Assessing Sustainability of Higher Education Institutions: the University Sustainability Assessment Framework

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Abstract. In recent decades, there has been a notable increase in the discourse surrounding the conceptualisation of sustainable development and the methodologies by which it can be measured and achieved. The United Nations 2030 Agenda for Sustainable Development has been adopted, and 17 corresponding Sustainable Development Goals have been established. Nevertheless, the global community remains a considerable distance from attaining sustainable development. Universities have the potential to play a pivotal role in addressing this challenge, given their position as institutions responsible for preparing future leaders and decision-makers. However, a significant challenge lies in the design and implementation of effective instruments for evaluating the extent to which academic institutions advance sustainable development. Accordingly, the aim of this article is to examine the assessment tools employed for evaluating universities' contributions to sustainable development, with a particular focus on the University Sustainability Assessment Framework (UniSAF) indicators.

Key words: sustainability, UN sustainable development goals, education, higher education institutions, University Sustainability Assessment Framework.
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1. Introduction

In recent decades, there has been a growing discourse on the concept of sustainable development and the means of achieving it. To advance the cause of sustainable development, the United Nations General Assembly adopted a resolution in 2015, entitled Transforming our world: the 2030 Agenda for Sustainable Development. As stated in its preamble, "*this Agenda is a plan of action for people, planet and prosperity*" (Transforming our world: the 2030 Agenda for Sustainable Development, 2015). In order to facilitate the implementation of Agenda 2030, the United Nations defined seventeen global Sustainable Development Goals (SDGs), pertaining to economic growth, social inclusion and environmental protection, which must be achieved by the year 2030. These goals are as follows: No poverty (SDG 1), Zero hunger (SDG 2), Good health and well-being (SDG 3), Quality education (SDG 4), Gender equality (SDG 5), Clean water and sanitation (SDG 6), Affordable and clean energy (SDG 7), Decent work and economic growth (SDG 8), Industry, innovation and infrastructure (SDG 9), Reduced inequalities (SDG 10), Sustainable cities and communities (SDG 11), Responsible consumption and production (SDG 12), Climate action (SDG 13), Life below water (SDG 14), Life on land (SDG 15), Peace, justice, and strong institutions (SDG 16), and Partnerships for the goals (SDG 17).

In the pursuit of sustainable development, academic institutions assume an indispensable role. According to SDG 4, "*education liberates the intellect, unlocks the imagination and is fundamental for self-respect. It is the key to prosperity and opens a world of opportunities, making it possible for each of us to contribute to a progressive, healthy society*" (The 17 goals, n.d.). To address this challenge, in 2020 ministers from the European Higher Education Area (EHEA) signed the Rome Communiqué, which emphasised the pivotal role of higher education in achieving the United Nations' SDGs. The communiqué states that "*higher education institutions have the potential to drive major change – improving the knowledge, skills and competences of students and society to contribute to sustainability, environmental protection and other crucial objectives. They must prepare learners to become active, critical and responsible citizens and offer lifelong learning opportunities to support them in their societal role. Higher education will be a key actor in meeting the United*

Nations' Sustainable Development Goals by 2030. We commit to supporting our higher education institutions in bringing their educational, research and innovation capacities to bear on these fundamental global objectives and to deploying resources to ensure that our higher education systems contribute to the achievement of the SDGs." (Rome Ministerial Communique, 2020).

In light of the pivotal role played by higher education institutions in steering societies towards sustainable development, it becomes crucial to determine the extent to which a university is making progress in this regard. A significant challenge lies in the design and implementation of effective instruments for evaluating the extent to which academic institutions advance sustainable development. Accordingly, the aim of this article is to examine the assessment tools employed for evaluating universities' contributions to sustainable development, with a particular focus on the University Sustainability Assessment Framework (UniSAF) indicators.

