Evaluation Of Campus Sustainability In Teacher Education Institutes Of Pakistan

Gulnaz Hameed[1] , Sehrish Khan[2] , Ayesha Rehman[3] , Javaid Iqbal[4] , Haider Ali Shams[5]

[1]*Assistant Professor Elementary and Teacher Education Lahore College for Women University, Pakistan.*
[2]*Assistant Professor Department of Education Lahore Leads University, Pakistan.*
[3]*Lahore College for Women University, Pakistan.*
[4]*Department of Education Assistant Professor Lahore Leads University, Pakistan.*
[5]*Assistant Professor NUST, Pakistan Ph. D Scholar Asia e University, Malaysia.*

Abstract

Since the approval of Agenda 2030, higher education institutions (HEIs) have expressed increasing apprehension regarding sustainability matters. However, this does not satisfy societal constituents who are committed to innovation and excellence. All United Nations Member States endorsed the 17 Sustainable Development Goals (SDGs) in 2015 as a universal call to action; they present a challenge for higher education institutions (HEIs) in terms of evaluating their performance and the endeavours required to achieve them. Nevertheless, the metric management system that higher education institutions (HEIs) swiftly adopted gave rise to rankings that contrast HEIs based on metrics unrelated to the sustainability aspects of the seventeen SDGs.

Keywords: Sustainability, Teacher Education, Sustainable Development, Campus, Sustainable Development Goals

Introduction

The Sustainable Development Goals (SDGs) were established in Rio de Janeiro in 2012, during the United Nations Conference on Sustainable Development. In order to address the world's most pressing environmental, political, and economic challenges, it was necessary to develop a set of universally applicable objectives. The United Nations' Sustainable Development Goals were approved by world leaders in 2015. The seventeen Sustainable Development Goals (SDGs) set a deadline of 2030 to do things like end extreme poverty and hunger, reduce environmental damage, improve access to healthcare and education, and strengthen institutions and collaboration. They are universal, encompassing all nations and individuals, and have been subscribed to by more than 190 countries (UN, 2020).

These SDGs have the potential to effectively convey imperative priorities. To encourage the participation and attention of stakeholders, each objective includes a number of targets that must be achieved by 2030. Every objective is multidimensional, signifying that it necessitates the accomplishment of distinct but interrelated and interconnected elements. Additionally, they necessitate profound contemplation regarding foundational concerns regarding the influence of data on knowledge control in order to transcend political constraints (Rivera, 2013). This demonstrates that universities are significant contributors to the realization of the Sustainable Development Goals (SDGs), offer an invaluable reservoir of knowledge in education and research across all SDG sectors, and are regarded as impartial and influential actors that promote the development of collaborations with communities and governments (El-Jardali, Ataya & Fadlallah, 2018).

Measures have been implemented subsequent to the 2015 United Nations

agreement (UNESCO, 2020). Numerous public and private sector stakeholders have adopted the SDGs through the formation of new partnerships or instruments. HESIs, like all other establishments, are not an exception. The Higher Education Sustainability Initiative is a network that has been established in collaboration with the United Nations and more than 300 universities (Higher Education Sustainability Education, 2020). With the goal of promoting sustainable development in the field of higher education (2020), the International Sustainable Campus Network (ISCN) has been publishing an annual report identifying and disseminating the most exemplary campus sustainability initiatives since 2013. At present, academic institutions continue to affix their names to declarations and agreements that yield no tangible results, whereas the private sector is progressively being held responsible for the societal repercussions of its operations (Hahn & Kunhnen, 2013; Alcaide et al., 2020).

Therefore, universities possess the ability to produce, translate, and distribute pertinent trans-disciplinary research in order to achieve the Sustainable Development Goals (Nicolescu, 2018). This is accomplished by balancing the interests of academic disciplines and the demands of society, although this may not always align with the expectations of society from universities (Dijkstra, 2020). SDG4 (education quality) is an ironic match with the functions of universities. However, due to the interconnectedness of the SDGs, it is challenging to separate education from the achievement of other SDGs. Thus, education is one of the pillars for achieving the SDGs, and higher education institutions (HEIs) utilize their research and education expertise across all SDGs to support and accelerate the success of the SDGs.

