BECOMING A GREEN UNIVERSITY IN SUPPORT OF THE GREEN ECONOMY: A CASE STUDY AT A MARITIME UNIVERSITY

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ABSTRACT

The damage caused to nature by human beings caught up in the wheels of the industry is increasing day by day. As a result, environmentally conscious people have started to take various measures to stop and possibly even reverse the damage. One of the first stops for these people who set out to turn the environmentally insensitive economy into a green one is schools, because they have an important role in raising public awareness. It is the duty of schools to educate and train their students not only to fight the harmful effects of the industry on nature but also to get them to adopt a green economy, which introduces environmentally friendly practices. In this study, firstly the environmental sensitivity and awareness levels of students studying at a maritime university were given with a special emphasis on maritime, and then an environmentally sensitive maritime university was examined from different perspectives. The study concluded that a green university should not only instil environmental awareness in its students but also lead environmentally conscious practices, internalize environmental protection in all aspects, and act with this awareness in all its practices. Further studies on this subject may investigate the obstacles which universities aiming to become green may face and how these obstacles can be overcome.

Keywords: Environmental awareness, green economy, green universities, maritime

INTRODUCTION

From the very beginning of their existence on earth, people have recklessly spent all the blessings that nature has bestowed on them without thinking that one day they might run out. When the human population was small, and the damage caused by humans to nature was being repaired by nature itself, no one thought that this damage could one day reach unbearable dimensions. However, as the population increased, especially after the industrial revolution, as mechanization was introduced and the damage of these machines to nature became palpable and visible, people began to realize that something was wrong. The air they breathed, the water they drank, the food they ate, and the environment they lived in were no longer the same.

One of the main reasons that causes environmental destruction is the thought that there are limitless natural resources. People with this mind wasted everything nature presented them recklessly till they suffered from the harm caused by it. Affected by the destruction of nature and realizing its importance, people began to strive to give it the value it deserves and return it to its former productive state. This movement, triggered by the longing for the old green days of nature and focused on nature protection, is called the green movement. The economy centered on the green movement is called the green economy. (United Nations Environment Program [UNEP] 2022a).

Ecological problems and the devastating effects of climate change have led people to take more effective and widespread measures. As a result, the United Nations has set the SDGs (Sustainable Development Goals) to transform the world by protecting nature, ending poverty and ensuring that all people will enjoy peace and prosperity by 2030. 2 of the 17 SDGs adopted by the UN (United Nations) are directly about nature and climate. They are "SDG 6-Clean water and sanitation" and "SDG13-Climate action". Some SDGs are also more or less related to the protection of nature, such as "SDG 12: Responsible consumption and production" or "SDG 14: Life below water" (United Nations Development Program [UNDP], 2022; Sustainable Development Goals [SDGs]. 2022).

On the other hand, a study conducted by UNICEF (United Nations Children's Fund) has shown that climate change and its effects on nature are among the issues that young people between the ages of 15 and 24 are most concerned about (Changing Childhood Project, 2021).

The realization of the fact that nature and climate-related problems have begun to seriously threaten the future of humanity has pushed all organizations to take measures. Educational institutions have not remained unresponsive to this issue and have started to change into green institutions that care about nature and aim to raise students' awareness of this issue.

LITERATURE REVIEW

People have started to take environmental protective measures not only as individuals but also as institutions and companies. One of these institutions is universities. Sustainability comes to the agenda of universities with the Talloires Declaration, which is an action plan to promote education for sustainability and environmental competency. Initially, it was signed by 31 participants from different universities in 1990. Then the number of signatories was raised to 300. There are similar declarations such as Copernicus Charter (1994), which was signed by the rectors of more than 305 European Universities, or The Kyoto Declaration (1993), which was signed by about 650 member universities of the International Associations of Universities (Shiberg & Tallent, 2003). The United Nations Environment Program started the Global Universities Partnership on Environment and Sustainability (GUPES) in 2013. This program aims to address issues of concern and importance about the environment and sustainability in activities like education, research and community service, and to find solutions to these problems. (Qdais et al., 2019).

