

TRAILBLAZING SUSTAINABILITY: LESSONS FROM UNIVERSITY EFFORTS SO FAR

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Universities are pivots not only of knowledge but also of their practices, which must be sustainable in an age of environmental crisis and thus set an example for others because the academy has always been a beacon and guide, even in the most difficult times. Universities should also educate and "shape" the students who will be our future and the decision-makers who will impact us all. Bearing this in mind, the authors of the paper have decided to outline the examples of beneficial sustainable practices of the universities with special reference to the sustainable mobility practices of university students and employees because of their impact in the fight against climate change. In this way, the existing practices, as case studies that can be applied outside the institutions where they started, pave the way for other universities to include the improvement of sustainability as a necessary goal in their strategies.

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1 Introduction

"Happiness can be found even in the darkest of times, if one only remembers to turn on the light." – J.K. Rowling

Sustainability, sustainable development (SD), and attaining the Sustainable Development Goals (SDGs) have become vital, necessary, and sufficient states for civilisation to move on from the "environmental mess" it created and exist in the long run. On this path of survival, universities are pivots not only of knowledge but also of their own practices, which must be sustainable and thus "lead by example" (Amaral et al., 2015), because the academy has always been a beacon and guide even in the most difficult times.

The planet's future growth must be based on the preservation of "natural capital" (air, water, and other environmental resources) while preserving a balance between human activity and nature's ability to replenish itself. "Environmental concerns" should be addressed in all major plans, programs, and processes for social progress. Existing environmental crises require holistic environmental education, and that is why at the 1972 United Nations Conference on the Human Environment, it was recommended in the 19th Principle of the The Stockholm Declaration that all nations promote environmental education, which must be adequate as well as quality, "developed in accordance with the principles of sustainability with the aim of including environmental issues in order to expand the basis for responsible behavior of individuals, organizations, and communities in the protection and improvement of the environment" (United Nations [UN], n.d.).

For these reasons, today's societies demand high-quality education programs that promote sustainability and environmental protection (Petrović, 2024). This demonstrates the crucial and essential role that universities play as higher education institutions that educate and "shape" the students who will be our future and the decision-makers and leaders who will impact us all. According to Gaitán-Angulo and others (2022) "universities, being the training center for future professionals and agents of change, have the responsibility to provide society with professionals who, in the exercise of their profession, meet our current needs without compromising the possibilities of future generations to respond to theirs". In addition "by demonstrating best practice in their operations, research and teaching, universities

have both multiple and multiplier effects on society" (Ralph & Stubbs, 2013). We need to keep in mind the so-called "third mission of the university" - trying to enhance people's lives and solve global concerns (Sady et al., 2019).

To this it should be added that universities have "played an instrumental role in encouraging SD, whether that be through education, research, operations, community partnerships, and more" (vanessalevesque, n.d.). Other universities might include sustainability improvement as a crucial aim in their goals and strategies by implementing current sustainable university practices. These strategies describe universities' approaches to sustainability, as well as key commitments such as achieving net zero carbon, improving low-carbon travel, increasing environmental performance, promoting sustainability in teaching and learning, research, and innovation, and reducing negative operational environmental impact. In this way, universities, as higher education institutions, outline their sustainability initiatives and show a way to balance economic and social progress with a concern for the environment and preserving natural resources.

2 Sustainable University

Every university is distinct and, as a result, addresses sustainability issues in a varied manner. Also, each university faces different challenges in its efforts to be sustainable and introduce sustainability in higher education (HE). Table 1 lists these challenges.

There is no generally applicable concept of a sustainable university, just as there is no single answer to sustainability challenges, but rather a diversity of approaches (vanessalevesque, n.d.). Some of definitions of sustainable university are:

- Sustainable university is "a higher educational institution, as a whole or as a part, 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 in order to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles" (Velazquez et al., 2006).

- A sustainable university is an institution that incorporates sustainable practices into many sections of its curricula while also encouraging students, staff, and visitors to evaluate and minimise the impact that they have on the planet (Celikdemir et al., 2017).
- Sustainable universities educate future generations, promote research initiatives, and engage with external organisations to maintain the community's long-term viability in terms of the environment, economy, and society (Sonetti et al., 2016).
- Sustainable universities contribute to SD both locally and globally (Bhowmik et al., 2018).
- Sustainable universities educate global citizens on how they may contribute to SD via their lives, careers, and overall life choices (The UNEP Sustainable University Framework, n.d.).