Consequently, four methods universities can assist society in achieving the SDGs were proposed by Bhowmik, Selim, and Huq (2018): investigation, instruction,

procedures and governance, and community engagement.

The majority of the knowledge gained through trans-disciplinary research is derived from empirical evidence, modelled mathematically using statistics and data. In alignment with this concept, recent research has provided causal substantiation concerning the impact of universities on economic activity and regional innovation. Florinda and Gaetani (2020) emphasised the significance of universities in a knowledge-based economy as a critical driver of innovation and economic development, as well as a vital source of talent. These authors established, through empirical investigation, that there is a positive correlation between the number and magnitude of regional research universities and the level of local patenting activity in the United States. Notably, this correlation strengthens as universities attain higher rankings, specifically in the fields of engineering and sciences. On the contrary, Garcia-Alvarez-Coque et al. (2021) posit that research universities may have a significant impact on innovation systems that transcend regional boundaries, and that preeminent research institutions employ extensive geographical networks without regard to whether they are influencing within or outside a region.

Universities, as stated earlier, have a significant impact on the dissemination of vital information, solutions grounded in empirical evidence, and advancements through their investigation of intricate socioeconomic and environmental issues (Mawonde & Togo, 2019). Therefore, in order to foster sustainable development, universities and technology centres, as well as university–industry partnerships, are indispensable (Kornfeld & Kara, 2015; Tobiassen & Petterson, 2018; Cairns & Hielscher, 2020).

This implies that research-oriented universities do not generate immediate short-term profits; however, this is advantageous for locally innovative firms. Moreover, higher

education institutions (HEIs) serve as knowledge centres that disseminate their scientific sustainability discoveries through publications and patents, which are ultimately embraced by industry. Universities play a significant role in technological advancement through the establishment of spinoffs and ventures that enable them to develop and commercialise their own technical applications, as well as by actively pursuing the Sustainable Development Goals (Cowan & Zinovyeva, 2013; Paletta et al., 2019; Hirsch et al., 2006).

Universities incorporate principles of education for sustainable development (ESD) and the Sustainable Development Goals (SDGs) into their curriculum at both the undergraduate and graduate levels (Annan-Diab & Monlinari, 2017; Moggi, 2019). Additionally, all course coordinators and curriculum developers are trained by HEIs to align curricula with the SDGs. However, as stated by Moggi (2019), the absence of suitable guidelines for universities hinders the progress towards achieving the Sustainable Development Goals in the realm of higher education. Therefore, lack of training and the difficulty of integrating SDGs into courses were frequently cited as factors that hindered the integration of SDGs into curricula. In contrast, as stated by Korhonen-Kurki et al. (2020), the most difficult aspects of sustainable development, including those of the SDGs, are those that require further evolution of students' perceptions and affective attitudes subsequent to information (cognitive aspects) having "sunk in" and through continuous learning. This ongoing learning transpires both within and beyond classroom settings, and is reinforced by formative events and in-class experiences that shape students' attitudes. In 2019, Purcell, Henriksen, and Spengler conducted a global survey of 140 higher education institutions to gather information regarding the extent to which the Sustainable Development Goals (SDGs) were integrated into the curriculum. Strategically, a mere 43% of these institutions

have chosen to incorporate the SDGs into their curricula.

Owing to (Bhowmik, Selim & Huq, 2018), the third fundamental pillar for higher education institutions (HEIs) to enhance SDG adoption is operations and governance. As a result, the majority of campuses serve as microcosms of society in terms of lodging, transportation, dining establishments, medical facilities, and more. Therefore, their purpose is to investigate and assess SDG solutions (Purcell et al., 2019; Shuqin et al., 2019). In a similar vein, the Brazilian University of Passo Fundo case study (Brandli et al., 2020) demonstrated that verdant spaces on university campuses can both interact with and contribute to the SDGs, particularly through managerial actions.