In 2010, the University of Indonesia initiated the Green Metric World University Ranking to assess campus sustainability activities. It evaluated the universities in 6 fields using criteria that cover 17 SDGs of the UN. They are Setting and Infrastructure, which includes ration of open space area and area on campus covered with forested vegetation or planted vegetation, Energy and Climate Change consisting of criteria like the use of energy efficient appliances, implementation of smart building or the use of renewable energy. The next title, Waste, includes features such as reduction of the paper and plastic usage on campus; initiating a recycling program for universities, sewerage disposal; and handling toxic waste and organic waste. The next title, Water, refers to water recycling or the use of water-efficient appliances. Transportation includes encouraging the service buses or bicycles on the campus. The last item on the list is Education, which refers to including everything about sustainability in courses, research, publications, or student organizations (Green Metric, 2016).

Another index is the Sustainable Campus Index, which was introduced by the Association for the Advocacy of Sustainability in Higher Education (AASHE) (2022). It evaluates higher education institutions in 17 criteria of sustainability. They are: air&climate, building, campus engagement, coordination&planning, curriculum, diversity affordability, energy, food&dining, grounds, investment&finance, public engagement, purchasing, research, transportation, waste, water, well-being&work. The university's commitment to sustainability is demonstrated through the adoption of low-carbon strategies, the inclusion of environmental sustainability in the syllabi, and collaboration with communities and stakeholders at all levels on sustainability priorities. (United Nations Environment Program [UNEP] 2022b).

Santa et al. (2019) describe a green university as a university that gives importance to sustainability in all its activities and entities, such as teaching, research, building, and campus, and say that it is the same as an ecological university or sustainable university. They have plans for sustainability initiatives, which sometimes succeed and sometimes fail because of absence of support (Velazquez et al., 2006). Despite the obstacles, universities have been pioneers and role models in sustainability for almost 30 years (Wright, 2010, Yuan et al., 2013). Yuan et al. (2013) found that the institutions with the highest contribution to sustainability are expected to be green universities, which prioritize sustainability in all kinds of activities they perform, such as framework of the institution, operations on the campus, teaching, research, engaging community in the operations, accountability, and reporting (Fissi et al., 2021). This is one of the things universities can do to make society more sustainable. Another thing is to take steps to lower the negative environmental impacts of economic and social activities (Fissi et al., 2021).

Yadegaridehkordi and Nilashi (2022) conducted a study on criteria for evaluating green building colleges and found that while innovation was the least important criterion when evaluating green buildings, space quality and energy efficiency were the most important. Wu (2021) developed 10 evaluation criteria under 3 dimensions for a green university, as Table 1 shows.

Table 1. Green University Evaluation Criteria (Wu, 2021)

Dimension	Evaluation Criteria
Environmental System	a. campus air quality
	b. smoke pollution control on campus
	c. green transport planning
	d. base greening
Environmental Management	e. waste classification
	f. resource recovery
	g. energy conservation
Environmental Education	h. sustainability-related studies
	i. in-depth environmental education
	j. green university certification

Sharp (2022) pointed out the importance of some approaches in the realization of a green campus. Among these approaches are management support, effective communication, the development of a learning organization, and student partnership.

Green universities impact not only the environment but also the economy. Much research has been done on the contribution of these universities to the economy. A green economy is described by United Nations Environment Program [UNEP] (2022c) as "the economy with an emphasis on human well-being and social justice while reducing the risks and scarcity related to environment". It is a response to today's dominant economy that deepens inequalities, fuels waste, fuels resource scarcity and poses highly devastating pervasive environmental and human health challenges.

Green economy concept has become an important strategic decision for a lot of governments for more than ten years. In 2008, UN Environment started the Green Economy Initiative (GEI), a program of global research that provides assistance to each country to motivate policymakers to back investments related to environment. Since then, the concept of green economy has become more and more recognized. As of 2022, 65 countries have promised to act in accordance with the green economy requirements of low-carbon, efficient and clean production in their practices (United Nations Environment Program [UNEP], 2022b).

The role of universities in the green economy has been pointed out in the report written by Luna et al. (2012), too. The report summarized the outputs from the Higher Education Academy (HEA) policy think tanks on green universities. They tried to explore the role of universities and found that they mainly conduct successful studies on sustainability and use the limited resources of the world effectively. According to the report, universities will have a significant role in the emerging green economy by preparing their graduates for participation in socio-economic roles.