2. Literature review

Universities occupy a pivotal position in the preparation of future leaders, decision-makers and educators. They possess the requisite authority and resources to exert a transformative influence on societal development in the pursuit of sustainability. Higher education institutions have the potential to play a key role in the realisation of the 2030 Agenda, particularly in three main areas: (i) expanding human capital with an SDG perspective, (ii) research, and (iii) implementing the agenda for sustainable development (United Nations, n.d.). To achieve this, universities can take a variety of actions, including educating students to understand the environmental, social and economic impacts of their future professional activities, introducing open online courses on sustainable development and making them accessible to the general public, initiating action-oriented research involving different stakeholders (policy makers, private sector, civil society), establishing close collaboration between universities, creating multi-stakeholder partnerships for the SDGs and thus contributing to knowledge transfer. In more detail, Dankova (2023) presents recommendations for universities to support sustainable development in the following areas: (i) educating students, (ii) conducting research, (iii) disseminating knowledge and ideas, (iv) engaging the public, (v) building peer networks, (vi) innovation and entrepreneurship, (vii) influencing state and local policy formulation, (viii) managing university buildings, and (ix) international cooperation.

Despite the incorporation of select sustainable development goals into certain university courses (Leahy and Sovacool, 2022), a notable discrepancy persists between the theoretical promotion of sustainability and its practical integration into higher education curricula, particularly within pivotal academic domains such as engineering and business (Al Kez et al., 2024). Soubhari et al. (2024) present an inclusive model for integrating climate education into the education system. This model engages a range of stakeholders, including educational institutions, industries, government bodies, and non-governmental organisations, with the goal of fostering collective action in addressing climate change.

As posited by Štrukelj et al. (2023), universities progress through seven consecutive stages on their journey towards sustainability. To describe this journey, the authors developed a cybernetic model of the university's transition to sustainability. In the initial (pre-awareness) stage, the actions of the university in relation to sustainability are largely driven by external pressure. In contrast, in the final seventh (continuous improvement) stage, the university regularly evaluates its achievements in this area and takes ongoing steps to enhance its sustainability performance (Štrukelj et al., 2023).

In order to assess the sustainability of higher education institutions, a number of methodologies and indicators have been developed to evaluate the environmental impact of university buildings and campuses. Adenle et al. (2021) address the topic of designing smart and sustainable educational institution campuses. The energy use assessment of educational buildings is also explored by Agdas et al. (2015), with the aim of formulating strategies to achieve sustainable energy policies for university campus buildings. Hiltunen et al. (2022) discuss the transition towards university campus carbon neutrality. By focusing on the most significant factors influencing buildings' and activities' greenhouse gas emissions and social performance, Jiang and Kurnitski (2023) devised a six-category framework comprising key performance indicators to assess the carbon footprint of university campuses. Furthermore, Mao et al. (2024) adopt an intriguing standpoint on the sustainability of university campuses, identifying a favourable influence on students' physical activity and mental and physical wellbeing.

Nevertheless, the assessment of the environmental impact of university buildings and campuses represents merely one aspect of an institution's sustainable development. It is of particular importance to implement a comprehensive system of indicators to measure the sustainable development of the university in all necessary areas, and to design said system in accordance with the latest standards and best practices.

3. The University Sustainability Assessment Framework

In essence, there are two principal approaches to identifying sustainable development indicators: top-down and bottom-up (Reed et al., 2006). A key benefit of a top-down approach is that it generates indicators with greater consistency and scientific rigour. In comparison, a bottom-up approach allows for a more inclusive and community-centric process by incorporating a wider range of perspectives. A university is a distinctive community of highly proficient individuals with scientific expertise. It is therefore essential that academics are involved in the development of indicators in order to guarantee their maximum practical utility. As Frazer et al. observe, "*the process of engaging people to select indicators also provides an opportunity for community empowerment that conventional development approaches have failed to provide*" (Frazer et al., 2005).

To measure the level of sustainability of higher education institutions, the Green Office Movement has developed a tool called the University Sustainability Assessment Framework (UniSAF). The Green Office Movement was launched in the Netherlands in 2010 by students and academic staff at Maastricht University, with the aim of encouraging higher education institutions to become catalysts for sustainability. It quickly gained international recognition after winning the Student Leadership Award in 2012 and the Dutch SustainaBul Award in 2014. Since then, the Green Office Movement has grown into an international network with more than 40 Green Offices and more than 65 initiatives. To date, it has implemented around 500 projects that address the SDGs through awareness raising, student and staff engagement, and embedding sustainability in curriculum, research, governance and operations.

