

The symbiotic relationship between University and Sustainable development: Transitioning to a Green University model

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Abstract:

The relationship between universities and sustainable development is crucial in a context where environmental and social challenges are increasingly pressing. Our study aims to elucidate the nature of this relationship and highlight the Green University model as a necessary answer to the fully integration of the sustainable development principles. To achieve this goal, we used the qualitative methodology based on documentary research. The results reveal a symbiotic win-win relationship between the university and sustainable development. And the transition to the Green University model requires institutional transformation using strategies to include sustainability into all the activities of the university.

Keywords: University, Sustainable development, Transition, Green University, Strategies.

JEL Classification Codes: I23, Q01, L39, Q59, I28.

1. INTRODUCTION

In a context marked by growing concerns about environmental and social issues, the university emerges as a key actor in promoting sustainable development. This relationship between the university and sustainable development is generating increasing interest within academic institutions, civil society, and governmental spheres. In the face of these challenges, the emergence of the "Green University" concept offers an innovative and promising perspective for fully integrating the principles of sustainable development within higher education institutions.

The objective of this paper is to explore the underlying dynamics of the relationship between the university and sustainable development, with a particular focus on the transition to the Green University. To achieve this, a qualitative method using documentary research as a data collection tool was employed.

The consulted documentation outlines the organization of this communication around the following ideas: we will successively address the concept of sustainable development (highlighting its main dimensions, objectives, and actors) and that of the university. Then, the key elements of the complex relationship between sustainable development and the university will be examined, exploring the various dimensions of university engagement in sustainable development. We will also analyze the practical implications of this transition to the Green University, highlighting the diverse principles and strategies of these higher education institutions that are at the core of sustainable development to promote a sustainable and equitable future.

2. Sustainable development: Integration of 3 dimensions through 17 goals and synergy between actors

There are several definitions of the concept of sustainable development. In 1987, the World Commission on Environment and Development proposed a definition in the famous Brundtland Report, which has been widely circulated and established as the reference definition in global debates. According to this definition:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Often overlooked, the following sentence is equally essential:

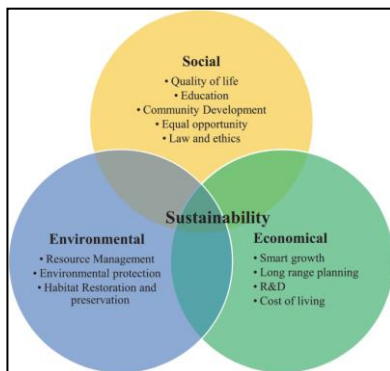
"Two concepts are inherent in this notion: the concept of 'needs,' particularly the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs." (Jounot, 2010)

The concept of sustainable development is a framework for thinking and acting aimed at primarily reconciling three (03) interconnected pillars and seventeen (17) goals, which are developed below:

2.1. Dimensions of sustainable development

According to the definition proposed by the Brundtland Report, the concept of sustainable development harmonizes three essential dimensions: economic efficiency, social equity, and environmental preservation, as illustrated in the figure below:

Fig.1. The 3 classic pillars of sustainable development



The economic dimension aims to maintain continuous economic development that benefits all members of society without depleting natural resources.

The environmental dimension seeks to promote the use of renewable energy sources and minimize the environmental impacts of human activities.

The social dimension aspires to build inclusive societies where everyone can live in dignity and security.

Source: (Veyret, 2005)

2.2. Goals of Sustainable Development

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015 as part of the 2030 Agenda, are categorized into 17 goals as shown in the figure below:

Fig.2. Sustainable Development Goals

Source: (17 Sustainable Development Goals, 2021)