Table 1: Challenges of sustainability in HE

Introducing sustainability in higher education			
Challenges to introducing sustainability into HE	Terminological challenges	Teaching and learning challenges	Curriculum orientation
Planning and implementing organizational changes in university	Ensuring a shared understanding of sustainability and related concepts	Creating sustainability-related dynamic learning processes	Choosing among the inter-disciplinary, horizontal (across different courses), vs. vertical curricular approach (by introducing separate, specialized courses)
Introducing changes into university management	Developing new sustainability-related HE concepts	Introducing problem-solving teaching and learning methods	Choosing among the cross-disciplinary (isolated, task-specific integration across courses), vs. inter-disciplinary (topic-specific integration across courses, including sharing of methods), vs. multi-disciplinary (field-specific integration across courses, retaining specific fields and methods within disciplines), vs. trans-disciplinary approaches (focusing on inclusiveness and real-world problems, transgressing the HE disciplines)
Ensuring stakeholder involvement	Addressing the lack of university staff and administrators' sustainability knowledge	Shifting content-centered HE teaching and learning toward the student-centered approach	
Ensuring sustainability leadership and shared values	Addressing the lack of university staff and administrators' competencies to generate and implement innovative concepts	Ensuring the active role of students in academic teaching and learning	

Source: Alfirević et al. (2024), Figueiró and Raufflet (2015)

2.1 Sustainable University Model

According to the author, Velazquez, and others (2006), the development of the model of a sustainable university has four phases:

- "Phase one: Developing a sustainability vision for the university.
- Phase two: The mission statement.
- Phase three: Sustainability committee: creating policies, targets, and objectives.
- Phase four: Sustainability strategies (education, research, outreach and partnership, sustainability on campus)."

This model (Figure 1) highlights that sustainability activities should be based on continual improvement: Plan – Do – Check – Act and "should be made through incremental steps" (Velazquez et al., 2006), as well as stated by Lozano (2004).

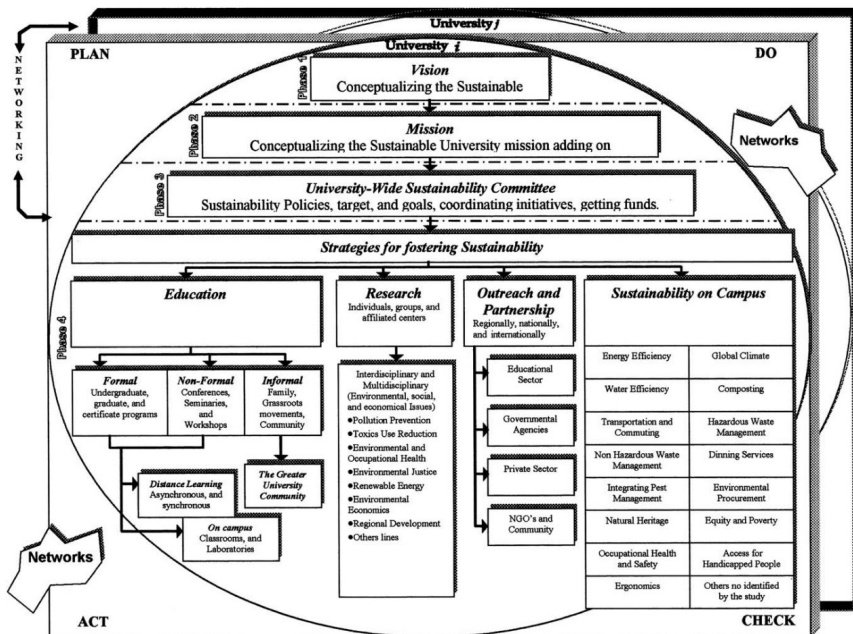


Figure 1: Sustainable university model

Source: Velazquez et al. (2006)

UNEP's Sustainable University Framework (2021) recognises four core areas of a sustainable university model (Figure 2):

- "1. Teaching and Research.
- 2. People and Society.
- 3. Environment and Climate.
- 4. Administration and Governance."

These four core areas are utilised to calculate a university's quadruple bottom line. Figure 2 also lists common aspects included in these universities' core areas (leadership, ethics, HR, business links etc.).

