered a quality control process (Ordanini et al., 2009; Calabró et al., 2019), books, book chapters, revisions, and other non-referred publications were excluded from the analysis. The authors decided to narrow this research to two scientific databases, one widely corresponding to the discipline – Emerald, and the other one considered a reference database - Scopus. The keywords used for searching in both databases were 'sustainability' and 'university,' and the timespan was 2001-2021. Concerning the Emerald database, to ensure the research quality, the filter applied was "journal articles" in English, while in Scopus, the protocol utilized was "articles" in English. As the selected keywords used in Scopus first showed 5,969 results, the authors adjusted the keywords and conducted the following search query: "university sustainability" or "sustainable university." This comprehensive search yielded 727 peer-reviewed articles (Scopus 289 items and Emerald 438 items). Then, the results were examined for duplicated papers (simultaneously originating from both databases). Eventually, the total number of articles was 436, with 39 duplicates identified.

The selection of these knowledge bases appears pertinent, as they encompass various journals, broadening scientific discourse's scope. The PRISMA approach was employed to conduct the selection process and outline its successive phases: identification, screening, eligibility, and inclusion. To ensure the results' quality, both researchers participated in every step of the research protocol.

Figure 1. PRISMA flowchart
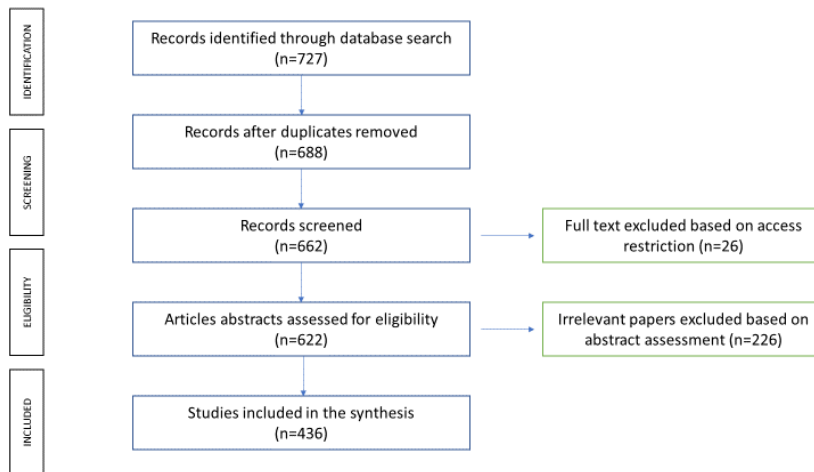
Source: Authors' elaboration based on Moher et al. (2009)

This research was performed in February-May 2022. For the main qualitative research steps, the coding approach has been used.

4. Results

Our research shows that a genuine interest in university sustainability started in 2010, when (as shown in Figure 2) the number of published articles intensively grew. The interest is visible today, and researchers from all over the world study their universities' sustainability.

Figure 2. The number of articles in specific years
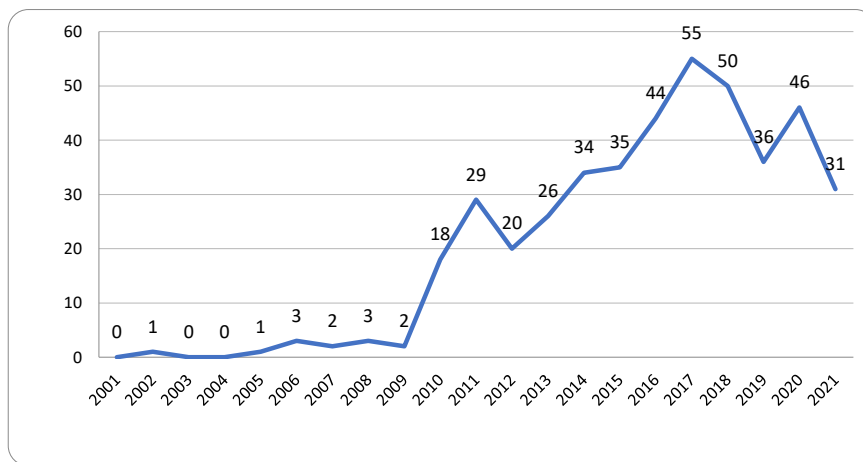
Source: Authors' elaboration (n=436)

Our research has identified 107 journals that published articles on university sustainability. The most popular journals for authors wanting to publish their research on this topic are presented in Table 1.

Table 1. Number of articles published in specific journals most relevant to the studied topic

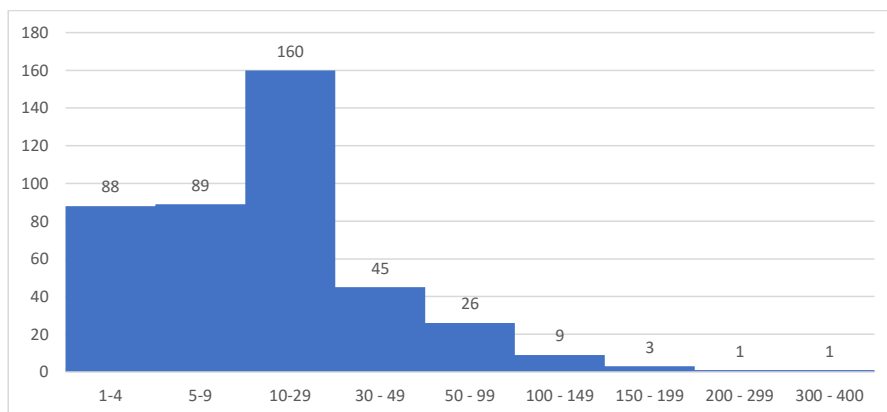| Journal name	Number of articles
International Journal of Sustainability in Higher Education	204
Sustainability	40
Journal of Cleaner Production	23
Sustainability Accounting, Management, and Policy Journal	14
Amfiteatru Economic	10
Library Management	7
Social Responsibility Journal	6
International Journal of Educational Management	5
Journal of Management Development	5
Management of Environmental Quality: An International Journal	5
Accounting, Auditing and Accountability Journal	3

Environmental Education Research	3
Facilities	3
Journal of Facilities Management	3
Journal of Global Responsibility	3
Journal of Organizational Change Management	3

Source: Authors' elaboration

The databases have shown 90 more journals, among which nine had published two articles on the topic, and 81 journals with one article per journal.