In another study, Sukiennik et al. (2021) pointed out the importance of universities in the realization of the goals of sustainable development and the principles of circular economy. They analyzed the activities that were realized by the universities to educate students in the field of sustainable development and the principles of the circular economy. They say the roles of universities are important since they have a good reputation and they can easily reach both students and the public, and they stress that if the university takes sustainable development as a basis and educates its students and the surrounding community in this direction, it will also contribute to the green economy. This also refers to the contribution of the universities to environmental education. The role of universities in environmental education has also been stressed by Pearson et al. (2005).

Aryani (2020) says that another way the university can contribute to the green economy is by making its own buildings environmentally friendly. They use new technologies to reduce their carbon footprints and increase resource efficiency. Momani, et al. (2020) points out that many new practices have been implemented in the university buildings to raise awareness on issues such as recycling, saving electricity and water, increasing green areas and constructing green buildings.

Özgül and Zehir (2023) found that senior managers' having a green transformational leadership style plays a key role in corporate environmental strategy and can determine the priorities of corporate environmental strategy. This result may lead to the conclusion that it is critical for the university administration to have a green transformational leadership style in order to minimize greenhouse gases generated as a result of various activities at the university, to cope with climate variability, and to reduce environmental damage.

Awareness of Maritime Students on Environmental/Marine Pollution

Maritime universities attach great importance to the protection of the environment not only on land but also on the seas and educate their students in a way to raise awareness of pollution and the harm caused by it. Therefore, the curriculum of maritime universities covers a number of courses related to pollution, with an emphasis on marine pollution, how to prevent it, and regulations about pollution. The criteria set by international organizations to prevent ships from damaging the environment are covered in the curriculum of maritime courses. In addition, activities and projects, both national and international, to raise environmental awareness are carried out at the school. Despite the great importance given to the environment, not all students are aware of the importance of the issue. According to a study (Ozdemir, 2021), 56% of the students surveyed at the university of interest have never participated in an activity related to environmental cleaning. When it comes to marine cleanliness, this rate increases to 85%. 99% of the students would like to participate in activities to raise awareness of this issue, while 73% stated that they would like to take a specially prepared course on preventing marine pollution, as seen in Figure 1.

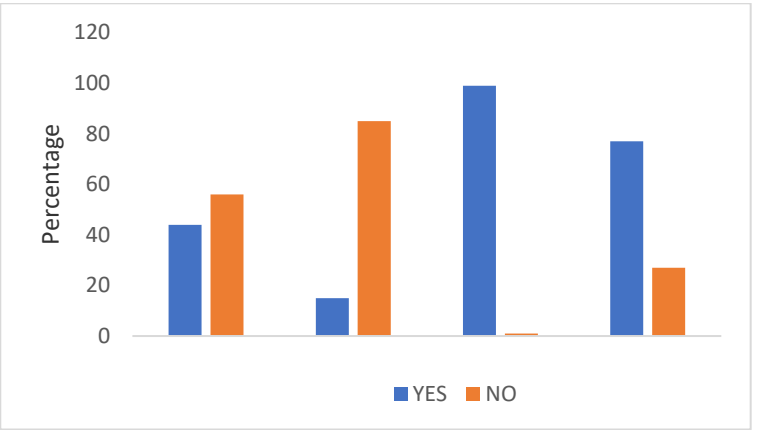

Figure 1. Responses to Environment-Related Questions

Question 1: Have you ever taken part in an activity for the prevention of environmental pollution?

Question 2: Have you ever taken part in an activity for the prevention of maritime pollution?

Question 3: Do you think it is necessary to hold an activity for the prevention of marine pollution?

Question 4: Would you like to take a course to prevent or decrease marine pollution?

The responses show that the students have not yet fully reached the awareness of environmental and marine pollution. Despite this, they know something is not right and some measures should be taken to keep the nature clean. A great majority of them agree that marine pollution should be prevented by various activities. Universities need to raise the awareness of their students about these issues in order to contribute to both the environment and the economy. This would be the right move expected from a green university.

On the other hand, it was revealed that green transformational leadership plays an important role in increasing green awareness and green self-efficacy (Zehir & Özgül, 2021). From this perspective, it can be argued that the university administration's adoption of green transformational leadership style is an important factor in creating and increasing environmental awareness in university students.

As noted by Şener and Artar (2022), research on green organizations is increasing and diversifying. In this context, it is expected that research on green universities may also increase and the number of green universities may increase in parallel.

