INTERNATIONAL STUDIES AND EVALUATIONS IN THE FIELD OF

SCIENCES AND MATHEMATICS

December 2024

EDITORS

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CONTENTS

CHAPTER 1

SUSTAINABILITY IN UNIVERSITIES AND GREEN UNIVERSITY INDICATORS

Sezen COSKUN[1,2]

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1. INTRODUCTION

The rapid depletion of natural resources due to population growth and the decrease in livable areas for next generations increases the importance of sustainability. Sustainability essentially refers to protecting natural resources and their safe transfer from generation to generation (Koyuncuoglu, 2022). Humanity must choose between irresponsibly continuing the destruction of the past and the present or working for a sustainable world (Bozoğlu and Ciğerim, 2022). Developing a sustainable development model has become an obligation nationally and internationally and should be adopted by the world. In order to eliminate or minimize regional and global risks that threaten sustainable development, it is necessary to build a habitable planet without destroying resources to meet the needs of future generations (Mishelsen and Fischer, 2017). In this regard, the success of world economies depends on the viability of society, and the success of society will necessarily ensure the viability of the environment and the protection of natural resources (Amaeshi et al., 2019). The realization of this goal will be achieved by changing the learning processes in education, which is an integral part of sustainable development (Vare and Scott, 2007).

There are different approaches to assessing sustainability internationally, nationally, regionally and institutionally. It is of great importance that the approaches are measurable. Measurable approaches prepared based on indicators related to sustainability also increase transparency and durability. The declarations that set the conditions for sustainability can be listed as follows according to years; The Talloires Declaration (France - 1990), The Halifax Declaration (Canada - 1991), The Kyoto Declaration (Japan – 1993), The Swansea Declaration (Wales – 1993) – The Lüneburg Declaration (Germany – 2004), The Barselona Declaration (Spain– 2005), The Graz Declaration (Austria – 2009), The Abuja Declaration (Nigeria – 2009), The Torino Declaration (Italy) (Lozano et al., 2013; Günerhan and Günerhan, 2016).

One of the best examples of sustainability of organizations is the concept of a 'green university.' Education and training are among the key factors that promote sustainable development, enabling people to develop skills to cope with environmental and development challenges (Günay, 2011, Koyuncuoglu, 2022; Günerhan and Günerhan, 2016). On a pilot basis, university campuses can act as a laboratory and serve as a model (Kaldırım et al., 2023). The main objective of educational institutions committed to sustainable development should raise awareness among students about sustainable development issues and to make them feel responsible enough to deal with economic, ecological and social problems in their working life. It is important to include courses such as ecological responsibility, environmental management and social responsibility in the curriculum (Koyuncuoglu, 2022). A sustainable university can be defined as a institution that works to minimise the environmental

pollution, economic and social impacts of its activities and leads the effectively in a sustainable lifestyle (Günerhan and Günerhan, 2016; Velaquez et al., 2006).

It has been determined that educational research in the context of the idea of sustainability in Turkey has been intensively addressed since 2010, the studies have been carried out to determine the situation, concepts such as sustainable development, sustainable environment, sustainability education come to the fore in terms of concept, and the issue of sustainability has been examined especially in relation to science and social studies education (Yıldırım, 2020; Koyuncuoglu, 2022).

In this study, information about sustainable green evaluation criteria in international and national literature is presented. The scope of certain criteria used to become a green university, the perspective of universities in Turkey on the subject and examples of good studies are shown. The study aims to provide a guideline for universities that want to complete the green university criteria.