There were significant disproportions in the citation of the studied articles. Figure 3 presents the number of papers cited 1-4 times, 5-9 times, 10-29 times, etc. Only one article was mentioned in the 300 – 400 and 200-299 range. The most significant part of our sample (160 papers) have between 10 and 29 citations.

Figure 3. Number of articles per citation number scale

Source: Authors' elaboration (n= 436)

The authors also aimed to identify the journals that published the most cited articles (those with over 100 citations), presented in Table 2. Among the fourteen most cited papers (with more than 100 citations), eight are published in the *International Journal of Sustainability in Higher Education*, four in the *Journal of Cleaner Production*, one in the *Clean Technologies and Environmental Policy*, and one in the *Journal of Facilities Management*.

Table 2. The most cited articles in our database

Journal	Title	Authors	Citations
Journal of Cleaner Production	Sustainable university: what can be the matter?	Velazquez, L., Munguia, N., Platt, A., Taddei, J.,	348
Journal of Facilities Management	Real-world learning opportunities in sustainability: from classroom into the real world	Brundiers, K., Wiek, A., Redman, Ch. L.	269

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International Journal of Sustainability in Higher Education	The state of sustainability reporting in universities	Lozano, R.	**196**
Journal of Cleaner Production	A tool for a Graphical Assessment of Sustainability in Universities (OASU)	Lozano, R.	**195**
Journal of Cleaner Production	Academic staff development as a catalyst for curriculum change towards education for sustainable development: An output perspective	Barth, M., Rieckmann, M.	**174**
International Journal of Sustainability in Higher Education	Achieving campus sustainability: top-down, bottom-up, or neither?	Brinkhurst, M., Rose, P., Ackerman, G.M.J.D.	**131**
International Journal of Sustainability in Higher Education	The state of sustainability reporting at Canadian universities	Fonseca, A., Macdonald, A., Dandy, A., Valenti, P.	**123**
International Journal of Sustainability in Higher Education	The future we want: Key issues on sustainable development in higher education after Rio and the UN decade of education for sustainable development	Leal Filho, W., Manolas, E., Pace, P.	**122**
Journal of Cleaner Production	Going beyond the rhetoric: system-wide changes in Universities for sustainable societies	Ferrer-Balas, D., Lozano, R., Huisingh, D., Buckland, H., Ysern, P., Zilahy G.	**121**
International Journal of Sustainability in Higher Education	Quest for a sustainable university: a review	Amaral, L.P., Martins, N., Gouveia, J.B.	**117**
International Journal of Sustainability in Higher Education	University presidents' conceptualizations of sustainability in higher education	Wright, T.	**117**
Clean Technologies and Environmental Policy	What are the critical elements of a sustainable university?	Lukman, R., Glavič, P.	**116**
International Journal of Sustainability in Higher Education	Mirroring, Gestaltswitching and transformative social learning: Stepping stones for developing sustainability competence	Wals, A.E.J.	**116**
International Journal of Sustainability in Higher Education	College students' perceptions of campus sustainability	Emanuel, R., Adams, J.N.	**110**

Source: Authors' elaboration as of June 2022

The coding procedure was conducted in a few steps. First, the article themes were coded by primarily used codes (transition, ESD – education for SD, sustainable campus, measuring, reporting, communicating, project, sustainable city, student perceptions, staff perceptions, MBA, sustainable library, online, accreditation, leadership, managing), based on the first overview of the abstracts and keywords of the studied articles. Subsequently, the authors verified the codes and made adjustments to align them more effectively with the content of the articles. After the second coding round, the following codes were agreed upon: attitudes,

collaboration, disclosure, ESD, governance, Higher Education (HE) in transition, and sustainable campus. On both rounds of coding, all articles and codes were double-checked to ensure accountability and transparency. The number of articles defined by specific codes is presented in Figure 4.

Figure 4. Number of articles classified as specific codes
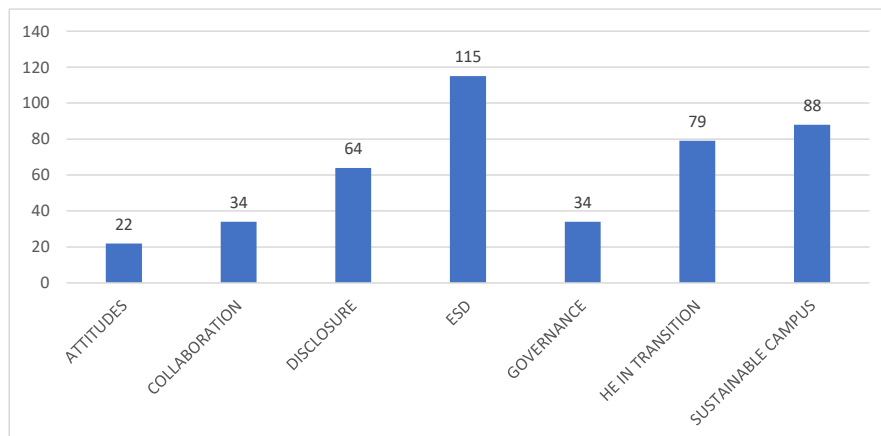
Source: Authors' elaboration (n=436)

Education for SD is the most popular research topic. It is also clearly connected with the other research areas, as education and mindset shift are crucial in all the dimensions to pursue sustainable university development.

Discussion

Every single day, the broken connections between humans and nature become more pronounced. Therefore, it is increasingly vital for HEIs to break down the walls that divide disciplines so that students leave these institutions with the skills to collaborate and build consensus. The identification of seven categories of research topics, which interrelate and establish clear pathways to acquiring new knowledge about the pursuit of university sustainability, enabled the authors to gain a more comprehensive understanding of research trends and assess the current state of knowledge.

1. ATTITUDES- not only about the education

In recent years, universities have increased their awareness of and commitment to sustainable practices. Student organizations and special events have emerged to focus on sustainable transportation, construction, energy, waste, food, water, and landscaping practices. The study by Emanuel and Adams (2011) focuses on students' understanding of the term and concept of sustainability in the university campus context. According to this study, an adequate knowledge of sustainability is an essential first step toward initiating, participating in, or advocating for intentional sustainability behaviors. Researchers conclude that rather than wait for off-campus initiatives, college administrators must talk about, commit to, and lead the way in establishing sustainable practices on campus. The paper by Fisher and McAdams (2015) indicates that the type and not the number of courses students take significantly impacts how students

conceptualize this term. This suggests that mere exposure to a particular theme in a class, rather than continued exposure to courses related to sustainability, is more important in shaping students' perceptions. The findings of the descriptive study conducted by Al-Naqbi and Alshannag (2018) confirm that a high level of ESD may support graduates in integrating a responsible approach into their professions.