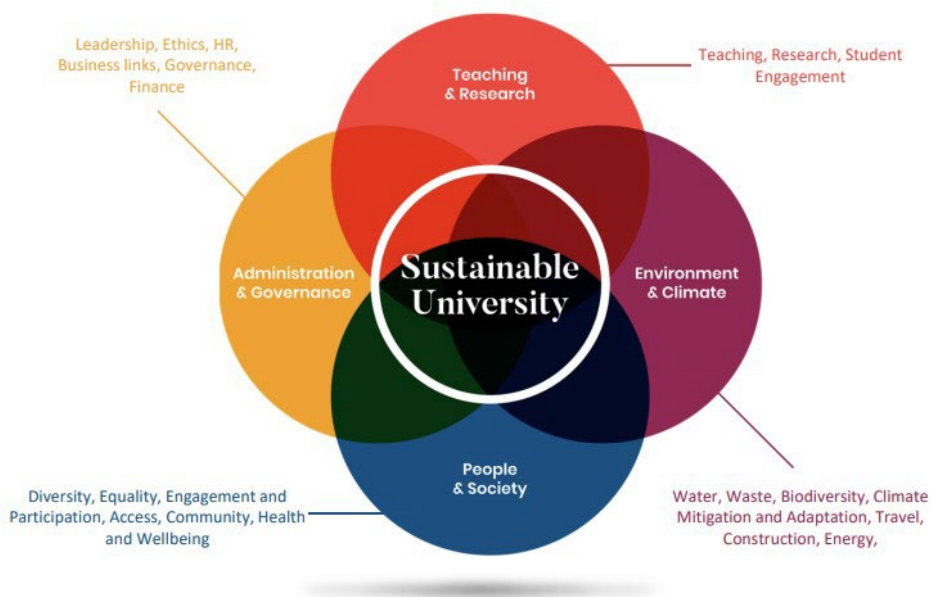


Figure 2: Sustainable university four core areas

Source: United Nations Environment Programme - UNEP (2021)

2.2 Sustainability Reporting at Universities

Sustainable reporting (SR) displays universities' commitment to SD, SDGs, and sustainability and can motivate other higher education institutions to take similar activities and responsibilities for their own actions towards a more sustainable future. Universities can also use SR as a tool for promoting cooperation and partnerships with other organisations or stakeholders in gained efforts for achieving SDGs (Strategist & Strategist, 2024).

In general, SR can be defined as "the process of communicating an organization's sustainability performance to stakeholders" (Kazemi et al., 2023; Kolk & Pinkse, 2006). SR gives information on the environmental, social, and financial implications, as well as efforts to achieve sustainability.

There are different frameworks and guidelines for SR such as the GRI, Sustainability Accounting Standard Boards (SASBs) and Integrated Reports (IR). They refer to non-financial reporting and therefore can be applied at universities (De Villiers et al., 2022; Purcell et al., 2019; Yang et al., 2019). The GRI principles are the most often used and implemented as a framework for SR in universities, particularly in Europe (Del Mar Alonso-Almeida et al., 2014; González et al., 2017). According to QS World University Rankings 2025: Sustainability 2025 (QS International, 2025), there are 1,744 ranked higher education institutions in the field of sustainability, especially in the areas of their environmental and social impact, as well as governance.

When it comes to universities' SR, their sustainability frameworks commonly include the following areas: Teaching and Learning, Research, Operations and Infrastructure, Engagement & Partnerships, and SDGs. In most cases, priority initiatives and commitments to improvement include climate change, energy efficiency, green building, transportation and travel, food, procurement, waste, plastic-free, water, general sustainability performance assessment, health and well-being, biodiversity, land use plan, justice, equity, diversity, inclusion...

3 Sustainable Mobility in Higher Education: Case Studies of Improvements in Transport and Travel Practices

"By adopting eco-friendly practices, such as reducing carbon emissions, conserving water, and protecting biodiversity, sustainable travel contributes to the preservation of delicate ecosystems and helps combat climate change" (Partners, 2024). Climate changes represent the worst environmental crisis because they are causing a climate crisis of the global ecosystem of the planet Earth.

When it comes to transport at universities, it must be noted that all SRs emphasise the need for sustainable university transportation, including business, staff, and student travel, having in mind their responsibilities for tonnes of CO₂ equivalent (CO₂e) emissions per year (e.g., ca. 97,000tCO₂e at Imperial College London (2024), which made up 10% of the university's carbon footprint, as much as its electricity consumption). University transport involves business travel and travelling by car and includes all local, national, and international travel taken on behalf of the university.

As a result, universities proposed the following opportunities for implementing sustainable mobility:

- Implementation of Sustainable Travel Policy (principles: "avoidance of air travel for national travel, with a limited number of exceptions where air travel is required; flight class is restricted to economy class, unless for health reasons or disability; first-class air travel is not allowed for any reason; support the uptake of first-class and direct flights, and sleeper rail or coach services where practical" (The University of Edinburgh, 2025)).
- Active travel can be achieved by developing sustainable travel facilities such as bike racks, repair stations, and water refill points, ensuring safety and security, providing cycle hire and maintenance services, hosting e-bike docking stations, offering adult bike training, offering discounts, and purchasing second-hand bikes (University of Leeds, 2025).
- Using public transport.
- Opportunities for more sustainable travelling by car (driving to the university is not encouraged): limited car parking, using electric vehicles along with electric car charging points at the university, carpooling/lift sharing, car hire.

- Virtual meetings for reducing emissions with the support of Microsoft Teams, Zoom..., hosting a virtual or hybrid conference.
- Promotion of using mobile applications for sustainable mobility of students and university staff.

4 Conclusion

Universities can and should play an important role in making society more sustainable by teaching and developing world leaders, as well as researching to allow a sustainable future. In general, a sustainable university should demonstrate its commitment to sustainability by not only teaching students about the notion and philosophy of SD, but also integrating this concept into daily organisational management. Moving forward, universities must build on the findings of previous studies and continue to engage in sustainable practices (Radaković et al., 2024).

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