Dziminska et al. (2020) put forth a framework that outlines how higher education institutions (HEIs) can advance sustainable development initiatives in their focal points of instruction, investigation, and community service. For example, Carnegie Mellon University worked with students and academic scientists at other HEIs to examine the impacts of universities on sustainability in areas other than the environment (carbon emissions), such as transportation, education and research, social and behavioural dimensions, economic and financial aspects, water and waste management. In conclusion, the project-based learning experience suggested that centralised office sustainability be established to coordinate distinct endeavours aimed at improving sustainability activities. This would enable Carnegie Mellon to gain a competitive edge in its research, education, and campus operations (Sustainability at Carnegie Mellon, 2020). Thomashow (2014) achieved comparable outcomes by leveraging his personal expertise as a former college president.

Ultimately, as stated by Bhowmik (2018), the fourth fundamental function concerns the growing efforts of universities to foster community involvement and establish a shared identity among their stakeholders—

students, faculty, staff, local businesses, government, and society as a whole (Blanco-Portela et al., 2017; Fissi et al, 2021).

Although there has been a growing body of research analyzing universities' contributions to the SDGs (Parkes, Buono, & Howaidy, 2017; Pizzi et al., 2020), this literature primarily describes the sustainable initiatives undertaken by individual HEIs; an evaluation of HEIs' global performance and SDG transparency is still lacking. Higher education is currently in its early phases with regards to both the quantity and quality of sustainability reporting (Alonso-Almeida et al., 2015; Sepasi, Braendle & Rahdari, 2019; Miotto et al., 2019). Sustainability measures have been implemented across multiple levels of higher education institutions (HEIs), including teaching, research, campus operations, and institutional framework. However, they have been sluggish in adopting sustainability reporting practises, such as integrating sustainability reporting into university sustainability management systems, receiving third-party assurance, and publishing consistent and periodic reports (Bice & Coates, 2015). HEIs lagged behind in their efforts to implement the SDGs in 2019, according to research (Leal et al., 2019).

In addition to identifying specific accountabilities, the actions necessary to achieve the SDGs necessitate the establishment of progress indicators and the participation of university administration, university stakeholders, and policymakers (Kopnina, 2017; Amey, Plummer & Pickering, 2020). This necessitates that annual reports emphasise any progress made as part of the strategic accomplishments and response mechanisms implemented by HEIs in the event of potential failures (Moggi, 2019). Consequently, the principal barrier impeding higher education institutions (HEIs) from genuinely adopting sustainability is their lack of enduring policies and resources to advance and achieve the Sustainable Development Goals (SDGs).

Consequently, this facilitates our understanding that the motivations of higher education institution leadership extend beyond the achievement of the Sustainable Development Goals. In an effort to attract and retain students, universities are presently involved in marketing initiatives; as a consequence, higher education has become commoditized, and competition among HEIs has intensified in this regard.

Higher education institutions' competitive nature could be advantageous if they prioritize the delivery of high-quality education. In addressing these global issues in relation to the seventeen SDGs, HEIs face obstacles, most notably SDG4, which aims to guarantee universal access to high-quality higher education. As a result, the procedure for determining the targets and critical performance indicators necessary for assessing the attainment of the SDGs becomes complex.

The past study indicated that Pakistani rankings are predominantly determined by factors such as research quality, number of Ph.D. faculty, publications, and journals. Additionally, it prioritised the provision of amenities and the effective and prudent allocation of financial resources. Social integration, community enhancement, outreach initiatives, international partnerships, and foreign professors and students are all elements of performance evaluation. In contrast, the significance attributed to 'citations' in performance evaluation is not as pronounced in Pakistan as it is in international standards (Noreen & Hussain, 2019). An additional study provided further details on the limited number of universities that incorporate the services of a third party to establish their quality assurance objectives and that enlist external evaluation of their performance. Moreover, the majority of universities face a scarcity of personnel who possess the requisite expertise in evaluating the calibre of courses and programmes (Rasool, Arshad & Ali, 2019).

