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Education – The Portal to A Green Society

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Abstract: We are overwhelmed by information about climate change, the most publicized being the disasters caused by various extreme phenomena. In addition, the twin transition (digital and green) represents one of the main topics at the level of European institutions. But, are we ready to genuine reconfigure our society? The current work aims to bring to the forefront the role of education in this process of transforming our society and proposes some transformation solutions to higher education institutions (HEIs) to be included in "green university" category. Benchmarking HEIs' development strategies with those of the top 10 green universities in the world, can be the starting point for designing new regulatory frameworks and directing fund flows towards sustainable design policies. Working together towards a common goal – a greener and safer society, will pave the path for us to follow locally, nationally and internationally. A key challenge of this article is to draw attention to the importance and urgency of climate change mitigation, and another challenge is to raise the awareness of leading policy makers and civil society, as drivers and triggers of transformation, about the role of education and the high level of support needed in reconfiguration and greening of the entire educational framework.

Keywords: climate change; fair-twin transition; green university

JEL Classification: Q01; I23; I28

1. Introduction

Education about the need of a green society development is essential, in order to enable people to participate fully informed in the transition process towards a green economy.

The **University** plays an important role, not only as the promoter of knowledge regarding the challenges, opportunities and good practices related to green economies and societies, but also because the University is the place that brings together the most important players: businesses, governments and civil society. By spreading the knowledge of current trends on climate change, presenting the cutting-edge studies and technological advances on this topic but also in the related research fields, the University has the power of making people to understand how to optimize the environmental, social and economic impacts of their activities and how to make real the twin transitions – locally, nationally and internationally.

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2. Related Work

To the best of our knowledge, there are presently few studies regarding the role of education in promoting a green society. In 1993, Mintu & Lozada reviewed the pioneering efforts of several institutions, such as schools of law and public administration, as well as environmental sciences, which offered courses in this field for a decade, highlighting the low involvement of business schools and other professional schools in including "green" issues in their curricula.

A research team from the *Romanian Institute for Adult Education* published in 2011 a study on the importance of promoting corporate social responsibility for a green economy and innovative jobs, revealing the role of education and training in building a new economy. The authors pointed out that the societal aspects of the green economy are evident, although inadequately researched and offered as solutions: the development of educational systems and training standards, the promotion of multidisciplinary learning environments and the creation of a flexible system of qualifications that supports and encourages the continuous acquisition of additional skills. (Pop *et al.*, 2011).

Most of the studies are focused on incorporating different sustainability principles into marketing pedagogy (Langerak, *et al.*, 1998; Bridges & Wilhelm, 2008; Mishra & Sharma, 2010; Polonsky, 2011; Arseculeratne & Yazdanifard, 2014).

The Centre for Sustainable Development (Greens), from the *University of Southern Santa Catarina* (Unisul) carried out a study on how to accelerate the promotion of sustainable development in HEIs, by improving the management of green marketing strategies for universities, based on four dimensions: community members, university members, product and strategy. (Fuchs et al., 2020).

Since 2010, at the initiative of the University of Indonesia, the UI Green Metric World University Ranking is calculated based on the analysis of 39 indicators grouped into 6 criteria to determine the ranking of universities according to their environmental commitment and initiatives:

1) Setting and Infrastructure – more space for greenery and in safeguarding environment, as well as the campus budget for sustainable development;

The campus setting and infrastructure information indicates the university consideration towards green environment. This indicator also shows whether the campus deserve to be called Green Campus.

Table 1. Top 10 UI Green Metric World University Ranking by "Setting and Infrastructure" Category, 2022

1	Universidad Autonoma De Yucatan	Mexico
2	University of Connecticut	USA
3	Universidade de Sao Paulo USP	Brazil
4	National Pingtung University of Science & Technology	Chinese Taipei
5	Universidade Federal de Lavras - UFLA	Brazil
6	National Chi Nan University	Chinese Taipei
7	University of Sharjah	United Arab Emirates
8	Universidad Pontificia Bolivariana	Colombia
9	Middle East Technical University	Turkey
10	Perm National Research Polytechnic University	Russia

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/1

2) Energy and Climate Change – increase the effort in using energy efficiency appliances and develop renewable energy;

The University is analyzed from different perspective, such as: energy efficient appliances usage, renewable energy usage policy, total electricity use, energy conservation program, green building, climate change adaptation and mitigation program, greenhouse gas emission reductions policy.