1. Eliminate poverty in every form globally.
2. End hunger, secure access to food, improve nutrition, and support sustainable agriculture.
3. Guarantee healthy lives and foster well-being for people of all ages.
4. Offer inclusive and fair quality education and encourage learning opportunities for all.
5. Attain gender equality and empower women and girls everywhere.
6. Ensure access to sustainable water and sanitation management for everyone.
7. Provide universal access to affordable, reliable, and sustainable energy sources.
8. Foster sustained and inclusive economic growth, along with full and productive employment and decent work for all.
9. Build resilient infrastructure, support inclusive and sustainable industrialization, and stimulate innovation.
10. Reduce inequality both within and between nations.
11. Create cities that are inclusive, safe, resilient, and sustainable.
12. Encourage patterns of consumption and production that are sustainable.
13. Take immediate action to combat climate change and its effects.
14. Manage oceans and marine resources in a sustainable manner to support growth.
15. Promote the sustainable management of terrestrial ecosystems, fight desertification, and safeguard biodiversity.
16. Foster peaceful and inclusive societies that support sustainable development, guarantee justice for everyone, and strengthen effective and accountable institutions.
17. Strengthen the methods for implementing sustainable development goals and reinvigorate the global partnership for achieving these goals.

These goals form a global roadmap for a sustainable future, integrating the economic, social, and environmental dimensions of development.

To conclude these first two points, we can assert that sustainable development has emerged in response to the negative impacts of economic growth on the environment and society. It is perceived as a conceptual framework, a process and a goal (Bayley & Stranget, 2008). And it also has several distinctive characteristics: creative capacity, qualitative dimensions of life and global cooperation are considered (Lasida, 2009).

2.3. Actors of Sustainable Development

The actors of sustainable development are varied and play complementary roles in promoting a more balanced and environmentally respectful society. Here is an overview of the main actors with a brief description of their roles:

Table.1. Actors of Sustainable Development

Actor	Role
Governments and Public Institutions	Develop policies and regulations to encourage sustainable development. (UNEP, 2020).
Businesses and Private Sector	Integrate sustainability principles into their operations and value chain. (Porter, M. E., & Kramer, M. R., 2011).
Non-Governmental Organizations	Raise public awareness, advocate to governments and businesses,... (Clark, P., 2009).
Local Communities	Implementation of sustainable development projects through local initiatives. (Pretty, J., 2003).
International Organizations	Coordinate global efforts and provide reference frameworks and funding (United Nations, 2015).
Citizens	Influence the practices of businesses and governments through consumption choices and civic participation (Thogersen, J., 2005).
Educational and Research Institutions (Universities, etc.)	Provide the knowledge and innovations necessary for sustainable development. Train future leaders and raise awareness about environmental issues, ... (Sterling, S., 2010).

Source: Compiled by the author based on the previously cited references.

These actors, by acting together and in a coordinated manner, contribute to achieving the SDGs and building a more sustainable future.

In the next section, we will highlight the crucial role of universities as central actors in sustainable development.

3. University and Sustainable Development: What Relationships and Contributions?

There are various definitions of the concept of "University" in the literature. These definitions can vary depending on the cultural, historical, and institutional context. Some definitions emphasize the traditional role of the university as an institution of higher education and research, while others highlight its commitment to the community, social and economic development, or its evolution in the context of globalization and technological advancements (Altbach, P. G., & Knight, J., 2007).

In this context, we expose below the two most frequently referenced definitions:

- The definition proposed by UNESCO (United Nations Educational, Scientific and Cultural Organization) states: "A university is an institution of higher education and research that awards academic degrees in various fields of study and promotes scientific research and innovation" (UNESCO, 2012).
- In his book, J.C. Hébert defines a university as an institution of higher education and research that offers a wide range of academic programs in various fields of knowledge. It plays an essential role in the education of individuals, the production and dissemination of knowledge, and the promotion of social and economic progress (Hébert, J.C., 1970).