The University Sustainability Assessment Framework (UniSAF) comprises a comprehensive set of indicators designed to facilitate the collection, analysis, and communication of sustainability performance data for universities (Green Office Movement, 2017). The sustainability indicators within UniSAF are organised into five categories, namely education, research, community, operations and government (table 1).

Table 1.

University Sustainability Assessment Framework (UniSAF) Indicators

EDUCATION		
Section	**Name**	**Indicators**
Educational offering	Courses focused on sustainability	A comprehensive list and total number of all sustainability focused courses.
	Percentage of courses	Percentage of all courses focused on sustainability, relative to the total number of all courses reviewed.
	Availability of courses to students	Ability of students to take sustainability focused courses from other faculties or study programmes.
	Educational offerings for general public	A comprehensive list and description of the availability of educational opportunities directly aimed at the general public.
	Sustainability specialization	A comprehensive list and total number of all accredited sustainability specializations and minors.
	Sustainability focused service learning	A comprehensive list and total number of courses in which students analyse and provide solutions to real-life sustainability problems of the institution or other actors.
Students	Student enrolment	Total number of students, and percentage of all students, who were enrolled in at least one course on sustainability.
	Student involvement	Extent that students feel they are actively involved in shaping their learning experiences.
	Alumni destinations	Extent of sustainability focused careers pursued by alumni after their study.
Course quality	Educational outcomes	Extent of acquired sustainability competencies by students enrolled in sustainability courses.
	Professional development of sustainability educators	All professional training opportunities that the institution provides to educators to improve their ability to teach in the area of sustainability.
	Links between sustainability research and education	Extent to which the insights from sustainability research conducted at the institution are systematically employed to inform the teaching content and practice of courses.
	Partnerships	Extent to which external partners are involved in designing and delivering courses whose involvement could enhance or limit the sustainability focus of these courses.

RESEARCH		
Research activities	Researchers focused on sustainability	A comprehensive list and total number of all researchers employed by the institution focused on sustainability.
	Percentage of researchers focused on sustainability	Percentage of all researchers focused on sustainability, relative to the total number of all researchers reviewed.
	Research institutes focused on sustainability	A comprehensive list and total number of all research institutes within the institution focused on sustainability.
	Percentage of research institutes focused on sustainability	Percentage of all research institutes focused on sustainability, relative to the total number of all research institutes within the institution.
	Research projects	A comprehensive list and total number of all research projects focused on sustainability.
Outputs and outcomes	Scientific publications	A comprehensive list and total number of all publications focused around sustainability questions and published in peer-reviewed journals.
	Number of start-ups founded	Number and type of start-ups created from sustainability research.
	Number of patents filed	Number and type of patents field from sustainability research.
	Application of sustainability research within the institution	Individual examples or systematic efforts through which the sustainability research of researchers is applied to inform the sustainability transition of the institution.
	Societal outcomes in terms of learning	Individual examples or systematic efforts through which sustainability research is communicated to and enabled the learning of non-scientific actors.
	Resource intensive research activities	List of particularly resource intensive research activities of the institution.
Quality	Interdisciplinary research	Extent to which research concerning sustainability is conducted in an interdisciplinary way.
	Transdisciplinary research	Extent to which sustainability research is conducted in a transdisciplinary way.
	Professional development for sustainability researchers	Professional training opportunities that the institution provides to sustainability researchers.
	Financial support and third party funding	Total sum of financial budgets available for sustainability research, as provided by the institution and third party funding.
	(Inter)national sustainability research partnerships	Extent of partnerships that research institutes from the institution maintain with research institutes at other institutions within the same country and internationally.
COMMUNITY		
Initiatives	Sustainability initiatives	A comprehensive list of the institution's sustainability initiatives.
	Membership in sustainability initiatives	Total number of all members who are active within the sustainability initiatives, as well as their percentage relative to all students and staff
	Activities organized in partnerships	A comprehensive list and total number of activities organized by sustainability initiatives with each other or in collaboration with external actors.
Engagement	Participation in activities	Total number and relative percentage of students who participated in activities organized by sustainability initiatives.
	Satisfaction	Percentage of students and staff satisfied with the sustainability activities they participated in that were organised by sustainability initiatives.
	Following communications	Total number and relative percentage of students and staff who are following the communications of sustainability initiatives.
Awareness and behaviours	Awareness of sustainability issues	Level of awareness of sustainability issues and relative importance that students and staff attach to them.
	Awareness of efforts	Level of awareness that students and staff have of sustainability efforts executed by sustainability initiatives and