2. SUSTAINABILITY STUDIES AT UNIVERSITIES

Academics have a major role in the transition to a sustainable society and in managing sustainable activities. Higher education institutions can build a fairer and more sustainable society. Today, many academic studies emphasize the importance of sustainability in universities (Çardak et al., 2022; Kaldırım et al., 2023). According to Labanauskis (2017), the idea of sustainable development enables universities to remain resilient in the face of scarce resource management and other challenges and to respond to the needs and expectations of internal and external stakeholders. The idea of sustainable development provides universities with a competitive advantage and helps them to define and position themselves (Labanauskis, 2017). The importance of education for sustainable development was underlined in the 'UN Agenda 2030' and UNESCO, under the title 'Education for Sustainable Development', drew attention to the important role of universities in building a more sustainable society and achieving sustainable development goals (Fissi ve diğerleri, 2021; Filho ve diğerleri, 2019; Kaldırım et al., 2023).

In a study conducted in Canada, the extent to which sustainability is included in university policies and the best practices in creating plans were analyzed. It was found that the concepts in the plans were divided into three main headings: environmental, economic and social. It has been observed that these topics are conceptualized to include research, education, operations and outreach. Especially in the sustainable policies and plans of higher education institutions, the environmental aspects of campus and facility areas are emphasized (Lidstone, 2014). Chawla (2015) analyzed the curricula of 33 public universities in the United Kingdom in terms of sustainability education and stated that sustainability is mostly included in the hospitality curriculum. He concluded that the curriculum is still fragmented in this regard and

that the main agendas and curricula in universities need to be updated. Labanauskis (2017) stated that in addition to the research, development and commercialization missions of the university, the functions of contribution to society are also important.

Today, university success rankings are made by many international ranking organisations according to various categories. Times Higher Education (THE), Quacquarelli Syndoms World University Rankings (QS), Akacedemic Ranking of World Universities (ARWU), University Ranking By Academic Performance (URAP), Webometrics (World Universities' Ranking to the Web), National Taiwan University Ranking (NTU), HEEACT (Performance Ranking of Scienticific Papers for World Universities) are some of them. Different from the research of these organisations, GreenMetric is an organisation that evaluates and ranks sustainability efforts on university campuses (Kaldırım et al., 2023).

3. GREEN UNIVERSITY INDICATORS

Universities have a very crowded population with their academic staff, administrative staff and students, as well as a large number of buildings, roads and car parks. When the people receiving services from various units are included in the number, universities contain factors that can have a direct impact on the environment and social environment. Therefore, universities need to be sustainable both in terms of reducing their pollutants and in terms of leading and setting an example for society (Günerhan and Günarhan, 2016). The innovative structure of a country's industry and the competitiveness of its economy depend on the sustainable university-industry co-operation of that country (Günay, 2011; Günay and Çalık, 2019). Universities should make socio-economic contributions to society in addition to education training and research-development studies on ecological sustainability. In this sense, a sustainable university can be defined as "education institution that takes measures to minimize the negative environmental effects, economic and social impacts of its activities and contributes to society in terms of a sustainablity" (Günerhan and Günerhan, 2016).

Signed in 1990, the Tallories Declaration, which is the first official commitment to sustainability studies at universities, is an important document (Khan, 2013). This declaration has been accepted and signed by many universities and has taken its place among the rating programmes that are indicators of sustainable development today. While many universities have established environmental management plans and environmental audit systems, some universities have taken a step further by publishing sustainability reports (Michelsen and Fischer, 2017).

The evaluation of the work of universities on environmental issues is a relatively new issue. The specific metrics used for a green university are

as follows (Günerhan and Günerhan, 2016; Zeybek, 2023; Özdoğan and Civelekoğlu, 2019):

- UI GreenMetric
- GASU (Graphical Assessment of Sustainability in Universities)
- People&Planet

3.1. UI GREENMETRIC

UI GreenMetric is the most widely used metric in the world, providing international recognition of sustainable universities (Muñoz-Suárez, Guadalajara and Osca, 2020; Özdoğan and Civelekoğlu, 2019). It is an international university ranking developed by the University of Indonesia in 2010. In this ranking, which is based on the evaluation of universities on their own criteria, six main criteria have a percentage distribution The percentage distribution of the criteria is as follows (GreenMetric 2024; Zeybek, 2023):

- Installation and Infrastructure (15%)
- Energy and Climate Change (21%)
- Waste (18%)
- Water (10%)
- Transport (18%)
- Education and Research (18%)

The purpose of this ranking is to provide conclusions about the status of universities in green and sustainable campus policies. Therefore, such policies need to change universities towards more sustainable behavior and consider equity for all (staff, faculty and students) (Günerhan and Günerhan, 2016; GreenMetric 2024).