In the following sections, we will closely examine the intricate relationships between universities and sustainable development. We will explore the multiple ways in which universities contribute to the promotion of sustainable development. We will also discuss the potential benefits of this collaboration for universities, addressing the following questions:

- *How can universities contribute to the SDGs?*
- *Why do universities need SDGs?*

3.1. How Can Universities Contribute to the SDGs?

As neutral and reliable actors in society, universities play a crucial role in achieving the Sustainable Development Goals (SDGs) across various sectors (agriculture, health, water, and sanitation, etc.) for several reasons, some of which are illustrated below (United Nations, 2017) and (Leal Filho, W., & Pace, P., 2019):

- Firstly, universities are centers of education and research that can train tomorrow's leaders and professionals in fields related to sustainable development, providing them with the skills and knowledge necessary to address current and future challenges.
- Additionally, universities often conduct innovative research in areas such as clean energy, health, the environment, and the economy, all of which are essential to achieving the SDGs.
- Moreover, universities can serve as bridges between civil society, the private sector, and governments, facilitating collaboration and the implementation of sustainable solutions.

3.2. Why Do Universities Need SDGs?

SDGs provide higher education institutions with, among other things (Ala Eddine Louafi, A. E., & Boutora, F., 2020):

- An opportunity to demonstrate their willingness and ability to play an active and significant role in the development of their respective countries and in contributing to global sustainable development.
- The chance to collaborate and establish partnerships.
- Easier job placement for university graduates, as the SDGs target businesses, young people, citizens, etc. Today, various organizations increasingly incorporate the SDGs as a strategic objective and create a demand for graduates who understand and can implement the SDGs.
- The opportunity to form new collaborations with government, industry, and the community in research and education.

The literature outlined above reveals the dynamic interactions between universities and sustainable development. These interactions have led to the

concept of the Green University, which will be discussed in the next section. Furthermore, the literature demonstrates that sustainable development and universities ultimately share a symbiotic win-win relationship where each concept benefits from the other. These points and results will be supported by the foundations of the Green University presented in the following section.

4. Green University model: Principles and Strategies for Achieving the SDGs

A Green University is recognized as "an educational institution that meets its needs for natural resources, such as energy, water, and materials, without compromising the ability of people in other countries and future generations to meet their own needs." The term "Green University" also encompasses all sorts of activities within the vision of "sustainable development" and represents a significant responsibility for higher education and the development of society. As some also highlight, "the concept of a Green University requires not only integrating the spirit of sustainability into the university's operations, curriculum planning, and daily campus life but also helping the university itself, society, the nation, and all of humanity face a sustainable future through education, research, innovation, and campus activities. As a responsible academic institution for the nation, the university must be prepared to become a complete Green University and also aim to focus more on achieving a greener society" (Ala Eddine Louafi, A. E., & Boutora, F., 2020).

To emphasize the concept of a Green University and support its previously presented relationships and interactions with sustainable development, we elaborate below on the principles of this Green University, the various strategies it can deploy to achieve the SDGs, and finally, an Indonesian initiative in the form of a global ranking aiming for the SDGs by involving universities.

4.1. Principles and Strategies for Implementing the SDGs

The principles of the Green University, often based on the concepts of sustainable development, can vary depending on specific sources and

initiatives. However, we present below some generally recognized principles in reports on sustainable development and environmental education:

Principle 1: Integration of Sustainability into all the university's operational activities

Principle 2: Promotion of awareness and education on sustainability among students, staff, and the community

Principle 3: Collaboration with internal and external stakeholders to develop sustainable and innovative solutions

Principle 4: Adoption of policies and practices that favor social equity, diversity, and inclusion

Principle 5: Encouragement of interdisciplinary research on environmental and societal issues

Principle 6: Transparency and accountability in communicating progress made in sustainability

(For each adopted principle, a series of illustrative strategies will be presented).

Talking about the Green University thus refers to the integration of sustainable development principles into all facets of university life, including teaching, research, operations, governance and interactions with the community. This implies a profound change in institutional culture, where sustainability becomes a central concern and cross-cutting objective.