Table 2. Top 10 UI Green Metric World University Ranking by "Energy and Climate Change" Category, 2022

1	Universidad de Alcalá	Spain
2	Nottingham Trent University	United Kingdom
3	Umwelt-Campus Birkenfeld (Trier University of Applied Sciences)	Germany
4	Leiden University	Netherlands
5	University of Kashan	Iran
6	Luiss University	Italy
7	An-Najah National University	Palestine
8	Universidad Complutense De Madrid	Spain
9	Universitat Autònoma de Barcelona	Spain
10	Dublin City University	Ireland

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/2

3) Waste – some programs and waste treatments, such as; recycling program, toxic waste, organic and inorganic waste, etc.;

Waste treatment and recycling activities are major factors in creating a sustainable environment.

Table 3. Top 10 UI Green Metric World University Ranking by "Waste" Category, 2022

1	Wageningen University & Research	Netherlands
2	Nottingham Trent University	United Kingdom
3	University of Nottingham	United Kingdom
4	University of Groningen	Netherlands
5	University of California, Davis	USA
6	Leiden University	Netherlands
7	University of Southern Denmark	Denmark
8	Dublin City University	Ireland
9	Politecnico di Torino	Italy
10	RUDN University	Russia

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/3

4) Water – decrease groundwater usage, increase conservation program, and protect the habitat; Water use in campus is another important indicator.

Table 4. Top 10 UI Green Metric World University Ranking by "Water" Category, 2022

1	Wageningen University & Research	Netherlands
2	University of Nottingham	United Kingdom
3	University of Groningen	Netherlands
4	University of California, Davis	USA
5	University College Cork	Ireland
6	University of Connecticut	USA
7	Leiden University	Netherlands
8	University of Southern Denmark	Denmark
9	Dublin City University	Ireland
10	Université de Sherbrooke	Canada

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/4

5) Transportation – transportation policy to limit the number of private vehicles, pedestrian;

Transportation system plays an important role on the carbon emission and pollutant level in university. Thus, a healthier environment can be achieved by a proper transportation policy oriented to limit the number of motor vehicles in campus and the use of campus bus and bicycles.

Table 5. Top 10 UI Green Metric World University Ranking by "Transportation" Category, 2022

1	Universita di Bologna	Italy
2	University of Groningen	Netherlands
3	Leiden University	Netherlands
4	Minin University	Russia
5	Umwelt-Campus Birkenfeld (Trier University of Applied Sciences)	Germany
6	Universitat Bremen	Germany
7	Universidade de Sao Paulo USP	Brazil
8	Politecnico di Torino	Italy
9	Lincoln University	New Zealand
10	Riga Technical University	Latvia

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/5

6) Education – courses, research, publication, website, report related to green and sustainability.

Added in 2012 questionnaire, this criterion represents 18% of the total score.

Table 6. Top 10 UI Green Metric World University Ranking by "Education" Category, 2022

1	Politecnico di Torino	Italy
2	Universita degli Studi di Torino	Italy
3	Universitas Indonesia	Indonesia
4	Universitas Diponegoro	Indonesia
5	Universitas Gadjah Mada	Indonesia
6	Universidade Federal de Lavras - UFLA	Brazil
7	Institut Teknologi Sepuluh Nopember	Indonesia
8	Universitas Sebelas Maret	Indonesia
9	Universidad De Antioquia	Colombia
10	UiTM SHAH ALAM	Malaysia

Source: https://greenmetric.ui.ac.id/rankings/ranking-by-category-2022/6

Since 2010, the total number of participants in the UI Green Metric World University Ranking has increased from 95 universities from 35 countries to 1050 universities from 85 countries in 2022.

Romania is not among the participants, so there is no university from Romania listed in this ranking.

Hence, even though at the international level, the University plays a fundamental role in promoting an eco-friendly lifestyle around the world, as it has the appropriate tools to engage a broader public in environmental issues and thus increase the green awareness of citizens, Romanian universities are taking small and very slow steps in promoting progress towards a green society.