The previous study centred on the classification systems of higher education

institutions in India. The majority of Indian institutions utilise the Webometrics ranking framework, the report concludes. The importance of institute visibility, transparency (including the lists of cited researchers), and excellence as determined by a number of highly cited papers and their rankings are all underscored (Chowdhury, 2021). An alternative research examined and contrasted various ranking systems implemented in distinct regions, such as the United States and China. Higher education institutions in China appear to prioritise research output, per capita performance, quality of education, and faculty excellence, according to the study (Aithal & Kumar, 2020). Moreover, an international report examines the evaluations of various institutions that are situated in distinct global regions. It comprises the two hundred most prestigious Asian institutes as determined by international rankings. Six institutes are located in India, while eighteen institutes are situated in China (Guillerme, 2022).

Therefore, the present research addresses the lack of a globally accessible assessment of the SDG performance and transparency of higher education institutions (HEIs). This study fills a gap in the literature. This is achieved through an innovative contribution to the current corpus of knowledge. As stated earlier, the implementation of sustainability reporting in higher education is still in its early stages, considering both qualitative and quantitative aspects (Fissi, Romolini, Gori & Contri, 2021). Furthermore, there is a dearth of empirical research pertaining to SDG reporting by institutions of higher education, and the existing literature is confined to particular case studies. As a result, this study utilised a self-reporting index constructed from indicators of the Sustainable Development Goals (SDGs) to assess the degree of sustainability exhibited by a university campus.

Subsequently, the inquiry emerges as to what extent higher education institutions in Pakistan, particularly operational teacher education departments, have achieved sustainability. The query posed an inquiry regarding the potential sustainability of a university campus during a period of transition when prospective teachers are active and faculty members are engaged in eminent discourse. Using a self-reported index, this level was investigated from the perspective of the department heads of the selected university campuses and qualitatively analysed.

Methodological Approach

A qualitative exploratory and descriptive design was employed in this study. To elicit insights that would not have been apparent in the absence of group dynamics, participants were guided through a discussion. Consequently, as the discussion unfolded, they were encouraged to establish connections between various concepts through analogies (Denzin & Lincoln, 2006; Hesse-Biber & Leavy, 2010). In this way, they were more able to report on the sustainability index.

In order to ascertain the extent to which individuals have experienced the ongoing phenomenon (ESD) in their daily lives and to examine the sustainability level of academic institutions, researchers opted to create a self-reporting index designed to quantify the sustainability level of campuses.

The Instrument: Campus Sustainability Index

The researchers culled works from the vast body of literature on ESD and sustainable leadership in order to identify the indicators that would comprise the criteria. The indicators categorised the following: the role of teacher education in promoting ESD, the integration of ESD principles into the curriculum, education, and sustainable leadership. Following an analysis of the indicators, the researcher endeavoured to formulate sustainability-related inquiries that would elicit responses from participants concerning their personal

encounters with the tangible realities of sustainability on their respective campuses.

Furthermore, previous scholars uncovered a Sustainability Assessment Questionnaire (SAQ) created by the Association of University Leaders for a Sustainable Future in 2009 and granted public access to it (http://ulsf.org/sustainability-assessment-questionnaire), in addition to the previously mentioned researchers who were chosen for the study. In consideration of SAQ, the researcher made the decision to construct her own sustainability assessment index. Scholars widely recognised the organization's efforts as a means to assist future researchers in evaluating the campuses of institutions situated in diverse environments.

Thus, in light of the situation in Pakistan, the campus sustainability assessment index was formulated in recognition of SAQ (2009). This index categorises 23 matters/practices/principles of SD into four main dimensions: research and development (six matters), outreach and services (three matters), and students' opportunities (six matters). The scale of the index ranges from high to medium to low.

The sample and sampling

As stated in the research question, the primary objective of this study was to investigate campus sustainability. Furthermore, the results would provide additional insight into the motivations behind faculty members' adoption of ESD practices and the transformation of prospective teachers into sustainable leaders. As a result, fifteen relevant department heads were contacted across Pakistan, granted permission, and scheduled appointments in order to ensure that the researchers encountered no obstacles or challenges when gathering opinions on the index. The selection of department heads was based on the study's objectives, which stipulated the following:

- Heads of the aforementioned faculties and prospective teachers
- Department heads in teacher education
- Possess a certain level of knowledge pertaining to sustainable development

Finally, the self-reported checklist assessed the sustainability of each campus according to the department heads' reports. Each practise was evaluated on a scale of high, medium, or low and the results were interpreted descriptively.