4.1.1. Integrating sustainability into all the university's operational activities.

This principle, as described in the report “Greening the Ivory Tower: Improving the Environmental Track Record of Universities, Colleges, and Other Institutions” (Kaid Benfield et al., 2012), implies a holistic approach to sustainability within the academic institution at both operational and governance levels. This leads to environmentally and socially responsible practices in the form of the following initiatives:

Table.2. Strategies for integrating sustainability into operational and governance activities

Initiative	Implementation
Ecological Campus Management	<u>Reducing energy and water consumption</u> by implementing water-saving technologies, energy-efficient equipment, etc. <u>Renewable energies</u> by investing in solar panels, wind turbines,...
Waste management	<u>Reduction, reuse and recycling</u> through waste sorting programs, installing collection points for recycling,.... <u>Composting</u> : for food waste and organic matter.
Sustainable transport	<u>Promotion of public transport and non-motorized modes of travel</u> : e.g. via bicycles by setting up bike lanes <u>Electric vehicles</u> : by encouraging their use and installing charging stations on campus.
Sustainable Construction and Renovation	<u>Green buildings</u> : by constructing new buildings and renovating existing buildings to improve their energy efficiency. <u>Use of sustainable materials</u> : for new construction projects and renovations.
Sustainable food	<u>Local and organic sourcing</u> : by promoting the purchase of local, organic and fair trade food products for campus. <u>Reducing food waste</u> : by donating surplus food to charitable organizations, for example.

Source: Based on : (Whitehair, K. J., et al, 2013), (Edwards, B., 2013). And (Calder, W., & Dautremont-Smith, J., 2009).

4.1.2. Promoting sustainability awareness and education among students, staff and the community.

In the report “Sustainability in Higher Education: Directions for Change” by Peters (2005), this principle of promoting sustainability awareness and education refers to a systematic and coherent approach to raising awareness and educating the entire university community, including students, academic and administrative staff. This principle can be broken down into several areas:

Table.3. Strategies for promoting sustainability awareness and education among students, staff and the community.

Axis	Implications
Integration of sustainability into academic programs of all disciplines	<u>Development of specific courses</u> : dedicated to sustainable development or incorporating the sustainability concepts into existing courses. <u>Projects and research on sustainability issues</u> , integrating them into practical work and theses.

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Staff training, awareness and commitment to sustainability issues	<u>Training programs</u> : for staff on the latest developments. <u>Workshops and seminars</u> : to discuss sustainable practices and innovations in the field. <u>Encouraging involvement in sustainable initiatives</u> and thus serve as role models for students.
Community outreach and partnerships to promote sustainability	<u>Events and campaigns</u> : to inform the university community and the public about sustainability issues. <u>Collaboration with external organizations</u> : to work together on sustainability projects. <u>Volunteer programs</u> : Encourage programs that focus on sustainable initiatives in the local community.
Communication and dissemination of sustainability information to ensure ongoing awareness	<u>University media</u> : Use university newspapers, websites, newsletters and social networks. <u>Educational materials</u> : such as brochures, guides and videos, to inform and educate about sustainable practices. <u>Discussion forums</u> : online and offline where members of the university community can exchange ideas and experiences.

Source: Based on : (Peters., 2005).

4.1.3. Collaboration with internal and external stakeholders to develop sustainable and innovative solutions.

In the report “The Sustainable University: Progress and Prospects” (Sterling, Maxey, & Luna, 2010), the principle of collaboration with stakeholders is highlighted as a crucial element in the sustainable development of universities. This principle is based on the idea that universities cannot achieve their sustainability goals in isolation, but must work closely with a variety of stakeholders to co-create effective, sustainable solutions.

The first step for a green university, within this framework, is to identify relevant stakeholders. These include, but are not limited to:

- **Students and Staff:** directly involved in day-to-day activities and can provide valuable ideas and active support.
- **Local Community:** can be a key partner for community and environmental projects.

- **Business and Industry Collaborations:** can provide resources, expertise and opportunities for concrete sustainability projects.
- **Governments and NGOs:** can offer political, regulatory and financial support for sustainability initiatives.

To maximize the impact of collaborations, universities can use a variety of methods and approaches:

Table.4. Strategies for collaborating with internal and external stakeholders to develop sustainable and innovative solutions.