3.2. GASU (Graphical Assessment of Sustainability in Universities)

GASU automatically draws nine charts, ranking each indicator on a scale from zero (no information) to four (excellent performance). These graphs are used to analyze the current situation of the university to identify the dimensions in which it excels and the dimensions that need further attention. The comparison of the charts from each year is the basis for the university managers' efforts towards sustainability (Lozano, 2006; Tanç et al., 2022). The indicators are defined below (Lozano, 2006; Günerhan and Günerhan, 2016; Zeybek, 2023):

- Economic Indicators: Customers, suppliers, employees, capital providers, public sector.
- Environmental Indicators: Materials, energy, water, biodiversity,

emissions, fluids and waste, suppliers, products and services, compliance, transport.

- Social Indicators:

o Labour practices and decent work: Employment, labour/management relations, health and safety, education and training, diversity and opportunity.

o Human rights: Strategy and management, non-discrimination, freedom of association and collective bargaining, child labour, disciplinary practices, natural rights.

o Society: Society, bribery and corruption, political contributions.

o Product liability: Customer health and safety, products and services, advertising, respect for privacy.

- Indicators of Training Performance

o Curriculum: Existing courses on sustainability, administrative support

o Research: Grants, extension and products, programmes and centres

o Service: Community activity and service, service learning.

3.3. People&Planet

People&Planet (P&P), a student network in the UK, was founded in 2007 and aims to achieve social and environmental justice to achieve an equal world in the future. The aim is to build a generation of competent, skilled and motivated people who will change the world in a fairer and more sustainable way. P&P maintains an annual ranking of UK universities based on their environmental and ethical performance (People&Planet, 2024). The results of this ranking are published annually in a national journal to increase the level of environmental management in higher education. It should be noted that the P&P model modifies its factors every year according to new environmental changes. In 2012, the number of main indicators of the model reached 13, and then a new indicator was added in 2015. The current indicators of the model with a large number are as follows (Godemann et al., 2014, People&Planet, 2024; Günerhan and Günerhan, 2016):

- Environmental staff (8%)
- Environmental monitoring and systems (10%)
- Ethical investment and banking (7%)
- Carbon management (7%)
- Labour rights (6%)
- Sustainable food (4%)

- Staff and student engagement (5%)
- Sustainable development in curriculum and training (10%)
- Energy sources (8%)
- Waste and recycling (8%)
- Reduction in carbon emissions (15%)
- Reduction in water use (8%)

When the factors of this model are analyzed, it can be said that the model covers all sustainable university factors such as the long-term plans of universities, the number of research on the environment and green transportation. Nevertheless, it is claimed that the factors do not have a direct impact on reducing the carbon footprint of the university. However, this model and alliance is an important factor in terms of sustainability as it has an important role in educating new generations (Zeybek, 2023).

4. GREEN UNIVERSITY STUDIES

On an international scale, 2015 data ranked the top three universities in the general ranking of the green university measurement as the University of Nottingham, University of Connecticut, University of California (Günerhan and Günerhan, 2016; University of Nottingham, 2024). In the 2023 initial rankings, Wageningen University & Research (Netherlands), Nottingham Trent University (United Kingdom), University of Groningen (Netherlands) are the top three universities (GreenMetric, 2024). It is noteworthy that these universities similarly include courses such as sustainability, environment and climate change in their curricula. Their preference for environmentally friendly technologies and organizing environmental activities to raise awareness are also among their similar policies (Günerhan and Günerhan, 2016).