Results and Findings

Infrastructure and operations, research and development, outreach and services, and student opportunities constituted the four indices that comprised the index.

A total of 23 repetitions were requested, with varying degrees of difficulty (high, medium, or low) being specified. Fifteen department heads from their respective campuses participated in completing this self-reporting inventory; nine of them were from public sector institutions and six were from private sector institutions. Seven leaders of state were male and two were female, whereas four presidents of state were male and two were female in the private sector. The department chairs were between the ages of 40 and 55. Both individuals held the rank of assistant professor in the private sector and were all associate professors in the public sector. The results of each indicator are as follows:

Infrastructure and Operations

In the areas of transportation, organic foods, campus buildings, air quality, pollution reduction, water conservation, recycling, and organic food utilisation, this indicator comprised eight sustainability practises. The head of departments in the public sector reported that their buildings and landscapes are constructed with a significant commitment to sustainability principles. However, they

expressed a moderate level of adherence to the remaining practises.

In contrast, university leaders of the private sector provided two distinct responses: 3 male head rated the condition of his campus building and landscapes as low to moderate, while the female heads rated them as moderate to high. Therefore it can be said that both sources reported that the indoor air quality was high, while the overall condition of the environment was described as moderate.

Research and Development

This indicator comprised six aspects that assessed the degree of sustainability: faculty research, student research, staff development for awareness, and teaching and research on sustainability. Interest level in teaching and research was also considered. The department heads of the public sector expressed a high degree of assurance and stated that research conducted by teachers and students on sustainability issues is at from moderate level to high. However, only two public sector heads expressed that staff development regarding sustainability was inadequate, while one head regarded it as being at a moderate level. On asking one of the head, he told that,

> "This institution partners with an international centre for sustainable development to provide young people with access to online youth development programs. Everyone in the academic community is welcome to join in…"

However, the research conducted by academics and students was rated as medium, while the remainder of the research and development issues were rated as poor by four private sector leaders and as medium by the other.

Outreach & Services

This metric was developed to assess the extent to which the institution participates in community service on a national, regional, and global scale. Both the public and private sectors have expressed their commitment to community work at the regional level as being at a moderate level. When queried about this, public sector institutions disclosed that they have affiliated colleges and sub-campuses to which they send prospective teachers for teaching practises and awareness campaigns on various issues. Conversely, the private sector made financial contributions to certain non-governmental organisations (NGOs) or maintained affiliations with international organisations that advocated for quality services or environmental protection.

At the national level, the public sector attributed high participation to the institutes' campus networks, whereas the private sector indicated low participation. Finally, regarding the international level, some members of the private sector rated it as medium, while others rated it as low. The public sector, on the other hand, rated it as medium due to the expenditure of faculty members on foreign training and research funds.

Students' Opportunities

Students' organisations, awareness campaigns, day-specific celebrations, student organisations, job fairs, and career counselling were the six practises comprised of this indicator. All heads of state in the public sector rated these practises as moderate, while heads of state in the private sector rated them as high. On asking one of the participants about the reason acclaimed was,

> "Co-curricular activities serve as a means of engaging and inspiring students, ensuring that they remain occupied while also acquiring knowledge that aligns with our desired objectives. …."

Overall Scenario of Sustainability in Teacher Education Institutes

In order to address this research inquiry, the heads of departments of relevant faculty members who had participated in interview sessions were contacted and provided with a checklist to be completed. An analysis of the data was conducted using pre-established metrics, including those for student opportunities, research and development, outreach and services, and infrastructure and operations. The main findings were:

1. In order to address this research inquiry, the heads of departments of relevant faculty members who had participated in interview sessions were contacted and provided with a checklist to be completed. An analysis of the data was conducted using pre-established metrics, including those for student opportunities, research and development, outreach and services, and infrastructure and operations.