		the institution.
	Responsible behaviours	Level that students or staff engage in socially responsible and environmentally friendly behaviours during their time at the institution.
OPERATIONS		
Energy	Energy mix	Energy mix, incl. at least a split in the sources of electricity and gas, as well as self-generated energy.
	Electricity usage	Total and per capita electricity usage by the institution in kWh.
	Natural gas usage	Total and per capita natural gas usage by institution in cubic meters.
	Heating energy	Total and per capita value of heating energy divided by heating degree days.
Water	Water usage	Total and per capita water consumption of the institution in cubic meters or liters.
	Virtual water footprint	Total virtual water footprint for the institution.
	Recycled or reused water	Share of recycled or reused water of the whole institution.
Waste	Waste disposal	Total and per capita kilograms of waste disposed at the institution.
	Recycled waste	Total amount and relative percentage of waste that is being recycled in kg.
	Hazardous waste	Total and per capita kilograms of hazardous waste disposed by the institution.
	E-Waste	Total and per capita e-waste disposed by the institution in kg, incl. how the E-Waste is disposed of and to what extent cradle-to-grave reporting is done.
	Radioactive waste footprint	Radioactive waste produced in the electricity supply chain of the institution in grams.
Climate footprint	Greenhouse gas emissions	Scope 1, 2 and 3 greenhouse gas emissions of the institution in kg of CO2 equivalents as a sum, separately and per capita.
	Compensations	Value of emissions prevented through purchases of certificates of origin or similar compensation schemes.
Procure-ment	Tenders with sustainability criteria	Share of tenders to which sustainability criteria by recognized entities were applied.
	Share of organic and sustainable catering	Total monetary value and relative percentage of foodstuff sold at the institution that is organic and/ or sustainable.
	Self-produced catering products	Where the institution produces foodstuff itself, provide a description of the processes in terms of sustainability and an evaluation of the level of sustainability of such production compared to purchasing equivalent products.
Mobility	Split of transportation mode	Shares of usage of different modes of transportation by students and staff members.
Eco-Systems	Land use	Percentage of land used for different purposes.
	Ecological footprint	Total and per capita ecological footprint of the institution in hectares.
	Biodiversity	Type and scope of biodiversity on campus.
GOVERNANCE		
Strategic integration	Definition	Definition of how the institution understands sustainability in its strategic documents.
	Long-term planning	Integration of sustainability into the institution's long-term planning.
	Accountability	Integration of responsibility for sustainability into job positions of employees, teams, departments and committees.
	Monitoring and reporting	Description of how the institution monitors the implementation of its sustainability efforts and communicates the results.
	Financing	Financial support that is allocated to sustainability efforts in education, research, community and operations.

Socio-economic indicators for staff	Number of employees	Number of academic and non-academic staff stated as a sum, separately and by type.
	Training	Possibilities for staff to receive training enabling them to thrive within the institution, but also in their further career elsewhere.
	Management composition	Composition of the management in terms of gender.
	Types of contracts	Number of academic and non-academic staff with permanent and with temporary contracts.
	Wages	Average wage paid by the institution in comparison to the national average.
	Equal pay ratio	Pay ratio between men and women.
	Social benefits	Financial social benefits above the legal minimum given to different groups of employees.
	Safety and health	Measures taken to ensure the health and safety of staff members.
	Non-financial social assistance	Non-financial social assistance available to staff members.
	Union rights	Union rights given to staff and any violations that occurred of these union rights.
Socio-economic indicators for students	Number of students	Number of students in total and by type.
	Programmes with higher tuition fees	For public institutions: Study programmes whose tuition fees exceed the standard tuition fees of public universities. For private institutions: Standard tuition fee of the institution.
	Enrollment in programmes with higher tuition fees	Total number and percentage of all students enrolled in programmes with higher tuition fees.
	Funds allocated to scholarships	Total monetary value of funds made available for scholarships by or through the institution.
	Scholarships	Total number and overall percentage of all students receiving scholarships
	Integration of foreign migrant students	Extent to which foreign or migrant students are integrated in the local and national community.
	Social assistance	Non-financial social assistance available to students.
	Support of student groups	Total monetary value of funds to support student groups.
Democracy and participation	Rights of councils	Rights given to elected councils, such as faculty and university councils, that go beyond the minimum legal requirements.
	Further participation	Democratic participation given to students and staff members outside of the councils.
	Accessibility of information	Level of accessibility of information concerning the governance of the institution.
Financial Governance	Investment decisions	Evaluation related to if and how sustainability considerations are integrated into financial investment decisions.
	Indebtedness	Indebtedness of the institution.