METHODOLOGY

In this study, the comparative case study method was used. Comparative case studies consist of the analysis and synthesis of the similarities, dissimilarities, trends and patterns in two or more cases that share mutual goals (Goodrick, 2014). In this framework, the characteristics that an ideal green university should have were investigated, and the criteria of internationally recognized organizations were examined. As a result of these processes, the characteristics that a green university that contributes positively to the environment and the economy are supposed to have were determined, and then the characteristics that the university subject to this research have were evaluated within the framework of this criteria.

There are various assessment tools for green buildings (Zuo & Zhao, 2014). The leading green building assessment tools are as follows: Leadership in Energy and Environmental Design (LEED, United States); BRE Environmental Assessment Method (BREEAM, United Kingdom); Green Building Council of Australia; Green Star (GBCA, Australia); Green Mark Program (Singapore); DGNB (Germany). The criteria that a green university must meet were decided upon after analyzing these tools. Since these criteria are specific to buildings, prerequisites related to education and training were added for a university to be considered green. This resulted in the final criteria that is given in Table 2.

Table 2: Green Maritime University Evaluation Criteria

Categories	Best Practice Prerequisites
Energy	Operational Energy and carbon dioxide (CO2)
Management	Management policy, field management and supply
Health and Wellbeing	Internal and External Problems
Transport	Transport-related CO2, factors related to a specific area
Water	Consumption and efficient utilization
Materials	Materials used in construction
Waste	Waste management, minimizing harmful effects
Pollution	Air and water pollution
Land Use	Site type and construction foot print
Ecology	Ecological Value, protection and improvement
Education and training	Pollution-related causes, activities and projects
MARPOL/SOLAS Rules	Inclusion of the rules in courses
Extracurricular Activities	Inclusion of the rules in the courses

FINDINGS

Approximately 90% of global trade is carried out by sea. The sea has a very important role, not only in terms of trade but also in terms of life, tourism, ecosystem and climate. Students of the university that is the subject of the case study of this research are educated and trained to be aware of the adverse effects of pollution on the environment, economy, and health and they also learn how to deal with these adverse effects. This is the first contribution that green universities can make to the economy. In addition to the courses given for this purpose, the same awareness is also reflected in the buildings of the school. The university has Turkey's first and only environmentally sensitive green campus. The following items summarize the main features of this campus:

- The establishment of a system that will make natural resources reusable;
- The use of solar energy as an energy source;
- Optimum provision of some lighting by using solar electric panels;
- The landscaping is designed to use as little water as possible.

- The use of very special recyclable materials during construction;
- The use of a trigeneration power plant as an innovation;
- Heating with the waste heat of the diesel generator, which minimizes natural gas/air pollution to be provided by the tri-generation system.
- Providing absorption cooling, and
- Using seawater-source heat pumps for heating and cooling in an energy-efficient campus where waste water is treated and used for environmental irrigation.
- Carbon dioxide, carbon monoxide and sulfur dioxide emissions are kept at the lowest levels.
- World maritime education gives utmost importance to issues such as the environment and marine pollution in accordance with international rules such as MARPOL (International Convention for the Prevention of Pollution from Ships)/SOLAS (Safety of Life at Sea).

In addition to these, the university takes part in international projects which aims to train and educate students on simulators by various methods to keep the seas clean. Moreover, students at this university take part in community involvement projects to raise the awareness about marine pollution among the local people.

CONCLUSIONS

Today, all institutions in society have begun to play their part in realizing the green economy. Universities are among these institutions. They are expected not only to train environmentally conscious students who are committed to protecting the environment but also pay attention to not harming it in their practices. The maritime university that is examined in this study is a good example of a green university since it has both some courses to raise awareness for environmental protection among the students and has environmental protection awareness in all its activities. The eco-friendly buildings of the maritime university fulfill the prerequisites of the green economy, which is defined as low carbon, resource efficient, and socially inclusive (United Nations Environment Program [UNEP] 2022a). The university uses natural resources like water in a sustainable manner and in such a way to have the minimum impact on the environment. All the resources are reused as much as possible. Carbon dioxide, carbon monoxide, and sulfur dioxide emissions are kept at the lowest levels on campus.

With these features, the university fulfills all the requirements of being a green university and thus serves the economy by being eco-friendly, saving energy and making recycling the focus of all its activities. For these reasons, it can be said that this maritime university will be a good example of the increasing number of green universities all over the world and a role model for maritime universities.

Further studies on this topic could focus on the challenges faced by universities aiming to become green universities and how to deal with them.

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