On the other hand, the findings of the research by Eagle et al. (2015) reflect naïve awareness of the potential impact of individual contributions to sustainability and environmental challenges. They reveal a tendency among individuals to regard major issues as beyond personal control and to view solutions as being the responsibility of others. This is coupled with a reluctance to consider significant lifestyle changes. Meanwhile, shaping attitudes is not only a matter of ESD. Results from focus group discussions revealed various beliefs and behaviors related to the connection between food, food production, and the environment. The survey conducted by Campbell-Arvai (2015) confirmed these results. Still, it indicated a preference for such actions as recycling and reducing food waste in contrast to such alternatives as reducing meat consumption or avoiding processed foods. These results suggest that educational campaigns could strengthen beliefs about the food-environment connection and help empower students to take a greater variety of actions to reduce their food-related environmental footprint (Campbell-Arvai, 2015).

Levy and Marans (2012) recommended education and training programs to strengthen campus community members' issue-based and procedural knowledge. They advocated specific engagement strategies for building campus community members' abilities and providing social and material incentives to behave environmentally correctly.

The results of the study by Vuorio et al. (2018) show that attitude toward sustainability and perceived entrepreneurial desirability enhance sustainability-oriented entrepreneurial intentions. Moreover, attitudes toward sustainability are positively impacted by altruism, while intrinsic and extrinsic rewards drive perceived entrepreneurial desirability. Fichter and Tiemann (2018) investigate university support systems for sustainable entrepreneurship by looking for triggers of the sustainable HEIs transition. They analyze factors that influence the emergence and implementation of university support systems for sustainable entrepreneurship.

The study's results by Murray (2018) suggest that students are working to increase the uptake of sustainability in higher education (SHE) through multi-stakeholder collaborations, collective action, and interdisciplinarity. The review identifies a lack of engagement with intersectionality (environmental and social issues). It emphasizes the necessity to steer future research in the field of SHE, urging for more extensive comparative research studies and syntheses to enhance our comprehension of student-led initiatives (Murray, 2018).

2. COLLABORATION- networking with stakeholders

Numerous factors drive growth and transformation within higher education. Among these sustainability drivers that can influence the transition of HEIs are partnerships with stakeholders and communities, harnessing the institution's social capital. The alliances established by the university can create opportunities for funding for sustainable operations and support in the community for applied research and community engagement that can be adapted by others (Bilodeau et al., 2014). Universities play an essential role in entrepreneurial ecosystems. Theodoraki et al. (2018), examining the university social capital, propose that focusing on the

cognitive dimension will strengthen the relationships among ecosystem members. Focusing on the relational dimension allows ecosystem members to maintain complementarity, trust, and constructive engagement while the ecosystem evolves. Knowledge transfer partnerships (KTPs) established by universities have the potential to be pivotal in fostering the growth of local authorities tasked with building sustainable cities and societies. These partnerships enhance the expertise and abilities of communities and their industry collaborators and contribute to the overall development of the mechanism for improving environmental, social, and economic sustainability (Hope, 2016). The projects students develop in entrepreneurship competitions may become a source of tools and solutions entrepreneurs apply in their quest for sustainability (Munro et al., 2016).

There is also a visible claim for more cross-institutional national and international cooperation to achieve better universities' SD agenda (Naeem and Peach, 2011). Universities can be the leading providers of ESD, but other education providers, such as professional accounting bodies, might also need to manage the development of ongoing education processes (Sharma and Kelly, 2014). Moreover, a unique format of cooperation is underlined- the one between the organizations such as Global Reporting Initiative (GRI) and the United Nations initiative - Principles for Responsible Management Education (PRME), enabling them to deliver the supplement for university graduates ready for a changing world. This might increase the number of PRME signatories (Adams and Petrella, 2010).

Collaboration with local businesses for internships is the foundation of a practical learning experience. This aspect also seems necessary for SD to spread to universities and organizations. Students develop competence in implementing a strategic intervention, which is better acquired through an internship (Meza Rios et al., 2018).

A study by Dupont et al. (2015) shows a concrete regional university strategy involving user-centric design, collaborative processes, citizens' workshops, and new financial and organizational answers enabling collaboration between private companies and public institutions. Too and Bajracharya (2015) developed the 6-P framework to make this strategy successful, suggesting that psychological, physical, personal, public perception, price, and policy factors are essential for engaging the community in sustainable development.

3. DISCLOSURE- measuring and communicating SD

Organizations increasingly disclose social, environmental, economic, safety, and health performance in response to society's growing accountability expectations. This trend, however, in slow motion, is also visible in the case of HEIs. This is mainly due to the self-awareness of the need for the moment. Still, it is also a consequence of the desire to improve the position of universities in national or international rankings and, thus, the need to undergo accreditation processes. The desire to attain such accreditations leads to implementing and disclosing several specific changes (Cooper et al., 2014).

Lozano (2011) showed that sustainability reporting in universities is still in its early stages (both in the numbers of institutions reporting and in the level of reporting) when compared to sustainability reporting in corporations. This is also confirmed by Adams (2013), who identified some specific factors of this weak readiness to accountability, including, among other things, unimaginative leadership, a lack of focus on the business case, and little push from the stakeholders. Both authors claim that sustainability disclosure by universities might help

incorporate and institutionalize this phenomenon. The variety of approaches and their eco-efficiency-centric scope result in the limited potential of these documents as a tool to inform sustainability-oriented decisions (Fonseca et al., 2011). This was ultimately confirmed by Martins and Borges (2015) and Fischer et al. (2015).

Berzosa et al. (2017) state that a relatively comprehensive assessment of university sustainability can be reached by implementing several evaluations in the same university. This implies a considerable effort in terms of time and cost but assures a better diagnosis and specific measures towards sustainability, avoiding the singular approach of an individual tool. After having this experience, it is considered feasible to use more than one tool when making a diagnosis and an accurate plan. Sayed et al. (2013), after examining some of the specific benchmarking tools in the Canadian context, recommend STARS (Sustainability Tracking Assessment and Rating System) as being the most effective in the sustainability context. This has been later confirmed in the European (Netherlands) reality (Alghamdi et al., 2017).