The University of Nottingham is a leading university in environmental sustainability. At undergraduate and postgraduate level, the curriculum includes courses that cover the economic, environmental and social dimensions of sustainability. In terms of recycling at the University of Nottingham, while 3000 tonnes of waste are produced annually and 95% of it is sent to landfill, the recycling rate success has been increased to 85% with sustainability efforts. Food waste and garden waste are composted and used to improve gardens. Students are encouraged to donate items they no longer wish to use to local charities when vacating their rooms. There is public transport to the campuses, car-sharing options for staff, cycle paths and secure cycle parks on campus. A Carbon Management Plan covering the period 2010-2020 has been prepared to reduce energy consumption, increase energy efficiency, use more renewable energy and thus reduce the carbon footprint. Events for the local community are also organized on the campus at certain times (University of Nottingham, 2024).

At the University of Connecticut, the Environmental Policy Office was established in 2002 to carry out similar studies, a council of advisors was formed, and a Climate Action Plan was established in 2009. To reduce greenhouse gas emissions from fossil fuels, using green technologies, increasing the use of renewable energy, expanding the use of biofuel, solar energy, hydrogen-fuelled vehicles, and making pedestrian and bicycle priority arrangements are among the priorities. Campus development plans have been prepared for waste reduction and recycling, solid waste disposal, compost production from garden and food waste, water conservation and reuse, and the use of biodegradable cleaners. The inclusion of environment, climate change and sustainability courses in undergraduate and graduate education, organizing environmental activities and competitions to encourage students and raise their awareness are among the important activities. (UCONN, 2024).

In the studies conducted on green universities in Turkey in 2017, Razman et al. (2017) found that the common activities that are frequently implemented are 'placing marked signs on garbage bins to increase recycling' and 'generating electricity on campus by establishing electricity generation facilities' with 87% and 83%, respectively. When the theses on sustainable universities are analyzed, it is noteworthy that mostly in-university research has been conducted. In the first place, it is seen that research topics related to course contents, curriculum and the effect of education in general on students sustainable thinking and awareness levels are addressed. In the second place, it is observed that intra-university research has been conducted under the theme of 'green campus (Koyuncuoğlu, 2022).

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In the dimension of the framework conditions of the university, it can be said that the issues of 'green campus' and 'sustainability thinking' and 'sustainability culture' are mainly investigated. Ayten (2016) stated that thesis studies mostly focus on graduates who support sustainable lifestyles, focus more on education and research, and the widespread social impact and benefit has not yet emerged clearly.

Bülent Ecevit University, which ranks first among Turkish universities, participated in the green measurement study for the first time in 2014. Examples of the studies carried out by the university with the aim of green university: The forested area is larger than the total area of the university located in Zonguldak province, the sheathing process has been completed in terms of building thermal insulation, LED (Light Emitting Diode) lighting has been made widespread for energy saving, the use of natural gas is emphasized, recycling bins are located in the campus buildings, and projects have been developed in the field of renewable energy use. Studies are being carried out on solar-powered cars. Thanks to the public transport and private car usage policies, the number of vehicles entering the campus daily has been reduced. The percentage of bicycle transport to the campus is high. There are projects and courses on environment and sustainability, training on separate collection of packaging wastes given to kindergartens in the province through the 'Environmental Problems Research and Application Centre,' and club activities on the environment also carry out important studies for the green university award (Zonguldak Bülent Ecevit University, 2016).

Sabancı University and Özyeğin University also rank among the top green universities in Turkey. The International Climate and Energy Centre at Sabancı University brings together important stakeholders in the fields of energy and climate and encourages the development and exchange of ideas, while Özyeğin University has been conducting similar studies on energy saving with the Energy, Environment and Economy Centre established in 2009. Özyeğin University has an energy distribution center, building automation applications, solar panels and seven buildings with green roofs. Sabancı University organizes the International Energy Forum every year to contribute to the discussion of sustainable future solutions for the region and the world in the field of energy. In both universities, course curricula related to sustainability and the environment are important for green university criteria. Another important criterion is the large number of green areas on campus (Özyeğin University, 2016; Sabancı University, 2016).