Source: Green Office Movement, 2017

In order to ensure the reliability of the data collected, indicators applied to assess the sustainability of universities must be transparent and clearly defined. Thoroughly designed indicators offer valuable information for strategic decision-making. By bringing together approaches from multiple paradigms, Reed et al. (2006) propose a learning process that provides a holistic approach to measuring progress towards sustainable development, highlighting the importance of participatory approaches that set the context for sustainability assessment at the local level. They further discuss how this learning process can be used to develop easily collected and interpreted quantitative and qualitative sustainable development indicators. Based on the analyses of 13 different campus sustainability appraisal frameworks, Adenle et al. (2021) identify a set of spatial-based and environmental-dimension indicators.

In order to encourage higher education institutions to make efforts towards sustainable development, one of the most esteemed global providers of insight into the higher education sector, QS Quacquarelli Symonds, introduced in 2022 the QS World University Rankings: Sustainability (QS International, 2024). It assesses an institution of higher education's capacity to address the most pressing environmental, social, and governance (ESG) challenges. The QS Sustainability Rankings comprise eight indicators, which are distributed into two

sections. The first section pertains to the university's environmental impact and encompasses the following indicators: (i) sustainable institution, (ii) sustainable education, and (iii) sustainable research. The second section is related to the university's social impact and comprises the following indicators: (iv) equality, (v) knowledge exchange, (vi) impact of education, (vii) employability and opportunities, and (viii) quality of life (Lightfinch, 2023). The third element of the ranking is concerned with the issue of governance. While it does not include specific indicators, it encompasses the provision of web links to the minutes of meetings held by the institution's governing body, evidence that students are represented on the aforementioned body, and confirmation that an ethical standards committee has been constituted at the institution.

4. Conclusion

The incorporation of sustainable development issues into the educational system will facilitate the empowerment of the next generation, equipping them with the requisite knowledge and expertise to become informed policy-makers and leaders. In order to achieve this, it is necessary to adopt a holistic approach that encompasses the integration of knowledge, behavioural change, technological advancement, community involvement and policy advocacy. Nevertheless, the majority of higher education institutions globally have yet to address this challenge. It is therefore imperative that universities are encouraged to make the relevant efforts in this regard, as well as to design and apply appropriate tools for assessing their level of sustainable development and their contribution towards achieving the Sustainable Development Goals (SDGs).

Literature

Adenle, Y.A., Chan, E.H.W., Sun, Y., Chau, C.K. (2021). Assessing the relative importance of sustainability indicators for smart campuses: A case of higher education institutions in Nigeria. *Environmental and Sustainability Indicators, v*ol. 9, https://doi.org/10.1016/j.indic.2020.100092.

Agdas, D., Srinivasan, R.S., Frost, K., Masters, F.J. (2017). Energy use assessment of educational buildings: Toward a campus-wide sustainable energy policy. *Sustainable Cities and Society*, vol. 17, pp. 15-21, https://doi.org/10.1016/j.scs.2015.03.001.

Al Kez, D., Lowans, C., Foley, A. (2024). Sustainable Development in Third Level Programs: Distilling a Pathway to a True Net-Zero Education. *Sustainability*, 16(5), https://doi.org/10.3390/su16051998.