Meanwhile, Disterheft et al. (2015) claim that more is needed to assess only the decision-makers. Still, there is a visible need for paying more attention to the more comprehensive participatory approaches, including other groups of stakeholders, directed toward sustainability implementation in HEIs.

On the other hand, the research results by Djordjevic and Cotton (2011) suggest some particular difficulties in successfully communicating messages about sustainability by universities. They link this to the need for an agreed definition or shared understanding of sustainability and potential individual differences in values and attitudes that may act as a perceptual filter of the message. Therefore, disclosure activity is not necessarily limited to formal reporting but can be practiced using social media (Hamid et al., 2017).

4. ESD- educating future leaders

There is an ongoing debate on the possible ways of teaching sustainability and responsibility (Larrán Jorge et al., 2017). Some researchers argue that it is best taught as a stand-alone, which allows for a comprehensive focus on the complexity of these issues (Stubbs and Schapper, 2011), and some others that it should be embedded in a wide range of courses for strengthening students' awareness and reasoning (Ghoshal, 2005; Blanthorne et al., 2007). Indeed, nowadays, students should receive a message in which, apart from the noble goals of responsibility and sustainability, there will also be information about the possible benefits of taking such actions, which, among other things, legitimize business in the modern world (Snelson-Powell et al., 2016).

Although many universities offer support for education for sustainability, research evidence indicates that most curriculum initiatives in this area have been driven by individual faculty. This approach should change (Stubbs and Schapper, 2011). Based on their experience and variety of educational content, teachers from various scientific fields should be able to build courses seeking, on the one hand, to develop an understanding of the sustainability problems from an environmental, social, and economic perspective (knowledge component), using a series of assigned readings, lectures, audiovisual, and discussion forums outlining the three dimensions of sustainability and on the other hand, strengthening students skills through interactive workshops and discussions. This interdisciplinary approach is also emphasized by Bacon et al. (2011), who claim that a multidisciplinary sustainability curriculum is urgently

needed. An emphasis on student-led campus and community projects is a tangible way to integrate a sustainability curriculum because students focus on local problem-solving situations.

Meanwhile, education is an essential condition but does not guarantee change. The successful change strategy consists of three crucial building blocks: create a neutral arena, build on individual engagement and involvement, and communicate a clear commitment from the management team. The process yielded positive results at Chalmers University, fostering a sense of shared responsibility and initiating learning processes among numerous individuals by engaging various educational stakeholders at the university level. Thus, to guarantee change, learning has to provide deep knowledge of the basics of sustainability and build students' capacity to absorb appropriate SD competencies for their future professional practice (Holmberg et al., 2012; Segalàs et al., 2012).

As mentioned before, effective ESD requires well-prepared and engaged teaching staff. Therefore there is also a need for curricula explicitly developed for academic staff that will not only facilitate the personal competence development of the participating academic staff and change their teaching practice but also influence the general organizational development of the university (Barth and Rieckmann, 2012).

However, besides developing teaching skills, the well-designed program should also enhance collaborative research between academic researchers and practitioners. The stepwise process combined with additional principles allows for building competencies such as problem-solving, linking knowledge to action, and collaborative work while applying concepts and methods from the field of sustainability (Brundiers et al., 2010).

5. GOVERNANCE- HEIs transition managers and leaders

Universities are expected to support SD by integrating sustainability into the curriculum, performing research, and community service activities. All these spheres need to be supported by specific policies, enabling lecturers and students to cooperate (Ariesanti et al., 2018). To foster institutional SD, investment in education for sustainability is crucial (Leal Filho et al., 2020). Education, research, and community outreach must be supported by general governance and operations (waste management, energy consumption, transportation, and facility management) (Vaughter et al., 2016). Governmental institutions and legal regulations should support a successful university sustainability strategy. So far, European universities have yet to receive much help in those terms, mainly relying on their know-how and assets (Farinha et al., 2018).

Universities are increasingly taking leadership in SD, engaging in dialogue, and reflecting on necessary changes. They communicate with the public and campus communities, treating them not only as the target audience for initiatives but also as the sources of input for sustainability initiatives (Vaughter et al., 2016). As universities are agents of change, they can spread knowledge, values, and norms to educate society, inspire innovation, and help solve social and environmental problems. Some of them create innovative strategies in the quest for a sustainable future. They require planning, policy, procedure formulation, benchmarking, performance reviews, management interventions, and statistical analyses (Barnard et al., 2016).

University leaders need to think long-term, innovate and manage the complexity of a complex system to ensure SD. This has to be followed by interdisciplinarity, knowledge about their institutions, and global sustainability challenges (Leal Filho et al., 2020). Training university

leaders in organizational environmental change will enable them to be clear and specific in communicating their organization's values, priorities, and goals (Robertson and Barling, 2017).

United Nations Sustainable Development Goals (SDGs) also play an essential role in managing university sustainability. Although many higher education institutions have already implemented SDGs and three-pillar (economic, environmental, and social) orientation in their policies (Vaughter et al., 2016), a greater engagement in attaining them is necessary, and specific measurements must be implemented to monitor the progress (Leal Filho et al., 2020). Sustainability strategies can only work correctly by defining specific instruments for monitoring, analyzing, and controlling university performance. Sustainability audits, necessary to stimulate progress, are focused on the social and environmental improvement of the university (including a review of policies and practices) (Velazquez et al., 2006).

6. HE IN TRANSITION- universities on their journey toward SD

Becoming a sustainable university is challenging for various reasons. First, a university is a complex network of stakeholders (internal and external), which calls for a systemic approach. The university's role within the system and its legacy are still under debate, and the expectations towards universities are unclear. Also, evaluating and measuring the university's impact on the ecosystem and social systems is challenging. University transformation is a fundamental shift in its mindset and values, and finally becomes embedded in the university DNA (Adams et al., 2018). If the sustainability implementation procedures are aligned with the tools used to assess performance in this field, managing sustainability is facilitated, and assessment and reporting are enabled (Amaral et al., 2015).