5. RESULTS and DISCUSSION

The keywords that stand out in scientific research conducted in Turkey are "sustainable university", "sustainable development and higher education", "green campus", "green university", "eco-campus", "ecological university", "environmental campus", "sustainable education" (Koynuncuoğlu, 2022). When the reports, conferences, summits and environmental education conducted by public institutions in Turkey in 2015 are examined, it is stated that Turkey's national strategy cannot be clearly stated, educational materials are insufficient to inform the society about sustainable development, and quality education cannot be provided in primary, secondary and higher education (Kaya et al., 2015).

After examining the studies conducted by universities on sustainability and the declarations they signed, it was seen that the studies conducted by universities in Turkey were limited (Günerhan and Günarhan, 2016). In the examined theses, it was seen that surveys were used more than scales. Scale studies can be conducted on the sub-topics of sustainable universities. In addition, in future studies, comparative sample events or case studies can be conducted in developed and developing countries, considering macroeconomic indicators (Ayten, 2016).

A model definition for sustainable universities was introduced to the literature by Günerhan and Günarhan (2016). Accordingly, a university that decides to become a sustainable university must first determine its sustainability vision and minimize the negative environmental, social and economic impacts that may arise in every initiative it will take, as per the definition of sustainability. The second stage is the definition of the university mission. In terms of sustainability, the current situation must first be determined and the university must well define its internal and external stakeholders. The third stage is the establishment of a sustainability office or coordination office where all sustainability-related studies will be carried out. Studies should be directed and recorded by a control mechanism. Studies carried out in terms of transparency should be shared with the society and stakeholders through social media and a website. The fourth stage should be the establishment of a committee/board consisting of experts on the subject. The committee/board should determine the sustainability goals, objectives and policies of the university and ensure that these are included in the daily operation. Another important issue is the provision of financial resources for sustainability studies. The fifth stage is to determine the university strategy and record it in writing. The strategy can be organized in four stages: teaching, research, social access and collaborations, sustainability on campus. Course content, research and collaborations related to sustainability should be provided (Günerhan and Günarhan, 2016). For these four strategies to be successfully implemented, raising awareness about sustainability and using technology to reduce the damage to the environment are two important points (Valequez et al., 2006; Günerhan and Günerhan, 2016).

6. CONCLUSION

In conclusion, it is of great importance to increase research on sustainability and green universities. In these studies, good practice examples can be developed with all stakeholders, starting from the management dimension and these practices can be spread throughout the process, contributing to the society's internalization of sustainability efforts. Student communities should be involved in sustainability activities so that good practice habits can be passed on to future generations. Universities should include sustainability in their vision, mission, strategic plan and annual activity reports, and should be able to objectively demonstrate that they have achieved their plans and goals through the events and projects they organize. Since environmental protection plays an important role in achieving goals and in feeling the social equality and social responsibility of universities, increasing the widespread impact on these issues will also improve the position of our universities in international standards. Reaching the top ranks in green university rankings depends on adding environmental protection, climate change, and sustainability courses to the curriculum, increasing R&D studies on these topics, expanding social responsibility course practices on environmental protection and climate change, utilizing renewable energy types in campus areas, reducing vehicle traffic, reducing fossil fuel use, utilizing reusable water obtained through water harvesting, saving water, and increasing green areas.

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RESOURCES

Amaeshi K, Muthuri JN, Ogbechie C 2019. Incorporating sustainability in management education: An interdisciplinary approach. Springer. Available at: https://books.google.com.tr/books/about/Incorporating_Sustainability_in_Manageme.html?id=qt-GDwAAQBAJ&redir_esc=y [28.05.16]

Ayten AM 2016. Yükseköğretim kurumlarında stratejik sürdürülebilir alan yönetimi. Yükseköğretim Dergisi, 6(3): 142–154. https://doi.org/10.2399/yod.16.010

Bozoğlu O, Ciğerim E 2022. Sürdürülebilirlik, sürdürülebilir kalkınma ve sürdürülebilir üniversiteler. Socrates Journal of Interdisciplinary Social Studies, 18: 146-158.