Axis	Implications
Public-Private Partnerships	Work with private companies to develop green technologies, improve sustainable infrastructures and funds.
Sustainability Committees	Establish committees with representatives from various stakeholders to plan and oversee sustainability initiatives.
Community Projects	Involve students and staff in projects that benefit both the university and the local community.
Forums and Workshops	Organize regular events where stakeholders can come together to exchange ideas, discuss challenges and co-create solutions.

Source: Based on: (Sterling, Maxey, & Luna, 2010)

4.1.4. Adoption of policies and practices that promote social equity, diversity and inclusion.

In the report “Campus Greening Initiatives: Approaches and Strategies” (Holmberg & Samuelsson, 2007), this principle of adopting policies conducive to social equity and diversity is based on the idea that these are essential to creating inclusive and fair learning environments, where all voices are heard and respected. For green universities, this means putting in place policies and practices that promote equal opportunities and diversity in all its forms, and thus inclusion.

Table.5. Strategies for adopting policies and practices that promote social equity, diversity and inclusion.

Policy	Through
Policies promoting social equity	
Equal access to education	<u>Scholarships and financial aid:</u> to students from disadvantaged backgrounds to ensure that the cost of education is not a barrier.

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Inclusion of marginalized groups	<u>Academic and personal support</u> : through services for minority students, international students, and students with special needs.
Representation and participation	<u>Diversity and inclusion committees</u> : which include representatives from all parts of the academic community.
Policies promoting diversity	
Recruitment and retention of diverse staff	<u>Inclusive recruitment strategies</u> : which actively target candidates from diverse backgrounds and encourage diversity among staff.
Inclusive academic programs	<u>Diverse Curriculum</u> : Integrate diverse perspectives and cross-cultural studies into academic programs to enrich the educational experience and raise student awareness of diversity.
Promotion of cultural diversity	<u>Cultural Events and Initiatives</u> : Those celebrate and promote cultural diversity within the university community.

Source: Based on : (Holmberg & Samuelsson, 2007)

4.1.5. Encouraging interdisciplinary research on environmental and societal issues.

In the report “Higher Education for Sustainable Development” (Lozano, 2006), this principle of encouraging interdisciplinary research on environmental and societal issues is based on the idea that the complexity of sustainability issues (which are interconnected) requires research approaches that transcend the traditional boundaries of academic disciplines and look towards more comprehensive interdisciplinary solutions.

Table.6. Strategies for encouraging interdisciplinary research on environmental and societal issues.

Strategy	Involvement
Creation of interdisciplinary research centers	Establish centers dedicated to sustainability research, bringing together researchers from different disciplines to collaborate on common projects.
Funding and Institutional Support	Offer specific grants and scholarships for interdisciplinary research projects that address environmental and societal issues.

Cross-disciplinary training and courses	Develop academic programs that integrate courses and modules from several disciplines, emphasizing interdisciplinary approaches to solving sustainability problems.
Networks and Partnerships	Encourage partnerships with other institutions to create global research networks.

Source: Based on : (Lozano, 2006).

4.1.6. Transparency and accountability in communicating sustainability progress.

According to the report “Benchmarking for Higher Education” (Cabinet Office Strategy Unit, 2006), this principle is crucial to ensuring that the actions undertaken by the university are aligned with its sustainability objectives, and to strengthening the institution's credibility, institutional culture, stakeholder trust and commitment, and leadership and continuous improvement.

Table.7. Strategies for transparency and accountability in communicating sustainability progress.

Strategy	Involvement
Sustainability reporting	Issue annual sustainability reports detailing initiatives taken, progress made and challenges encountered.
Key Performance Indicators (KPIs)	Set up sustainability-specific KPIs and regularly monitor these indicators to measure progress.
Transparency portals	Create online portals where stakeholders can easily access information on the university's sustainability initiatives.
Audits and certifications	Use external bodies to audit sustainability practices and obtain recognized certifications.
Stakeholder consultation	Organize discussion forums, workshops and consultations with stakeholders to gather feedback and suggestions.

