Sustainability Opportunities and Barriers at Universities, Development of a Sustainable University Environment

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Nowadays, one of the most crucial environmental, social, and economic questions is how to build a sustainable future for the following generations. This is a vital challenge because we live in a historical age due to the over-utilization of CO₂-intensive technologies. Thanks to this practice, greenhouse gas emission is increasing yearly; biodiversity is decreasing dramatically. It is essential for our environment that universities play a leading role in the actions that can eliminate these adverse effects. This paper introduces the status of the uptake of sustainability-related issues and targets in the Higher Education (HE) sector. It emphasizes the necessity of the comparable evaluation of these activities by introducing current sustainability ranking systems. Some barriers disable the transition to a sustainable working model for universities. The paper identifies these barriers and makes suggestions for eliminating them through the example of Széchenyi István University’s practice and sustainability action plan.

1. Introduction

The United Nations (1987) formulated the definition of sustainable development and defined 17 Sustainable Development Goals (SDGs) in 2015, which are intended to highlight the necessity of actions to end poverty, protect our planet, and ensure peace and prosperity for every people by 2030 (United Nations, 2015). These goals are the basinment of all environmental protective and sustainable activities. The fields of sustainability can be grouped into five main categories: environmental, economic, social, governmental, and institutional sustainability. Environmental sustainability refers to maintaining biodiversity, preserving natural resources, and reducing emissions to ensure a healthy environment for future generations (Theis and Tomkin, 2015). Society must utilize natural resources (e.g., energy, raw materials, and water) to minimize waste and depletion (McKinnon et al., 2010). Economic sustainability focuses on fostering long-term economic growth and stability without compromising environmental and social goals (Baumgärtner and Quaas, 2010). The research, development, and innovation (R&D&I) activities must be utilized by all the players in the industry to adopt new technologies and services to reduce their environmental impact. Governmental incentives and industry contributions have to support universities and research institutes to lead this process. Inequality arises with the increasing efficiency due to R&D&I, so the sustainable economy must also aim to reduce disparities (Spangenberg, 2005). The economy has to shift towards environmentally friendly and low-carbon industries, products, and services. Social sustainability focuses on creating an equitable society where everyone has the same access to resources and opportunities to improve their well-being (Orlitzky et al., 2011). Everyone deserves a decent standard of living that incorporates the sustainability of health and well-being. There is a significant correlation between healthcare expenditures and labor productivity, personal spending, and GDP (Raghupathi and Raghupathi, 2020). A highlighted mission of social sustainability is the elimination of any disadvantageous diversification of humans from different genders, races, economic statuses, or religions.
Adapting state-holding. Their analysis reveals that most reports contain details about content. Education and research are in the midst institutions. 20 and forced it Higher Education (THE). The two low levels contain nearly. They found that the majority of the HE institutions sustainability ranking process and considered with different weighting. (Suwartha and Sari, 2013) considers six indicator categories (Setting and Infrastructure; Energy and Climate Change; Waste; Water, Transportation; Education and Research) connecting to SGDs during their ranking process and considered with different weighting. Puertas and Marti suggest an alternative index based on UI GreenMetric variables applying data envelopment analysis (DEA), resulting in a university ranking based on their contribution to sustainability (Puertas and Marti, 2019). They clustered the investigated 719 universities evaluated by UI GreenMetric into four levels based on Ward’s Method (high, medium-high, medium-low, low). They found that the majority of the HE institutions were located in the medium-low-level sustainability cluster. The two low levels contain nearly two-thirds of the total investigated institutions. Other rankings, like Times Higher Education (THE) consider the SDGs as a basis of its evaluations, ranking the universities based on social ones and feasible institutional development planning. The question arises: how can sustainability be measurable in universities? Shriberg (2002) analyzed different cross-institutional sustainability assessment tools, comparing their strengths and weaknesses. He highlighted their possibility of contributing to management decision-making. Although the comparability of institutions through the investigated tools is impossible because of the applied simplifications in the methodologies, their broad utilization and development will significantly contribute to their applicability. The UI GreenMetric World University Ranking ranks universities based on green campuses and environmental sustainability (Suwartha and Sari, 2013). It considers six indicator categories (Setting and Infrastructure; Energy and Climate Change; Waste; Water, Transportation; Education and Research) connecting to SGDs during their ranking process and considered with different weighting. Puertas and Marti suggest an alternative index based on UI GreenMetric variables applying data envelopment analysis (DEA), resulting in a university ranking based on their contribution to sustainability (Puertas and Marti, 2019). They clustered the investigated 719 universities evaluated by UI GreenMetric into four levels based on Ward’s Method (high, medium-high, medium-low, low). They found that the majority of the HE institutions were located in the medium-low-level sustainability cluster. The two low levels contain nearly two-thirds of the total investigated institutions. Other rankings, like Times Higher Education (THE) consider the SDGs as a basis of its evaluations, ranking the universities based on
individual and overall SDG scores. Quacquarelli Symonds (QS) World University Ranking has a dedicated Sustainability ranking category investigating the university's contribution to environmental, social, and governance (ESG) challenges. It evaluates sustainability through documentation and, similar to THE, verifies publications related to specific SDGs in the Scopus database.