Chawla G 2015. Sustainability in hospitality education: A content analysis of the curriculum of British universities. In: Proceedings of the European Conference on Research Methodology for Business and Management Studies. Malta, June 11-12. pp. 135-139

Çardak D, Tanç GŞ, Tanç A, Yağlı İ 2022. Türkiye'deki üniversitelerin sürdürülebilirlik çalışmalarının incelenmesi. Muhasebe ve Denetime Bakış Dergisi, 66: 83-100. https://doi.org/10.55322/mdbakis.1063261

Filho LW, Shiel C, Pacho A, Misfud M, Avilla LV, Brandling LL, Hill PM, Pace P, Azeiteiro UM, Vargas, VR, Caeiro JS 2019. Sustainable development goals and sustainability teaching at universities: Falling behind or getting ahead of the pack. Journal of Cleaner Production, 232: 285-294.

Fissi S, Romolini A, Gori E, Contri M 2021. The path toward a sustainable green university: The case of the University of Florence. Journal of Cleaner Production, 279: 1-9. https://doi.org/10.1016/j.jclepro.2020.123655

Godemann J, Bebbington J, Herzig C, Moon J 2014. Higher education and sustainable development: Exploring possibilities for organizational change. Accounting, Auditing & Accountability Journal, 27(2): 218-223. https://doi.org/10.1108/AAAJ-12-2013-1553

GreenMetric 2024. GreenMetric universities. Available at: https://greenmetric.ui.ac.id/rankings/overall-rankings-2024 [20.12.2024].

Grindsted TS 2011. Sustainable universities from declarations on sustainability in higher education to national law. Environmental Economics, 2(2): 29-36.

Günay D 2011. Türk yükseköğretiminin yeniden yapılandırılması bağlamında sorunlar, eğilimler, ilkeler ve öneriler – I. Yükseköğretim Dergisi, 1(3): 113-121.

Günay D, Çalık A 2019. İnovasyon, icat, teknoloji ve bilim kavramları üzerine. Üniversiteler Araştırmaları Dergisi, 2(1): 1-11. https://doi.org/10.26701/uad.549654

Günerhan S, Günerhan H 2016. Türkiye İçin Sürdürülebilir Üniversite Modeli. Mühendis ve Makina, 57(682): 54-62.

Kaldırım Z, Özcan İ, Ergün İ 2023. Çevresel Sürdürülebilirlik ve Akademik Başarı

İlişkisi: UI Greenmetric ile Urap ve The Üniversite Sıralamalarının Karşılaştırılmalı Analizi. Muhasebe Bilim Dünyası Dergisi, Özel Sayı, 187-206.

Kaya N, Çobanoğlu MT, Artvinli E 2015. Sürdürülebilir kalkınma için Türkiye'de ve dünyada çevre eğitimi çalışmaları. In Türkiye Coğrafyası Araştırma ve Uygulama Merkezi (TÜCAUM) VI. Coğrafya Sempozyumu (pp. 407-418). Ankara: Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi.

Khan T 2013. Sustainability accounting courses, Talloires Declaration and academic research. International Journal of Sustainability in Higher Education, 14(1): 42-55. https://doi.org/10.1108/14676371311288949

Koyuncuoglu Ö 2022. A Review of Graduate Theses on the Sustainable University in Turkey. Journal of University Research, 5(1): 84-100.

Labanauskis R 2017. Key features of sustainable universities: A literature review. Journal of Business Management, 13: 56-69.

Lidstone L 2014. A content analysis of sustainability policies and plans from stars-rated Canadian higher education institutions (Unpublished master's thesis). Dalhousie University, Nova Scotia, Canada.