Source: Based on : (Cabinet Office Strategy Unit, 2006)

We can summaries the various benefits of these strategies by exposing the following principal ideas:

- energy savings and procurement of additional resources and expertise.
- diversity of perspectives and skills that can stimulates innovation and creativity,

- build commitment and support both within and outside the institution which amplifies the impact of sustainability initiatives,
- Inclusive environments foster improved social cohesion and cooperation, reduce inequalities, and prepare students for a globalized world,
- Interdisciplinary research advances knowledge and trains future leaders,
- ...

4.2. Presentation of the “UI GreenMetric” green university ranking initiative

This section presents the “UI GreenMetric” global green ranking initiative, highlighting its purpose, the benefits that universities can derive from participating in it, and its evaluation methodology. (UI GreenMetric, 2024)

4.2.1. Purpose of the UI GreenMetric ranking list

The annual “UI GreenMetric” World University Ranking is an initiative launched by the University of Indonesia in 2010 to assess the sustainability efforts of university campuses. It is based on environmental, economic and equity criteria, and aims to encourage universities worldwide to adopt sustainable practices. The ranking has grown significantly since its launch, attracting a growing number of participants from various countries each year (1 183 universities across 84 countries worldwide took part in the latest ranking in 2023).

Any university in the world with a strong commitment to sustainable development can take part in the ranking (see www.greenmetric.ui.ac.id for details). This ranking aims to :

- contribute to academic debates on sustainable development in education and the promotion of ecological practices on university campuses.
- encourage social change by aligning universities with sustainable development objectives.
- serve as a self-assessment tool for evaluating sustainable development initiatives in higher education institutions worldwide.

- inform governments, international and local environmental organizations and society at large about sustainability programs implemented on university campuses.

4.2.2. Benefits of participation in the UI GreenMetric ranking for universities

Universities participating in this ranking can benefit from a number of spin-offs, which can be summarized as follows:

- Internationalization and recognition: by raising the profile of their contributions to sustainable development on the international stage. Participation in the “UI GreenMetric” can lead to an increase in visits to the university's website, ...
- Raise awareness of sustainable development issues: within and outside universities,
- Networking: All participants in this ranking automatically become members of the UI GreenMetric World University Ranking Network (UIGWURN). Within this network, participants can: share their best practices in sustainable development program(s), discuss with other participants from all over the world by attending the various workshops organized.

4.2.3. Evaluation methodology for the “UI GreenMetric” ranking

In this ranking, the practices and strategies implemented by universities are assessed on the basis of six (06) criteria and thirty-nine (39) indicators. A score is awarded for each indicator, and the sum of the points obtained from these indicators is grouped together in the criterion score. The score obtained from each criterion is weighted and then summed with the rest to obtain the ranking of the university in question.

The weights and scores assigned to each indicator and criterion are shown below:

Table.8. “UI GreenMetric” evaluation grid

No	Category	Percentage of Total Points (%)
1	Setting and Infrastructure (SI)	15
2	Energy and Climate Change (EC)	21
3	Waste (WS)	18
4	Water (WR)	10
5	Transportation (TR)	18
6	Education and Research (ED)	18
TOTAL		100

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No	CRITERIA	Point	Weighting
1	Setting and Infrastructure (SI)		15%
SI1	The ratio of open space area to total area	200	
SI2	Total area on campus covered in forest vegetation	100	
SI3	Total area on campus covered in planted vegetation	200	
SI4	Total area on campus for water absorption besides the forest and planted vegetation	100	
SI5	The total open space area divided by total campus population	200	
SI6	Percentage of university budget for sustainability efforts	200	
SI7	Percentage of operation and maintenance activities of building in one year period	100	
SI8	Campus facilities for disable, special needs and/or maternity care	100	
SI9	Security and safety facilities	100	
SI10	Health infrastructure facilities for students, academics and administrative staffs' well-being	100	
SI11	Conservation: plant (flora), animal (fauna), or wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities	100	
	Total	1500	