2. Private sector institutes exhibited a high level of cleanliness, while the cleanliness of public sector institutions was moderate..

3. The level of investigation conducted by educators and learners on sustainability concerns, as well as the development of staff in this area, was deemed to be moderate.

4. Both the public and private sectors rated their community service at the regional and national levels as moderate, whereas the majority believed that their service at the international level was extremely limited.

5. Through nearly every campus's co-curricular activities, students have the chance to advocate for ESD and develop into sustainable leaders in their academic communities.

Conclusions and Discussions

The results indicated that the sustainability of the teacher education programmes implemented was not comprehensive in all facets of ESD. To ensure that the infrastructure of teacher education institutes is entirely sustainable, the engineering, social, and developmental sectors must collaborate and establish practical connections. Education for sustainable development is widely recognised as an approach that advocates for the conservation of resources for the benefit of future generations. However, on an international scale, it is understood to be a form of education that fosters a paradigm shift in understanding, values, and perspectives concerning the provision of equitable and sustainable resources for all (Leicht, Heiss & Byun, 2018). This pertains to the empowerment of young individuals so that they may adopt a balanced, methodical, and integrated approach towards the three pillars of sustainable development in order to both lead and follow.

International organizations consider ESD to be a comprehensive transformational approach to teaching, training, and learning that emphasizes the production of positive outcomes such as altered behaviours, solution-oriented pedagogies, and optimal learning environments (UNESCO, 2014).

The level of sustainability was assessed as moderate, if not low, in certain aspects when compared to the faculty members' and students' perceptions of ESD practices in institutions. This appeared to corroborate the qualitative finding that prospective teachers implement these practices to a moderate degree. Target 4.7 of the seventeen sustainable development goals pertains to fostering lifelong learning, quality education, and inclusive education. This objective emphasizes the necessity of equipping learners with the understanding necessary to comprehend the significance of the

underlying concepts, ideas, and necessity that underpin the sustainable development goals (Leicht, Heiss & Byun, 2018).

As per the findings and explanations of previous researches (De la Poza, Merello, Barberá, & Celani, 2021; Shuquin, 2019), Pakistan's situations of teacher education institutes are still developing. There is a long way to lead matching up the international sustainability levels and the targeted year 2030 is just around the corner. Current study is a continuum of the thesis and researches conducted by the same researchers. It is recommended to conduct extensive in-depth study on international sustainability ranking indicators contrasting the real situations running in our universities rather to attain only world ranking scores and take part in ranking race.

References

1. Aithal, P. S., & Kumar, P. M. (2020). Global ranking and its implications in higher education. SCHOLEDGE International Journal of Business Policy & Governance, 7(03), 25-47.
2. Alcaide González, M. Á., De La Poza Plaza, E., & Guadalajara Olmeda, N. (2020). The impact of corporate social responsibility transparency on the financial performance, brand value, and sustainability level of IT companies. Corporate Social Responsibility and Environmental Management, 27(2), 642-654.
3. Amey, L., Plummer, R., & Pickering, G. (2020). Website communications for campus sustainability: An analysis of Canadian universities. International Journal of Sustainability in Higher Education, 21(3), 531-556.
4. Annan-Diab, F., & Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. The International Journal of Management Education, 15(2), 73-83.
5. Bhowmik, J.; Selim, S.; Huq, S (2018). The Role of Universities in Achieving the Sustainable Development Goals, CSD-ULAB and ICCCAD Policy Brief; ULAB: Dhaka, Bangladesh.
6. Bice, S., & Coates, H. (2016). University sustainability reporting: taking stock of transparency. Tertiary Education and Management, 22, 1-18.
7. Blanco-Portela, N., Benayas, J., Pertierra, L. R., & Lozano, R. (2017). Towards the integration of sustainability in Higher Education Institutions: A review of drivers of and barriers to organisational change and their comparison against those found of companies. Journal of Cleaner Production, 166, 563-578.
8. Brandli, L. L., Salvia, A. L., da Rocha, V. T., Mazutti, J., & Reginatto, G. (2020). The role of green areas in university campuses: Contribution to SDG 4 and SDG 15. Universities as Living Labs for Sustainable Development: Supporting the Implementation of the Sustainable Development Goals, 47-68.
9. Cairns, R., Hielscher, S., & Light, A. (2020). Collaboration, creativity, conflict and chaos: Doing interdisciplinary sustainability research. Sustainability Science, 15, 1711-1721.
10. Cf, O. D. D. S. (2015). Transforming our world: the 2030 Agenda for Sustainable Development. United Nations: New York, NY, USA.
11. Chowdhury, A. R., & Rahman, Z. (2021). Global ranking framework & indicators of higher educational institutions: A comparative study. Library Philosophy and Practice (e-journal), 5268.
12. Cowan, R., & Zinovyeva, N. (2013). University effects on regional innovation. Research Policy, 42(3), 788-800.
13. De la Poza, E., Jódar Sánchez, L. A., Merello, P., & Todoli-Signes, A. (2020). Explaining the rising precariat in Spain. Technological and Economic Development of Economy, 26(1), 165-185.
14. De la Poza, E., Merello, P., Barberá, A., & Celani, A. (2021). Universities' reporting on SDGs: Using the impact rankings to