3. The University – a Key Change Factor

The University is the proper environment to create a favorable framework for dialogue and analysis on various issues related to EU's "twin transition" (green and digital).
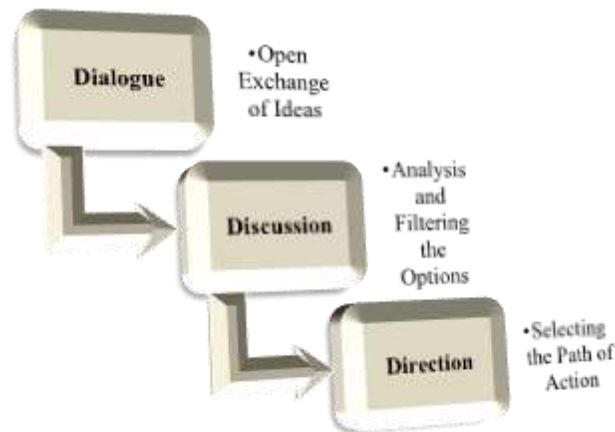

Figure 1. The 3D Role of University

"Combating climate change and mitigating its negative consequences requires enhancing awareness of sustainable development. It is believed the education sector is an excellent trigger for green transformations." (Us, Yana, *et al.*, 2022).

By synergizing the community through cooperative and collaborative projects, the University can ease and accelerate the green transition and thus will limit the negative impact of climate change. Therefore, raising awareness among different category of people about the role of everyone in mitigating climate change, may appear to be a small fist-step, but, in time, this step might prove to be the most important one.
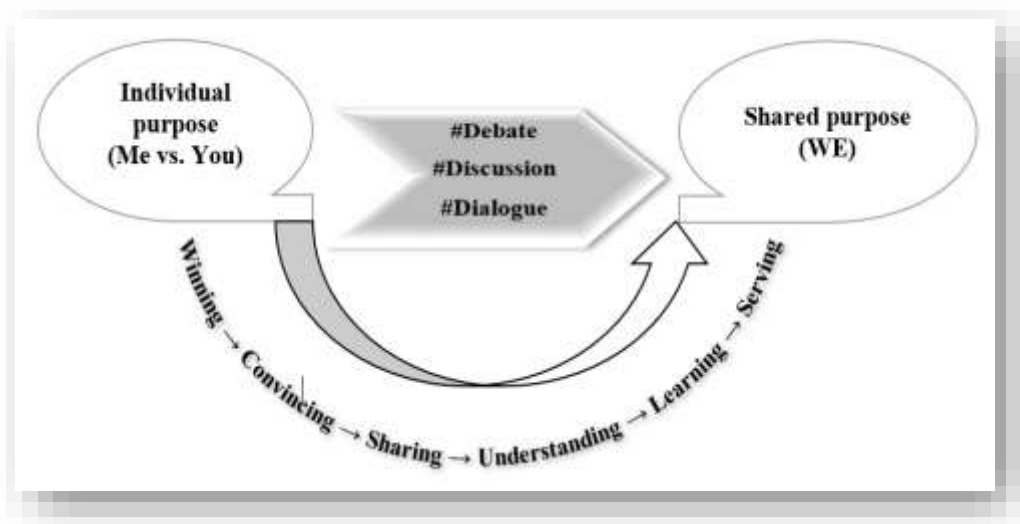

Figure 2. The University – a Favourable Framework for Raising Awareness

But before educating others, the University should educate itself. A **digital net-zero University** may represent a good-example of how to progress towards a green institutional environment, which can be replicated anywhere else.

4. How to Green HEIs?

The pathway towards a sustainable HEI, which from a holistic perspective, represents the place where environmental, cultural, economic, and social interests intersect, can be explored on 3 dimensions, as follows:

☑ *organizational*

Broadening knowledge for a more resilient society can be achieved by informing people about current challenges and engaging them to find appropriate solutions.

☑ *functional*

Education is essential to the success of this endeavor. All stakeholders within the institution must understand how their activities affect the environment as a whole.

☑ *technical*

Tools and technologies which are available at the institutional level: e-learning platforms, websites, annual conferences, workshops.

Building a green educational system starts with greening the HEIs. First of all, it is important to be aware of the context (*Why is it in the interest of HEIs to take the initiative?*), secondly, to establish the steps of the algorithm for implementing the dual transition at University level (*What is the plan to implement the changes?*; *What is the plan to address the gap between where HEI is and where it needs to be*?; *What does HEI currently have that can be used/changed and what might need to be created?*; *Are there gaps or challenges?*), thirdly, to design the strategies to be implemented and lastly, but perhaps most importantly, to commit because education, monitoring and evaluation are essential at all levels and in all processes of HEI.