Lozano R 2006. A tool for a Graphical Assessment of Sustainability in Universities (GASU). Journal of Cleaner Production, 14 (9-11): 963-972.

Lozano R, Lukman R, Lozano FJ, Huisingh D, Lambrechts W 2013. Declarations for Sustainability in Higher Education: Becoming Better Leaders, Through Addressing the University System. Journal of Cleaner Production, 48: 10-19.

Michelsen G, Fischer D 2017. Sustainability and Education. In M. v. Hauff & C. Kuhnke (Eds.), Sustainable Development Policy: A European Perspective. London: Routledge.

Muñoz-Suárez M, Guadalajara N, Osca JM 2020. A comparative analysis between global university rankings and environmental sustainability of universities. Sustainability, 12(14): 5759. https://doi.org/10.3390/su12145759

Özdoğan B, Civelekoğlu G 2019. Üniversite Yerleşkeleri İçin Ulusal Çevresel Sürdürülebilirlik Endeksinin Geliştirilmesi. Mühendislik Bilimleri ve Tasarım Dergisi, 7(1): 65-80.

Özyeğin University 2016. GreenMetric. Available at: http://www.ozyegin.edu.tr/RESEARCH/ [05.02.2016].

People & Planet 2024. University-League. Available at: https://peopleandplanet.org/university-league [20.12.2024].

Razman R, Abdullah AH, Wahid AZA, Muslim R 2017. Web content analysis on sustainable campus operation (SCO) initiatives. MATEC Web of Conferences, 87: 1-6. doi:10.1051/matecconf/20178701020.

Sabancı University 2016. Campus Life. Available at: https://www.sabanciuniv.edu/tr/kampus-hayati/gol [05.02.2016].

Suwartha N, Sari RF 2013. Evaluating UI Green Metric as a Tool to Support Green

Universities Development: Assessment of the Year 2011 Ranking. Journal of Cleaner Production, 61: 46-53.

Tanç GŞ, Tanç A, Çardak D, Yağlı İ 2022. Türkiye'deki üniversitelerin sürdürülebilirlik çalışmalarının incelenmesi. Muhasebe ve Denetime Bakış Dergisi, 2022(66), 83-100. https://doi.org/10.55322/mdbakis.1063261

UConn 2024. UConn Earns Top 10 Spot for UI GreenMetric Sustainability Ratings. Available at: https://sustainability.uconn.edu/2024/12/19/uconn-earns-top-10-spot-for-ui-greenmetric-sustainability-ratings/ [20.12.24].

University of Nottingham 2024. Available at: http://www.nottingham.ac.uk [20.12.24].

Vare P, Scott WR 2007. Learning for a change: Exploring the relationship between education and sustainable development. Journal of Education for Sustainable Development, 1(2): 191-198. https://doi.org/10.1177/097340820700100209.

Velaquez L, Munguia N, Platt A, Taddei J 2006. Sustainable University: What Can Be Matter. Journal of Cleaner Production, 14(8): 810-819.

Yıldırım G 2020. Sürdürülebilirlik konusunda eğitim araştırmalarının tematik olarak incelenmesi. Akdeniz Eğitim Araştırmaları Dergisi, 14(33): 70-106. doi:10.29329/mjer.2020.272.4.

Yücel Işıldar Y 2015. Sürdürülebilir Kentler İçin Üniversitesi Yerleşkelerinin Rolü. Yerel Politikalar, 1.

Zeybek B 2023. Sektörel Sürdürülebilirlik, Yeşil bir üniversite için uluslararası değerlendirme ölçütleri. Available at: https://yesilbuyume.org/yesil-bir-universite-icin-uluslararasi-degerlendirme-olcutleri/ [20.12.2024].

Zonguldak Bülent Ecevit University 2016. Greenmetrics. Available at: http://web.beun.edu.tr/greenmetrics/ [21.02.2016].