model and measure their contribution to sustainability. Sustainability, 13(4), 2038.

15. del Mar Alonso-Almeida, M., Marimon, F., Casani, F., & Rodriguez-Pomeda, J. (2015). Diffusion of sustainability reporting in universities: current situation and future perspectives. Journal of cleaner production, 106, 144-154.

16. Denzin, N. K. (2008). The landscape of qualitative research (Vol. 1). Sage.

17. Dijkstra, E. W. (2020). Answers to questions from students of Software Engineering. Circulated privately. Retrieved from: https://www.cs.utexas.edu/~%7B%7DEWD/transcriptions/EWD13xx/EWD1305.html

18. Dzimińska, M., Fijałkowska, J., & Sułkowski, Ł. (2020). A conceptual model proposal: Universities as culture change agents for sustainable development. Sustainability, 12(11), 4635.

19. El-Jardali, F., Ataya, N., & Fadlallah, R. (2018). Changing roles of universities in the era of SDGs: rising up to the global challenge through institutionalising partnerships with governments and communities. Health research policy and systems, 16, 1-5.

20. Fissi, S., Romolini, A., Gori, E., & Contri, M. (2021). The path toward a sustainable green university: The case of the University of Florence. Journal of Cleaner Production, 279, 123655.

21. Florida, R., & Gaetani, R. (2020). The university's Janus face: The innovation–inequality nexus. Managerial and Decision Economics, 41(6), 1097-1112.

22. Garcia-Alvarez-Coque, J. M., Mas-Verdú, F., & Roig-Tierno, N. (2021). Life below excellence: Exploring the links between top-ranked universities and regional competitiveness. Studies in Higher Education, 46(2), 369-384.

23. Guillerme, G. (2022). Analysis of universities in QS ranking.

24. Hadorn, G. H., Bradley, D., Pohl, C., Rist, S., & Wiesmann, U. (2006). Implications of transdisciplinarity for sustainability research. Ecological economics, 60(1), 119-128.

25. Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research. Journal of cleaner production, 59, 5-21.

26. Hesse-Biber, S. N., & Leavy, P. (2010). The practice of qualitative research. Sage.

27. Higher Education Sustainability Education (2020). Available online: https://sustainabledevelopment.un.org/sdinaction/hesi

28. International Sustainable Campus Network (2020). Sustainable Development: Educating with Purpose. Available online: www.iscnetwork.org

29. Kopnina, H. (2018). Teaching sustainable development goals in The Netherlands: a criticalapproach. Environmental education research, 24(9), 1268-1283.

30. Korhonen-Kurki, K., Koivuranta, R., Kuitto, V., Pietikäinen, J., Schönach, P., & Soini, K. (2020). Towards realising SDGs in the University of Helsinki. Sustainable development goals and institutions of higher education, 15-29.