Dankova, P. (2023). Sustainable development: challenges for educational institutions. In: *Industrial Business - Perspectives & Opportunities.* Round table proceedings. Varna: Nauka i ikonomika, pp. 190-197, Available at: https://ue-varna.bg/uploads/filemanager/303/publishing-complex/2023/Industrial-business-perspectives-opportunities-2023.pdf Accessed: 30.11.2024.

Fraser, E. D., Dougill, A. J., Mabee, W. E., Reed, M., McAlpine, P. (2005). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of Environmental Management*, *78*(2), 114–127. https://doi.org/10.1016/j.jenvman.2005.04.009

Goals Archive - The Global Goals. (2024). The Global Goals. https://www.globalgoals.org/goals/ Accessed: 20.11.2024.

Green Office Movement (2017). University Sustainability Assessment Framework (UniSAF). Available at: https://www.greenofficemovement.org/sustainability-assessment/. Accessed: 24.11.2024.

Hiltunen, P., Volkova, A., Latõšov, E., Lepiksaar, K., Syri, S. (2022). Transition towards university campus carbon neutrality by connecting to city district heating network. *Energy Reports*, Vol. 8, pp. 9493-9505, https://doi.org/10.1016/j.egyr.2022.07.055.

Jiang, Q., Kurnitski, J. (2023). Performance based core sustainability metrics for university campuses developing towards climate neutrality: A robust PICSOU framework. *Sustainable Cities and Society*, vol. 97, https://doi.org/10.1016/j.scs.2023.104723.

Leahy, P.G., Sovacool, B. K. (2022). Decarbonize pedagogy - apply sustainable development goals. *Nature*. 608(7922):266. https://doi.org/10.1038/d41586-022-02126-8

Lightfinch, L. (2023). *QS World University Rankings: Sustainability methodology - How to use the rankings in your university search*. Top Universities. https://www.topuniversities.com/university-rankings/sustainability-rankings/methodology. Accessed: 24.11.2024.

Mao, Y., Xia, T., Hu, F., Chen, D., He, Y., Bi, X., Zhang, Y., Cao, L., Yan, J., Hu, J., Ren, Y., Xu, H., Zhang, J., Zhang, L. (2024). The greener the living environment, the better the health? Examining the effects of multiple green exposure metrics on physical activity and health among young students. *Environmental Research*, 250, 118520. https://doi.org/10.1016/j.envres.2024.118520.

Reed, M. S., Fraser, E. D., Dougill, A. J. (2006). An adaptive learning process for developing and applying sustainability indicators with local communities. *Ecological Economics*, *59*(4), 406–418. https://doi.org/10.1016/j.ecolecon.2005.11.008

Rome Ministerial Communique (2020, 19 November). EHEAROME2020. Available at: https://www.ehea.info/Upload/Rome_Ministerial_Communique.pdf. Accessed: 21.11.2024.

QS International. (2024). *QS Sustainability University Rankings 2024: Environmental, Social and Governance*. Top Universities. https://www.topuniversities.com/sustainability-rankings. Accessed: 30.11.2024

Soubhari, T., Nanda, S. S., Shobha, C. V. (2024). Revisiting climate crisis for carbon neutrality through Education? A Sustainable nudging approach. In: *World sustainability series,* pp. 263–291. https://doi.org/10.1007/978-3-031-65972-0_14

Štrukelj, T., Dankova, P., Hrast, N. (2023). Strategic Transition to Sustainability: A Cybernetic Model. *Sustainability*, 15(22), 15948. https://doi.org/10.3390/su152215948.

The 17 goals | Sustainable Development. (n.d.). https://sdgs.un.org/goals. Accessed: 12.11.2024.

Transforming our world: the 2030 Agenda for Sustainable Development. (2015, 25 September). Resolution by the United Nations General Assembly. Department of Economic and Social Affairs. Available at: https://documents.un.org/doc/undoc/gen/n15/291/89/pdf/n1529189.pdf. Accessed: 12.11.2024.

United Nations. (n.d.). *Universities: Getting ready for the SDGs | United Nations*. https://www.un.org/en/academic-impact/universities-getting-ready-sdgs Accessed: 21.11.2024.