2.3 Széchenyi István University

Sustainability has strategic importance in the activity field of SZE, and senior management of the university highlighted sustainability as a strategic way of future activities. Széchenyi István University has become one of the leading HE institutions in Hungary, with a significant number of students, infrastructure investments, and stable management. To create efficient, competitive HE in Hungary, the Government approved the modernization of the University's operating model, which encourages the institutions to improve entrepreneurial skills and education through industry-related considerations. Further strengthening the university's corporate partnerships, internationalization, and service provider capabilities supports long-term institutional sustainability. With the increasing number of internships, English-language courses, and foreign instructors, internationalization also aids the university’s sustainability goals. SZE dedicated the sustainability discipline to the Department of Applied Sustainability. The Competence Center of Sustainability was established to support sustainable related scientific activities in all the disciplines of the University, Széchenyi István University, in accordance with the above, considers its presence on the QS and THE sustainability rankings to be of strategic priority. The latter two higher education ranking organizations publish world rankings, primarily based on scientific performance, which international students take into consideration when choosing universities. The uniqueness of THE lies in its evaluation of how institutions are contributing to each Sustainable Development Goal (SDG) through implemented programs and action plans. It also assesses how universities teach the various SDGs as part of their curriculum and whether the keywords associated with the SDGs appear in scientific publications present in the Scopus database, which is used as a source by both THE and QS. For this reason, Széchenyi István University has aligned the structure of its sustainability website with THE's Impact Ranking system (Széchenyi István University, 2023). In 2020, Széchenyi István University developed a comprehensive 10 y sustainability action plan represented by Figure 1.

Figure 1: Ten-year strategic plan of SZE and connections to SDGs

This plan was accompanied by specific projects supporting the set objectives, some of which were initiated and/or completed. Among these projects, the most prominent one is the "Insula Magna" or "Szigetkőz-Csallókőz" project. It is a sustainability initiative realized in collaboration with Slovak and German partners, encompassing the Danube region from the city hosting the University to the Austrian border, taking into consideration economic, social, and ecological aspects. Similar projects focus on waste recycling and reducing vehicle emissions using hydrogen technology. These projects aim to contribute to sustainability goals by leveraging the University's knowledge base. The University's Mósonmagyaróvár campus features the "Smart Farm" and greenhouse projects, which employ cutting-edge technologies to support sustainability objectives. By 2027, the institution aims to achieve the status of a paperless University. Széchenyi István University
welcomes international students from 77 countries, actively involving them in specially designed sustainability projects and start-up ventures. The goal is for these students to return to their home countries and contribute to the implementation of sustainability strategies devised by their home nations.

Considering the 10 y long institutional development time, the stations in Figure 1 play key roles in the University’s life, and each can be associated with SDGs. This paper identifies the most relevant connecting SDGs to each strategic point in which methodology can be utilized in representation and strategy-making in the future and will ensure the formation of a sustainable and competitive university. Based on the coverage of all SDGs by the strategic plan, SZE can maintain the current sustainable activities and support further environmental, social, economic, and governmental sustainability improvement. The exact sustainability performance evaluation is under construction based on the methodology highlighted in Sections 2.1 and 2.2 to make comparability available with other HE institutions. Although the final set of indicators is not fully defined and the values are not evaluated, the main sustainability burdens can be identified based on the already realized measurement steps.

3. Challenges of the sustainable actions

3.1 Barriers to Sustainability

Some barriers disable the transition to a sustainable working model for universities. Ávila et al. identified the links between sustainability and innovation in universities (Ávila et al., 2017). They also investigated the barriers to innovation and sustainability worldwide in the HE sector (Ávila et al., 2019). They found that the main barriers are lack of planning and focus, lack of environmental committee, lack of applicability and continuity of actions, and resistance to change. Based on their evaluation, Africa and Oceania reached the highest scores in the rank. At the start of the century, Dahle and Neumayer (2001) explored the greening steps of higher educational institutions. They found that budget constraints are the most significant barriers that disable environmental awareness in campus communities. Elliott and Wright (2013) approached the issue from the student’s viewpoint. Through the involvement of 27 Canadian university student union presidents, they identified the university finances as a barrier and incentive to sustainability. The authors emphasized the students’ significant stakeholder role in supporting sustainability. Ávila et al. (2017) comprehensively reviewed the literature dealing with barriers to sustainability in the HE segments. They highlighted that the majority of these objects are well-known, but they are not addressed. Waas et al. (2012) examined the contemporary literature on key barriers to sustainability and innovation in universities and determined the key barriers to sustainability in the Flemish HE system. Ávila et al. created a questionnaire of 25 questions and got 283 respondents from around the world (Ávila et al., 2019). Based on their study, the main barrier is the lack of support from the university administration. Besides the poor administrative support, the lack of appropriate technology and environmental committees are the most significant obstacles. The less impedimental factors are the lack of dialogue and lack of applicability and continuity.