Research shows that the main barrier to the SD of a university is poor awareness and resistance to change (Wright, 2010). An institutional Sustainability Coordinator should be appointed to facilitate transformation toward a more sustainable university and be responsible for curriculum changes and operational modifications. This transformation is usually dominated by project-based initiatives, recognizing that a university is an open and dynamic system, being able to learn, evolve, and change (Beringer and Adomßent, 2008).

Krizek et al. (2011) identify four phases of university approaches to campus sustainability. First, the grassroots initiatives and champions advocate for sustainability-related services and policies. If accepted – the second phase begins, in which university leadership agrees with some aspects of sustainability and implements sustainability programs related to cost savings or building a university brand. In the next phase, university leaders openly promote a sustainability vision, include it in the strategic plan, and articulate a clear vision for the future. The last step is characterized by a fully self-actualized and integrated campus community, focusing on interdisciplinary cooperation and systems thinking, where sustainability is an integral element of the whole system.

There are a few approaches that may lead to a better transition towards a sustainable university: communicating sustainability as a core value, creating clearly defined goals and responsibilities, learning from professional organizations and leaders in this field, fostering an environment of innovation, appreciating and rewarding sustainability leaders, value measurable goals, and make clear vision, mission, and values (Krizek et al., 2012).

7. *SUSTAINABLE CAMPUS- greening HEIs infrastructure and responsible resources management*

Organizations today (including higher education institutions) are expected to balance their economic outcomes with environmental and social impacts. Sustainability practices are increasingly common on university campuses (Chen et al., 2011; Too and Bajracharya, 2015). Campus sustainability management relies on an organizational culture committed to innovation and continuous improvements (Posner and Stuart, 2013).

Green campus operation measures and campus administration significantly contribute to achieving environmental sustainability (James and Card, 2012). Choosing an appropriate environmental management system (EMS) is a complex issue, as there are numerous formal certified and informal uncertified models to choose from. The framework will require an environmental officer fully dedicated to implementing and reporting environmental progress and an audit team (with either internal or external consultants) (Clarke and Kouri, 2009).

Sustainability-driven changes can be either down-top (often initiatives are student-led) or top-down (inspired by university leaders). One of the significant obstacles in both attitudes is the bureaucratic distance from implementation (Brinkhurst et al., 2011). Those changes are also closely related to student perception of following sustainable living practices and behavior, so visible in student accommodation (Wyton and Chaplin, 2014).

Numerous studies delve into on-campus mobility due to the substantial number of students and staff who commute to university facilities by car in developed nations (Eluru et al., 2012). This issue is studied from different points of view: carbon footprint, parking spaces, transit routes on campus, public transportation, on-campus transportation, and drivers' motivations.

Responsible resource management is necessary for sustainability pursuit. Reducing food waste and optimizing food units are essential for a sustainable campus. Portion size and energy density, number of meals prepared and served, the value of leftovers, and food workers' training are topics investigated to minimize food waste and help planning (Ferreira et al., 2013). If done rationally, water usage and conservation in university facilities and on campuses can be a powerful way to reach sustainability and contribute to financial savings (Marinho et al., 2014). These strategies for resource management need to be implemented with the active participation of the users – faculty, and students. Cooperative projects with external partners can also help to professionalize the strategy.

Conclusions

This paper offers an overview of the research interests of scientists studying SD at universities. It has also described the presently identified development of universities. It helps to understand conceptualizations of university sustainability, the role that universities play in SD, their transition, and strategies in the sustainability journey. The findings show that universities worldwide are paying more and more attention to the importance of sustainability in education, research, and operations. Social and environmental changes can only involve internal and external stakeholders, stimulating creativity and innovation in this field.

A systematic literature review was conducted to investigate university sustainability's current state of knowledge. The authors coded aggregated 436 articles from Scopus and Emerald databases in the following codes: HE in transition, governance, assessment and disclosure,

collaborations, ESD, attitudes, and sustainable campus. This allowed the authors to better identify the current trends in university sustainability research.

While the analysis shows a great variety of investigated topics, it also reveals that sustainability will be an important strategic issue for a growing number of universities. Therefore, further research will be necessary to examine how university strategies and operations evolve toward university sustainability.

References

Adams, A. C. (2013). Sustainability reporting and performance management in universities. *Sustainability Accounting, Management and Policy Journal*, 4(3), 384–392. https://doi.org/10.1108/SAMPJ-12-2012-0044.

Adams, A. C., and Petrella, L. (2010). Collaboration, connections, and change. *Sustainability Accounting, Management and Policy Journal*, 1(2), 292–296. https://doi.org/10.1108/20408021011089284.

Adams, R., Martin, S., and Boom, K. (2018). University culture and sustainability: Designing and implementing an enabling framework. *Journal of Cleaner Production*, *171*, 434-445. https://doi.org/10.1016/j.jclepro.2017.10.032.

Alghamdi, N., den Heijer, A., and de Jonge, H. (2017). Assessment tools' indicators for sustainability in universities: an analytical overview. *International Journal of Sustainability in Higher Education*, 18(1), 84–115. https://doi.org/10.1108/IJSHE-04-2015-0071.

Al-Naqbi, A. K., and Alshannag, Q. (2018). The status of education for sustainable development and sustainability knowledge, attitudes, and behaviors of UAE University students. *International Journal of Sustainability in Higher Education*, 19(3), 566–588. https://doi.org/10.1108/IJSHE-06-2017-0091.

Alshuwaikhat, H., Abubakar, I. (2008), An integrated approach to achieving campus sustainability: assessment of the current campus environmental management practices. *Journal of Cleaner Production*, 16: 1777-1785.

Amaral, L. P., Martins, N., and Gouveia, J. B. (2015). Quest for a sustainable university: a review. *International Journal of Sustainability in Higher Education*, *16*(2), 155-172. https://doi.org/10.1108/ijshe-02-2013-0017.

Ariesanti, A., Ganis Sukoharsono, E., Irianto, G., and Erwin Saraswati, E. (2018). The practice of Sustainability in Higher Education. *International Journal of Engineering and Technology*, *7*(3.25). https://doi.org/10.14419/ijet.v7i3.25.17473.

Arora, N.K., Mishra, I. (2019), United Nations Sustainable Development Goals 2030 and environmental sustainability: race against time. *Environmental Sustainability*, 2, 339–342.