3	Waste (WS)		18%
WS1	3R (Reduce, Reuse, Recycle) program for university's waste	300	
WS2	Program to reduce the use of paper and plastic on campus	300	
WS3	Organic waste treatment	300	
WS4	Inorganic waste treatment	300	
WS5	Toxic waste treatment	300	
WS6	Sewage disposal	300	
	Total	1800	

5	Transportation (TR)		18%
TR1	The total number of vehicles (cars and motorcycles) divided by total campus' population	200	
TR2	Shuttle services	300	
TR3	Zero Emission Vehicles (ZEV) availability on campus	200	
TR4	The total number of Zero Emission Vehicles (ZEV) divided by total campus population	200	
TR5	Ratio of the ground parking area to the total campus area	200	
TR6	Program to limit or decrease the parking area on campus for the last 3 years (from 2021 to 2023)	200	
TR7	Number of initiatives to decrease private vehicles on campus	200	
TR8	The pedestrian path on campus	300	
	Total	1800	

2	Energy and Climate Change (EC)		21%
EC1	Energy efficient appliances usage	200	
EC2	Smart building implementation	300	
EC3	Number of renewable energy sources on campus	300	
EC4	Total electricity usage divided by total campus' population (kWh per person)	300	
EC5	The ratio of renewable energy production divided by total energy usage per year	200	
EC6	Elements of green building implementation as reflected in all construction and renovation policies	200	
EC7	Greenhouse gas emission reduction program	200	
EC8	Total carbon footprint divided by total campus' population (metric tons per person)	200	
EC9	Number of innovative program(s) in energy and climate change	100	
EC10	Impactful university program(s) on climate change	100	
	Total	2100	

4	Water (WR)		10%
WR1	Water conservation program & implementations	200*	
WR2	Water recycling program implementation	200	
WR3	Water efficient appliances usage	200	
WR4	Consumption of treated water	200	
WR5	Water pollution control in the campus area	200	
	Total	1000	

6	Education and Research (ED)		18%
ED1	The ratio of sustainability courses to total courses/subjects	300	
ED2	The ratio of sustainability research funding to total research funding	200	
ED3	Number of scholarly publications on sustainability	200	
ED4	Number of events related to sustainability (environment)	200	
ED5	Number of activities organized by student organizations related to sustainability per year	200	
ED6	University-run sustainability website	200	
ED7	Sustainability report	100	
ED8	Number of cultural activities on campus (e.g.Cultural Festival)	100	
ED9	Number of university sustainability program(s) with international collaborations	100	
ED10	Number of community services related to sustainability organized by university and involving students	100	
ED11	Number of sustainability-related startups	100	
	Total	1800	

Source: Based on (UI GreenMetric, 2024)

It should be noted that each category and evaluation criterion introduced as part of this ranking aims to achieve sustainable development goals. This architecture can be illustrated in the figure below:

Fig.3. The UI GreenMetric ranking and the Sustainable Development Goals

5. CONCLUSION

The relationship between the university and sustainable development is of crucial importance in a world facing growing environmental and social challenges. Our study has highlighted the emergence and relevance of the “Green University” concept as a necessary response to fully integrate the principles of sustainable development within higher education establishments. Using a qualitative methodology based on documentary research, we explored the fundamental dimensions of sustainable development, its objectives and key actors, as well as the essential role of universities in this dynamic.

The results of our analysis show that: the university and sustainable development are in a symbiotic Win/Win relationship, they maintain a mutually beneficial relationship, where each concept benefits from the advantages of the other; And that the transition to the Green University implies a profound transformation of academic institutions, encompassing the integration of sustainability into all their academic and operational activities, the promotion of sustainability awareness and education, as well as the encouragement of interdisciplinary research on environmental and societal issues. In addition, the adoption of policies promoting social equity and diversity, as well as transparency and accountability in the communication of sustainability progress, are key elements in making this

transition a success. All these aspects can also be presented in the form of suggestions for any university wishing to make a successful transition and contribution to sustainable development.