3.2 Ways forward at SZE in sustainability actions

In order to protect our environment from society’s harmful intervention, it is essential to jump through the abovementioned barriers to sustainability. Education is the basis for fulfilling all the SDGs, and it has an outstanding contribution to the formation of society (Žalėnienė and Pereira, 2021). During the investigation of major barriers in HE to sustainable actions, Waas et al. (2012) also suggest ways forward in sixteen steps, which will ensure the green transition at universities. Based on these points, this study highlights the ways forward in the case of SZE. Table 1 contains the existing practices for promoting the green transition at Széchenyi István University and proposals to further the development of processes.

<table>
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<th>Table 1 Ways forward to support sustainable development in the HE</th>
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<td>Ways forward</td>
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<td>Assess and Measure</td>
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<td>Communicate</td>
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<td>Engage Stakeholders</td>
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<td>Make Concrete</td>
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Table 1 Ways forward to support sustainable development in the HE (continued)

<table>
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<tr>
<th>Ways forward</th>
<th>Existing practice at SZE</th>
<th>Suggested next step</th>
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<tbody>
<tr>
<td>Multiply the knowledge about SD</td>
<td>All subjects contain sustainability elements at SZE</td>
<td>Emphasizing its connection to all disciplines, involving students into sustainability projects</td>
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<td>Meet Needs</td>
<td>Focusing on the uniqueness of the HE sector</td>
<td>Involving the stakeholders in sustainable activities more frequently</td>
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<td>Promote Understanding</td>
<td>Socialization activities for publicizing the significance of sustainability</td>
<td>Improved sensitization of students and all SHs within the “Knowledge Pentagon”</td>
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<tr>
<td>Incorporates Quality Education</td>
<td>All subjects contain sustainability elements at SZE</td>
<td>Assessing the teacher’s attitude to sustainability, establishing a sustainability knowledge expert group</td>
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<td>Reward</td>
<td>Leaders define sustainability indicators during the goal definition of employees</td>
<td>Increased emphasis on delivering sustainability indicators in variable wage</td>
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<tr>
<td>Educate University Wide</td>
<td>All subjects contain sustainability elements at SZE</td>
<td>Launching academic programs and project-oriented activities about sustainability</td>
</tr>
<tr>
<td>Promote Empowering</td>
<td>Application of project and experiential learning in top education programs</td>
<td>Extending this attitude to all programs</td>
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<tr>
<td>Create Management Positions</td>
<td>Competence Center of Sustainability</td>
<td>Integrating sustainability tasks at higher management positions (supervisory board)</td>
</tr>
<tr>
<td>Develop and Participate in Networks</td>
<td>Publishing papers regarding sustainability in the international research network</td>
<td>Application to EU grants with SD-related topics, strengthening local/regional network</td>
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<td>Engage in Regional SD Initiatives</td>
<td>Outstanding participation in regional socialization activities</td>
<td>Cooperation with UN’s Regional Centers of Expertise</td>
</tr>
<tr>
<td>Develop Research Priorities</td>
<td>The common topic is the sustainability of all research activities at the SZE</td>
<td>Prioritizing SD-related research with increased incentives</td>
</tr>
<tr>
<td>(Re)orient Public Higher Education Policy and Funding</td>
<td>Governmental indicator system for model changed universities in Hungary</td>
<td>Make suggestions to supplement the indicators with SD goals</td>
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4. Conclusion

This paper introduced the different approaches to sustainability from environmental, economic, social, and governmental viewpoints. Through the representation of Széchenyi István University, the connection between SGDs and strategic points of the university’s strategy was introduced. The sustainability goals of SZE cover four main areas: quality, ethical education, protection and innovation, zero carbon emissions, and partnerships. The challenges of the higher education sector regarding sustainable actions were investigated. This work contributes to the transformation of the higher education sector to a more sustainable and environmentally friendly future. The methodology applied to examine the sustainability actions of SZE can be directly utilized in the case of any higher education institution. The key barriers to sustainability at universities must be evaluated to ensure the transformation of the higher education sector. The SDG-driven strategy-making process is crucial, and utilizing this methodology for all universities is recommended. Assigning current activities and future recommendations to ways forward enables us to overcome the barriers, and these steps provide the most promising realization of sustainable development for the future. Universities have a unique mission to provide for the well-being of society, so they have to operate as hot spots for SDG-related activities. With the application of the previously discussed ways forward, the HE can strengthen its outstanding role, and through the teaching and coaching of future generations, it outstandingly supports a sustainable and liveable future.

References


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