Bacon, C. M., Mulvaney, D., Ball, T. B., Melanie DuPuis, E., Gliessman, S. R., Lipschutz, R. D., and Shakouri, A. (2011). The creation of an integrated sustainability curriculum and student praxis projects. *International Journal of Sustainability in Higher Education*, 12(2), 193–208. https://doi.org/10.1108/14676371111118237.

Barnard, Z., de, S., Alex Tubawene Kanyimba, L., and Van der Merwe, D. (2016). Innovative management for organizational sustainability in higher education. *International Journal of Sustainability in Higher Education*, *17*(2), 208-227. https://doi.org/10.1108/ijshe-08-2014-0120.

Barth, M., Rieckmann, M. (2012). Academic staff development as a catalyst for curriculum change towards education for sustainable development: An output perspective. *Journal of Cleaner Production*, 26, 28-36. doi 10.1016/j.jclepro.2011.12.011.

Bekessy, S., Samson, K., Clarkson R. (2007), The failure of non-binding declarations to achieve university sustainability – a need for accountability. *International Journal of Sustainability in Higher Education*, 8(3), 301-316.

Beringer, A., and Adomßent, M. (2008). Sustainable university research and development: inspecting sustainability in higher education research. *Environmental Education Research*, *14*(6), 607-623. https://doi.org/10.1080/13504620802464866.

Berzosa, A., Bernaldo, M.O., Fernández-Sanchez, G. (2017). Sustainability assessment tools for higher education: An empirical comparative analysis. *Journal of Cleaner Production*, Volume 161, 812-820. https://doi.org/10.1016/j.jclepro.2017.05.194.

Bilodeau, L., Podger, J., and Abd-El-Aziz, A. (2014). Advancing campus and community sustainability: strategic alliances in action. *International Journal of Sustainability in Higher Education*, 15(2), 157–168. https://doi.org/10.1108/IJSHE-06-2012-0051.

Blanthorne, C., Kovar, S.E. and Fisher, D.G. (2007), Accounting Educators' Opinions about Ethics in the Curriculum. An Extensive View. *Issues in Accounting Education*, 22(3), 355–390.

Brinkhurst, M., Rose, P., Maurice, G., and Ackerman, J. D. (2011). Achieving campus sustainability: top-down, bottom-up, or neither? *International Journal of Sustainability in Higher Education*, *12*(4), 338-354. https://doi.org/10.1108/14676371111168269.

Brundiers, K., Wiek, A., and Redman, C. L. (2010). Real-world learning opportunities in sustainability: from the classroom into the real world. *International Journal of Sustainability in Higher Education*, 11(4), 308–324. https://doi.org/10.1108/14676371011077540.

Brundtland, G. (1987). Report of the World Commission on Environment and Development: Our Common Future. United Nations General Assembly document A/42/427.

Calabrò, A., Vecchiarini, M., Gast, J., Campopiano, G., De Massis, A., and Kraus, S. (2019). Innovation in family firms: A systematic literature review and guidance for future research. *International Journal of Management Reviews*, 21(3), 317–355.

Campbell-Arvai, V. (2015). Food-related environmental beliefs and behaviours among university undergraduates. *International Journal of Sustainability in Higher Education*, 16(3), 279–295. https://doi.org/10.1108/IJSHE-06-2013-0071.

Chen, C. J., Gregoire, M. B., Arendt, S., and Shelley, M. C. (2011). College and university dining services administrators' intention to adopt sustainable practices. *International Journal of Sustainability in Higher Education*, *12*(2), 145-162. https://doi.org/10.1108/14676371111118200.

Clark, B., and Button, C. (2011). Sustainability transdisciplinary education model: interface of arts, science, and community (STEM). *International Journal of Sustainability in Higher Education*, 12(1), 41–54. https://doi.org/10.1108/14676371111098294.

Clarke, A., and Kouri, R. (2009). Choosing an appropriate university or college environmental management system. *Journal of Cleaner Production*, *17*(11), 971-984. https://doi.org/10.1016/j.jclepro.2009.02.019.

Clugston, R., Calder, W. (1999), Critical Dimensions of Sustainability in Higher Education. In Sustainability and University Life (Ed.), Walter Leal Filho, Lang Peter XXX.

Cooper, S., Parkes, C., and Blewitt, J. (2014). Can accreditation help a leopard change its spots? *Accounting, Auditing and Accountability Journal*, 27(2), 234–258. https://doi.org/10.1108/AAAJ-07-2012-01062.

Disterheft, A., Azeiteiro, U. M., Leal Filho, W., and Caeiro, S. (2015). Participatory processes in sustainable universities – what to assess? *International Journal of Sustainability in Higher Education*, 16(5), 748–771. https://doi.org/10.1108/IJSHE-05-2014-0079.

Djordjevic, A., and Cotton, D. R. E. (2011). Communicating the sustainability message in higher education institutions. *International Journal of Sustainability in Higher Education*, 12(4), 381–394. https://doi.org/10.1108/14676371111168296.

Dupont, L., Morel, L., and Guidat, C. (2015). Innovative public-private partnership to support Smart City: the case of "Chaire REVES." *Journal of Strategy and Management*, 8(3), 245–265. https://doi.org/10.1108/JSMA-03-2015-0027.

Eagle, L., Low, D., Case, P., and Vandommele, L. (2015). Attitudes of undergraduate business students toward sustainability issues. *International Journal of Sustainability in Higher Education*, 16(5), 650–668. https://doi.org/10.1108/IJSHE-04-2014-0054.

EC Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a renewed EU agenda for higher education, COM/2017/0247 final, retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017DC0247.

Eluru, N., Chakour, V., and El-Geneidy, A. M. (2012). Travel mode choice and transit route choice behavior in Montreal: insights from McGill University members commute patterns. *Public Transport*, *4*(2), 129-149. https://doi.org/10.1007/s12469-012-0056-2.

Emanuel, R., and Adams, J. N. (2011). College students' perceptions of campus sustainability. *International Journal of Sustainability in Higher Education*, 12(1), 79–92. https://doi.org/10.1108/14676371111098320.

Evangelinos, K. I., Jones, N., Panoriou, E. M. (2009), Challenges and opportunities for sustainability in regional universities: a case study in Mytilene, Greece. *Journal of Cleaner Production*, 17(12): 1154–1161.

Farinha, C. S., Azeiteiro, U., and Caeiro, S. S. (2018). Education for sustainable development in Portuguese universities. *International Journal of Sustainability in Higher Education*, *19*(5), 912-941. https://doi.org/10.1108/ijshe-09-2017-0168.