31. Kornfeld, B. J., & Kara, S. (2015). Industry-university collaboration in sustainable manufacturing. Procedia CIRP, 29, 8-12.

32. Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L. V., Brandli, L. L., ... & Caeiro, S. (2019). Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack?. Journal of Cleaner Production, 232, 285-294.

33. Mawonde, A., & Togo, M. (2019). Implementation of SDGs at the university of South Africa. International Journal of Sustainability in Higher Education, 20(5), 932-950.

34. Miotto, G., Polo Lopez, M., & Rom Rodriguez, J. (2019). Gender equality and UN sustainable development goals: Priorities and correlations in the top business schools' communication and legitimation strategies. Sustainability, 11(2), 302.

35. Moggi, S. (2019, July). Social and environmental reports at universities: A Habermasian view on their evolution. In Accounting Forum (Vol. 43, No. 3, pp. 283-326). Routledge.

36. Nicolescu, B. (2018). The transdisciplinary evolution of the university condition for sustainable development. Transdisciplinary theory, practice and education: The art of collaborative research and collective learning, 73-81.

37. Noreen, F., & Hussain, B. (2019). HEC Ranking Criteria in the Perspective of Global University Ranking Systems. Global Social Sciences Review, 4(2), 59-70.

38. Paletta, A., Fava, F., Ubertini, F., Bastioli, C., Gregori, G., La Camera, F., & Douvan, A. R. (2019). Universities, industries and sustainable development: Outcomes of the 2017 G7 Environment Ministerial Meeting. Sustainable Production and Consumption, 19, 1-10.

39. Parkes, C., Buono, A. F., & Howaidy, G. (2017). The Principles for responsible management education (PRME): The first decade–What has been achieved? The next decade–Responsible management Education's challenge for the Sustainable Development Goals (SDGs). The international journal of management education, 15(2), 61-65.

40. Pizzi, S., Caputo, A., Corvino, A., & Venturelli, A. (2020). Management research and the UN sustainable development goals (SDGs): A bibliometric investigation and systematic review. Journal of cleaner production, 276, 124033.

41. Purcell, W. M., Henriksen, H., & Spengler, J. D. (2019). Universities as the engine of transformational sustainability toward delivering the sustainable development goals:"Living labs" for sustainability. International Journal of Sustainability in Higher Education, 20(8), 1343-1357.

42. Rasool, S., Arshad, M., & Ali, M. S. (2019). Current Trends and Issues in Quality Assurance Practices: Higher Education Pakistan. Global Regional Review, 4(3), 250-257.

43. Rivera, M. (2013). Political criteria for Sustainable Development Goal (SDG) selection and the role of the urban dimension. Sustainability, 5(12), 5034-5051.

44. Shuqin, C., Minyan, L., Hongwei, T., Xiaoyu, L., & Jian, G. (2019). Assessing sustainability on Chinese university campuses: Development of a campus sustainability evaluation system and its application with a case study. Journal of Building Engineering, 24, 100747.

45. Sustainability Assessment Questionnaire (2009). Retrieved from: http://ulsf.org/sustainability-assessment-questionnaire

46. Sustainability at Carnegie Mellon (2020). A Path Forward. Student Project Report, Department of Engineering and Public Policy and Department of Social and Decision Sciences; Carnegie Mellon University: Pittsburgh, PA, USA, December 2018; Retreived from https://www.cmu.edu/environment/energy-water/images/sustainabilitycmu_project-report_final-20190206.pdf

47. Thomashow, M. (2014). The nine elements of a sustainable campus. Mit Press.

48. Tobiassen, A. E., & Pettersen, I. B. (2018). Exploring open innovation collaboration between SMEs and larger customers: The case of high-technology firms. Baltic Journal of Management, 13(1), 65-83.

49. UNESCO (2017). Education for Sustainable Development Goals: Learning Objectives; UNESCO: Paris, France.

50. United Nations (2020). Transforming Our World: The 2030 Agenda for Sustainable Development; UN: New York, NY, USA, 2015; Available online: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

51. Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable university: what can be the matter?. Journal of cleaner production, 14(9-11), 810-819.