Next steps consist in defining the success criteria in order to measure the progress. For instance, in the case of "Education" category, the success may be measures by:

☑ number of leaders that were trained about the importance of being a resilient and sustainable HEI;

☑ number of study-programs that have up-dated their curricula by integrating the green digital skills training in different disciplines;

☑ number of optional courses offered by different programs, focused on the topic of sustainable green development;

☑ number of students attending different courses that have as a goal, the development of green digital skills;

☑ number of participants to HEI's traditional conferences, which aim to renew and strengthen networking between university researchers, policy makers, civil society and mass media representatives, in order to discuss current challenges, policy priorities and new pathways in policy-making related to green society;

☑ number of professors who have participated in scientific conferences with the aim of sharing their acquired knowledge on this topic and raising people's awareness, knowing that scientific knowledge is essential to guide political decision-making in today's world, constantly challenged by demographic, climatic and technological changes;

☑ number of research papers on the topic of sustainable green development;

☑ number of scientific articles published on this topic.

This list is not exhaustive, being just an example.

5. Conclusions and Recommendation – Educate with the Future in Mind!

A global green society transformation requires bold actions on EDUCATION – the basic cornerstone of any society.

Let's introspect the circumstances:

✓ The prioritization of skills and the adjustment of training curricula relevant to green jobs relate to the educational policy of any society.

Integrating environmental and sustainability concerns into teaching, research, curriculum development and implementation, and developing knowledge and skills for different employment sectors are two main directions that support education for the future, for everyone and everywhere.

✓ Environmental awareness is an integral part of education for sustainable development (ESD).

"Education for sustainable development aims to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions […] and concerns all levels of education and all social contexts (family, school, workplace, community)." (UNESCO, 2016).
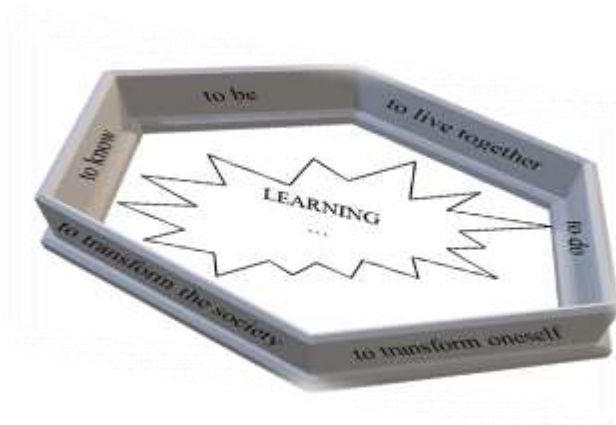

Figure 3. The Concept of Learning in the ESD Context

✓ Effective cooperation between government and civil society can be fostered by the University.

Governments should recognize that there is a need to invest in green training, education and programs. Besides being the most suitable environment for training and knowledge transfer, HEIs can stimulate community involvement through various events geared towards building green societies.

Furthermore, the University can be an example for the entire community by adopting, developing and maintaining green infrastructure, facilities and operations.

Therefore, university management should be concerned about greening the university.

For further investigation and research, all tables presented in this article have active links to the website of HEIs recognized internationally for their progress in various areas towards a green university

("Setting and Infrastructure"; "Energy and Climate Change"; "Waste"; "Water"; "Transportation" and "Education") and the last table reflects the best good practice examples of green HEIs in the world.

Table 7. Top 10 UI Green Metric World University Ranking, 2022

1	Wageningen University & Research	Netherlands
2	Nottingham Trent University	United Kingdom
3	University of Nottingham	United Kingdom
4	University of Groningen	Netherlands
5	University of California, Davis	USA
6	Umwelt-Campus Birkenfeld (Trier University of Applied Sciences)	Germany
7	University College Cork	Ireland
8	University of Connecticut	USA
9	Universitat Bremen	Germany
10	Universidade de Sao Paulo USP	Brazil

Source: https://greenmetric.ui.ac.id/rankings/overall-rankings-2022

Educate with the Future in Mind! means to reform the entire educational system.

This process would imply to going through the following 4 stages.

Figure 4. Phases of the Educational Environment Reform

In summary, in this journey towards a green society, EDUCATION plays the most important role as it fosters responsible citizens through teaching and learning activities that enable learners to acquire the skills, capabilities, values and knowledge needed to ensure sustainable development.

Huge investments are needed in the educational sector, and thus, the University, as a strategic game-chancer of the society, together with the policy-makers and civil society, as promoters and drivers of transformation, should collaborate and explore together the variety of paths they might pursue in this journey to a green society.