Ferreira, M., Liz Martins, M., and Rocha, A. (2013). Food waste as an index of foodservice quality. *British Food Journal*, *115*(11), 1628-1637. https://doi.org/10.1108/bfj-03-2012-0051.

Fichter, K., Tiemann, I. (2018). Factors influencing university support for sustainable entrepreneurship: Insights from explorative case studies. *Journal of Cleaner Production*, Volume 175, 512-524, https://doi.org/10.1016/j.jclepro.2017.12.031.

Fischer, D., Jenssen, S., Tappeser, V.(2015). Getting an empirical hold of the sustainable university: a comparative analysis of evaluation frameworks across 12 contemporary sustainability assessment tools. *Assess.Eval.High.Educ.*40(6), 785–800.

Fisher, P. B., and McAdams, E. (2015). Gaps in sustainability education. *International Journal of Sustainability in Higher Education*, 16(4), 407–423. https://doi.org/10.1108/IJSHE-08-2013-0106.

Fonseca, A., Macdonald, A., Dandy, E., and Valenti, P. (2011). The state of sustainability reporting at Canadian universities. *International Journal of Sustainability in Higher Education*, 12(1), 22–40. https://doi.org/10.1108/14676371111098285.

Ghoshal, S. (2005), Bad Management Theories are Destroying Good Management Practices. Academy of Management Learning and Education, 4, 75-91. http://dx.doi.org/10.5465/AMLE.2005.16132558.

Giesenbauer, B., Müller-Christ, G. (2020), University 4.0: Promoting the Transformation of Higher Education Institutions toward Sustainable Development. *Sustainability* 12(3371), 1-27.

Grindsted, T. (2011), Sustainable Universities – From Declarations on Sustainability in Higher Education to National Law, Environmental Economics, 2(2), 29-36.

Hamid, S., Ijab, M. T., Sulaiman, H., Md. Anwar, R., and Norman, A. A. (2017). Social media for environmental sustainability awareness in higher education. *International Journal of Sustainability in Higher Education*, 18(4), 474–491. https://doi.org/10.1108/IJSHE-01-2015-0010.

Holmberg, J., Lundqvist, U., Svanström, M., and Arehag, M. (2012). The university and transformation towards sustainability. *International Journal of Sustainability in Higher Education*, 13(3), 219–231. https://doi.org/10.1108/14676371211242544.

Hope, A. (2016). Creating sustainable cities through knowledge exchange. A case study of knowledge transfer partnerships. *International Journal of Sustainability in Higher Education*, 17(6), 796-811.

James, M., and Card, K. (2012). Factors contributing to institutions achieving environmental sustainability. *International Journal of Sustainability in Higher Education*, *13*(2), 166-176. https://doi.org/10.1108/14676371211211845.

Kapitulčinová, D., AtKisson, A.; Perdue, J.; Will, M. (2016), Towards integrated sustainability in higher education – Mapping the use of the Accelerator toolset in all dimensions of university practice. *Journal of Cleaner Production*, 172, 4367-4382.

Krizek, K. J., Newport, D., White, J., and Townsend, A. R. (2012). Higher education's sustainability imperative: how to practically respond? *International Journal of Sustainability in Higher Education*, *13*(1), 19-33. https://doi.org/10.1108/14676371211190281.

Labanauskis, R. (2017), Key features of sustainable universities: a literature review. *Journal of Business Management*, 13, 56-69.

Larrán Jorge, M., Andrades Peña, F.J. and Muriel de los Reyes, M.J. (2017), Analysing the inclusion of stand-alone courses on ethics and CSR: A study of the MBA curricula of the Financial Times top-ranked business schools. *Sustainability Accounting, Management and Policy Journal*, 8(2), 114-137. https://doi.org/10.1108/SAMPJ-05-2015-0033.

Latapí Agudelo, M.A., Jóhannsdóttir, L., Davídsdóttir, B. (2019), A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), 1-23.

Leal Filho, W., Eustachio, J. H. P. P., Caldana, A. C. F., Will, M., Lange Salvia, A., Rampasso, I. S., Anholon, R., Platje, J., and Kovaleva, M. (2020). Sustainability Leadership in Higher Education Institutions: An Overview of Challenges. *Sustainability*, *12*(9). https://doi.org/10.3390/su12093761.

Lee, K-H., Schaltegger, S. (2014), Organizational transformation and higher sustainability management education. The case of the MBA Sustainability Management. *International Journal of Sustainability in Higher Education*, 15(4): 450-472.

Levy, B. L. M., and Marans, R. W. (2012). Towards a campus culture of environmental sustainability. *International Journal of Sustainability in Higher Education,* 13(4), 365–377. https://doi.org/10.1108/14676371211262317.

Lidgren, A., Rodhe, H., Huisingh D. (2006), A systemic approach to incorporate sustainability into university courses and curricula. *Journal of Cleaner Production,* 14: 797-809.

Lozano, R. (2006), A Tool for a Graphical Assessment of Sustainability in Universities (GASU). *Journal of Cleaner Production*, 14, 963-972.

Lozano, R. (2011). The state of sustainability reporting in universities. *International Journal of Sustainability in Higher Education*, 12(1), 67–78. https://doi.org/10.1108/14676371111098311.

Lukman, R., Glavič, P. (2007). What are the key elements of a sustainable university? *Clean Techn Environ Policy* 9, 103–114. https://doi.org/10.1007/s10098-006-0070-7.

Magliacani, M., and Sorrentino, D. (2020). Embedding sustainability dimensions in university collections management: a "scientific journey" into a natural history museum. *Journal of Cultural Heritage Management and Sustainable Development*, *11*(4), 395-410. https://doi.org/10.1108/jchmsd-03-2020-0044.

Marinho, M., Gonçalves, M. d. S., and Kiperstok, A. (2014). Water conservation as a tool to support sustainable practices in a Brazilian public university. *Journal of Cleaner Production*, *62*, 98-106. https://doi.org/10.1016/j.jclepro.2013.06.053.

Martins, N., Borges, Gouveia J. (2015). Quest for a sustainable university: a review. *International Journal of Sustainability in Higher Education,* 16 (2), 155–172.