In short, the Green University represents a promising way of meeting current and future sustainability challenges. By committing to this transition, universities play a vital role in building a sustainable and equitable future, preparing future generations to be responsible citizens aware of environmental and social issues.

6. Bibliography List :

- 17 *Objectifs de développement durable*. (2021). From the web site l'ONU l'Agenda 2030: <https://www.agenda-2030.fr/17-objectifs-de-developpement-durable/> Retrieved January 18, 2021.
- Altbach, P. G., & Knight, J. (2007). The Internationalization of Higher Education: Motivations and Realities. *Journal of Studies in International Education*, 11(3-4), 290–305.
- Bayley, A., & Stranget, T. (2008). *Le développement durable, à la croisée de l'économie, de la société et de l'environnement*. Paris: OCDE.
- Cabinet Office Strategy Unit. (2006). *Benchmarking for Higher Education*. Office of the Deputy Prime Minister.
- Calder, W., & Dautremont-Smith, J. (2009). Higher education: More and more laboratories for inventing a sustainable future. *International Journal of Sustainability in Higher Education*, 10(3), 476-487.
- Clark, P. (2009). *Sustainability and NGO Accountability*. Routledge.
- Edwards, B. (2013). *Rough Guide to Sustainability*. RIBA Publishing.
- Holmberg, J., & Samuelsson, B. E. (2007). *Campus Greening Initiatives: Approaches and Strategies*. Paris: UNESCO.
- Jounot, A. (2010). *100 questions pour comprendre et agir, RSE et développement durable*. Paris: Edition AFNOR.
- Lasida, E. (2009). Le développement durable: un nouveau style de vie. *Revue Transversalités* (109), pp. 15-16.
- Leal Filho, W., & Pace, P. (2019). *Universities and the Sustainable Development Goals: The Role of Higher Education Institutions in Addressing the Goals*. Springer.

- Louafi, A E et Boutora, F, (2020), Le rôle de l'université verte dans le développement d'infrastructures respectueuses de l'environnement, conformément aux critères de classement mondial pour soutenir les objectifs de développement durable- référence à l'université de Wageningen, classée numéro un dans le monde-, Multilinguales, 14. pp 01-19
- Lozano, R. (2006). Higher Education for Sustainable Development. Palgrave Macmillan.
- Peters, M. A. (2005). Sustainability in Higher Education: Directions for Change. Routledge.
- Porter, M. E., & Kramer, M. R. (2011). Creating Shared Value, Harvard Business Review. 89(1/2), pp 62-77.
- Pretty, J. (2003). Social Capital and the Collective Management of Resources, Science. 302(5652), 1912-1915.
- Sterling, S. (2010). Transformative Learning and Sustainability, Journal of Education for Sustainable Development. 4(2), pp 200-214.
- Sterling, S., Maxey, L., & Luna, H. (2010). The Sustainable University: Progress and Prospects. Routledge.
- Thøgersen, J. (2005). How May Consumer Policy Empower Consumers for Sustainable Lifestyles?, Journal of Consumer Policy. 28(2), pp163-177.
- UI GreenMetric (2024). From the web site <https://greenmetric.ui.ac.id/#>, Retrieved May, 26, 2024.
- UNESCO (2012). Guide pour l'élaboration des lois sur l'enseignement supérieur : Vers une législation harmonisée dans les pays d'Afrique. UNESCO.
- United Nations (2015). Transforming our world: the 2030 Agenda for Sustainable Development.
- United Nations. (2017). Higher Education and the Sustainable Development Goals: Moving Forward. United Nations Department of Economic and Social Affairs.
- Veyret, Y. (2005). *Le développement durable: approches plurielles*. Paris: Hatier.
- Whitehair, K. J., et al., (2013). Written messages improve edible food waste behaviors in a university dining facility. *Journal of the Academy of Nutrition and Dietetics*, 113(1), 63-69.