References

*** (2009). *Bonn Declaration on Education for Sustainable Development*. http://unesdoc.unesco.org/images/0018/001887/188799e.

*** Green New Deal: www.greennewdeal.eu.

*** *The European Centre for the Development of Vocational Training (CEDEFOP)*. www.cedefop.europa.eu.

Admati, A. & Hellwig, M. (2013) *"The Bankers" New Clothes. What is Wrong with Banking and What to Do about It*, Princeton, Princeton University Press.

Arseculeratne, D. & Yazdanifard, R. (2014) How green marketing can create a sustainable competitive advantage for a business. *International business research* Vol.7, no.1, pp. 130-137.

Atici, K. B.; Yasayacak, G.; Yildiz, Y. & Ulucan, A. (2021) Green University and academic performance: An empirical study on UI GreenMetric and World University Rankings. *Journal of Cleaner Production*, Vol. 291.

Green Economy and Sustainable Development

Bridges, C. M. & Wilhelm, W. B. (2008) Going beyond green: The "why and how" of integrating sustainability into the marketing curriculum. *Journal of marketing education* Vol. 30, no. 1, pp. 33-46.

da Silva, L. A.; de Aguiar Dutra, A. R. & de Andrade Guerra, J. B. S. O. (2023). Decarbonization in Higher Education Institutions as a Way to Achieve a Green Campus: A Literature Review. *Sustainability*, vol. 15, no. 5, article number 4043.

da Silva, Liziane Araújo; de Aguiar Dutra, Ana Regina & de Andrade Guerra, José Baltazar Salgueirinho Osório (2023). Decarbonization in Higher Education Institutions as a Way to Achieve a Green Campus: A Literature Review. *Sustainability* Vol. 15, no. 5.

Devuyst, D., Hens, L. & de Lannoy, W. (2001) *How Green is the City? Sustainability Assessment and the Management of Urban Environments*, Columbia University Press.

Fuchs, P.; Raulino, C.; Conceição, D.; Neiva, S.; Amorim, W.S.d.; Soares, T.C.; Andrade de Lima, M.; Montenegro De Lima, C.R.; Soares, J.C. & Andrade Guerra, J.B.S.O.d.A. (2020). Promoting sustainable development in higher education institutions: the use of the balanced scorecard as a strategic management system in support of green marketing. *International Journal of Sustainability in Higher Education*, Vol. 21 No. 7, pp. 1477-1505.

Geng, Y.; Liu, K.; Xue, B. & Fujita, T. (2013). Creating a 'green university' in China: a case of Shenyang University. *Journal of Cleaner Production*, Vol. 61, pp. 13-19.

https://greenmetric.ui.ac.i.

Langerak, F.; Peelen, E. & van der Veen, M. (1998). Exploratory Results on the Antecedents and Consequences of Green Marketing. *Market Research Society. Journal.*, Vol. 40, no. 4, pp. 1-12.

Mintu A., T. & Lozada, H. R. (1993). Green Marketing Education: A Call for Action. *Marketing Education Review*, Vol. 3, no. 3, pp. 17-23.

Mishra, P. & Sharma, P. (2010). Green marketing in India: Emerging opportunities and challenges. *Journal of Engineering, Science and Management Education*, vol. 3, no. 1, pp. 9-14.

Polonsky, M. J. (2011). Transformative green marketing: Impediments and opportunities. *Journal of business research*, vol.64, no.12, pp.1311-1319.

Pop, O., Dina, G. C. & Martin, C. (2011) Promoting the corporate social responsibility for a green economy and innovative jobs. *Procedia – Social and Behavioral Sciences*, vol. 15, pp. 1020-1023.

Uhl, C. & Anderson, A. (2001). Green Destiny: Universities Leading the Way to a Sustainable Future. *BioScience*, Vol. 51, no. 1, pp. 36-42.

UNESCO (2016). *YouthXchange Green Skills and Lifestyles Guidebook*, A United Nations Publication.

United Nations (2022). *Delivering on the vision of the 1972 Stockholm Declaration and achieving the 2030 Agenda for Sustainable Development*. A UN System Contribution to Stockholm + 50.

Us, Y.; Pimonenko, T.; Lyulyov, O.; Chen, Y. & Tambovceva, T. (2022) Promoting green brand of university in social media: Text mining and sentiment analysis. *Virtual Economics*, Vol. 5, no. 1, pp. 24-42.