Meza Rios, M.M., Herremans, I.M., Wallace, J.E., Althouse, N., Lansdale, D. and Preusser, M. (2018), Strengthening sustainability leadership competencies through university internships, *International Journal of Sustainability in Higher Education*, 19(4), 739-755. https://doi.org/10.1108/IJSHE-06-2017-0097.

Munro, A., Marcus, J., Dolling, K., Robinson, J.and Wahl, J. (2016). Combining forces: Fostering sustainability collaboration between the city of Vancouver and the University of British Columbia. International Journal of Sustainability in Higher Education 17(6), 812-826.

Murray, J. (2018). Student-led action for sustainability in higher education: a literature review. *International Journal of Sustainability in Higher Education*, 19(6), 1095–1110. https://doi.org/10.1108/IJSHE-09-2017-0164.

Naeem, M. A., and Peach, N. W. (2011). Promotion of sustainability in postgraduate education in the Asia Pacific region. *International Journal of Sustainability in Higher Education*, 12(3), 280–290. https://doi.org/10.1108/14676371111148063.

Niu, D., Jiang, D., and Li, F. (2010). Higher education for sustainable development in China. *International Journal of Sustainability in Higher Education*, 11(2), 153–162. https://doi.org/10.1108/14676371011031874.

Okoli, C., Schabram, K. (2010). A guide to conducting a systematic literature review of information systems research. Available at: http://dx.doi.org/10.2139/ssrn.1954824.

Ordanini, A., Rubera, G., and DeFillippi, R. (2009). The many moods of inter-organizational imitation: A critical review. *International Journal of Management Reviews*, 10(4), 375–398.

Pickering, C., Byrne, J. (2014). The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers. *Higher Education Research and Development*, 33:3, 534-548, DOI: 10.1080/07294360.2013.841651.

Posner, S. M., and Stuart, R. (2013). Understanding and advancing campus sustainability using a systems framework. *International Journal of Sustainability in Higher Education*, *14*(3), 264-277. https://doi.org/10.1108/ijshe-08-2011-0055.

Robertson, J. L., and Barling, J. (2017). Contrasting the nature and effects of environmentally specific and general transformational leadership. *Leadership and Organization Development Journal*, *38*(1), 22-41. https://doi.org/10.1108/lodj-05-2015-0100.

Sachs, J.D., Schmidt-Traub, G., Mazzucato, M. et al. (2019). Six Transformations to achieve the Sustainable Development Goals. *Nat Sustain* 2, 805–814. https://doi.org/10.1038/s41893-019-0352-9.

Sayed, A., Kamal, and Asmuss, M. (2013). Benchmarking tools for assessing and tracking sustainability in higher educational institutions. *International Journal of Sustainability in Higher Education*, 14(4), 449–465. https://doi.org/10.1108/IJSHE-08-2011-0052.

Segalàs, J., Mulder, K. F., and Ferrer-Balas, D. (2012). What do EESD "experts" think sustainability is? Which pedagogy is suitable to learn it? *International Journal of Sustainability in Higher Education*, 13(3), 293–304. https://doi.org/10.1108/14676371211242599.

Sharma, U., and Kelly, M. (2014). Students' perceptions of education for sustainable development in the accounting and business curriculum at a business school in New Zealand. *Meditari Accountancy Research*, 22(2), 130–148. https://doi.org/10.1108/MEDAR-12-2012-0042.

Snelson-Powell, A., Grosvold, J., and Millington, A. (2016), Business school legitimacy and the challenge of sustainability: A fuzzy set analysis of institutional decoupling. *Academy of Management Learning and Education*, 15(4), 703–723. https://doi.org/10.5465/amle.2015.0307.

Sterling, S.R. (2013), The Sustainable University: Challenge and Response [w:] The Sustainable University: Progress and Prospects, red. S.R. Sterling, L. Maxey and H. Luna, 17-50, Milton park: Routledge.

Stubbs, W., and Schapper, J. (2011). Two approaches to curriculum development for educating for sustainability and CSR. *International Journal of Sustainability in Higher Education*, 12(3), 259–268. https://doi.org/10.1108/14676371111148045.

Theodoraki, C., Messeghem, K. and Rice, M.P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Bus Econ* 51, 153–170. https://doi-1org-1000004nv0002.han.bg.pg.edu.pl/10.1007/s11187-017-9924-0.

Too, L., and Bajracharya, B. (2015). Sustainable campus: engaging the community in sustainability. *International Journal of Sustainability in Higher Education*, 16(1), 57–71. https://doi.org/10.1108/IJSHE-07-2013-0080.

Tranfield, D., Denyer, D., Smart, P. (2003), Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14: 207–222.

UI GreenMetric World University Ranking, http://greenmetric.ui.ac.id/what-is-greenmetric/ [Accessed on 23.01.2022].

ULSF, Talloires Declaration Signatories List http://ulsf.org/96-2/ [Accessed on 23.01.2022].

Vaughter, P., McKenzie, M., Lidstone, L., and Wright, T. (2016). Campus sustainability governance in Canada. *International Journal of Sustainability in Higher Education*, *17*(1), 16-39. https://doi.org/10.1108/ijshe-05-2014-0075.

Velazquez, L., Munguia, N., Platt, A., and Taddei, J. (2006). Sustainable university: what can be the matter? *Journal of Cleaner Production*, *14*(9-11), 810-819. https://doi.org/10.1016/j.jclepro.2005.12.008.

Verhulst, E., Lambrechts, W. (2014), Fostering the incorporation of sustainable development in higher education. Lessons learned from a change management perspective. *Journal of Cleaner Production*, 106, 189-204.

Vuorio, A. M., Puumalainen, K., and Fellnhofer, K. (2018). Drivers of entrepreneurial intentions in sustainable entrepreneurship. *International Journal of Entrepreneurial Behavior and Research*, 24(2), 359–381. https://doi.org/10.1108/IJEBR-03-2016-0097.

Wright, T. (2002), Definitions and Frameworks for Environmental Sustainability in Higher Education, *International Journal of Sustainability in Higher Education*, 3(3), 203-220.

Wright, T. (2010). University presidents' conceptualizations of sustainability in higher education. *International Journal of Sustainability in Higher Education*, Vol. 11 No. 1, 61-73.

Wyton, P., and Chaplin, G. (2014). Student engagement with sustainability: understanding the value–action gap. *International Journal of Sustainability in Higher Education*, *15*(4), 404-417. https://doi.org/10.1108/ijshe-04-2012-0029.