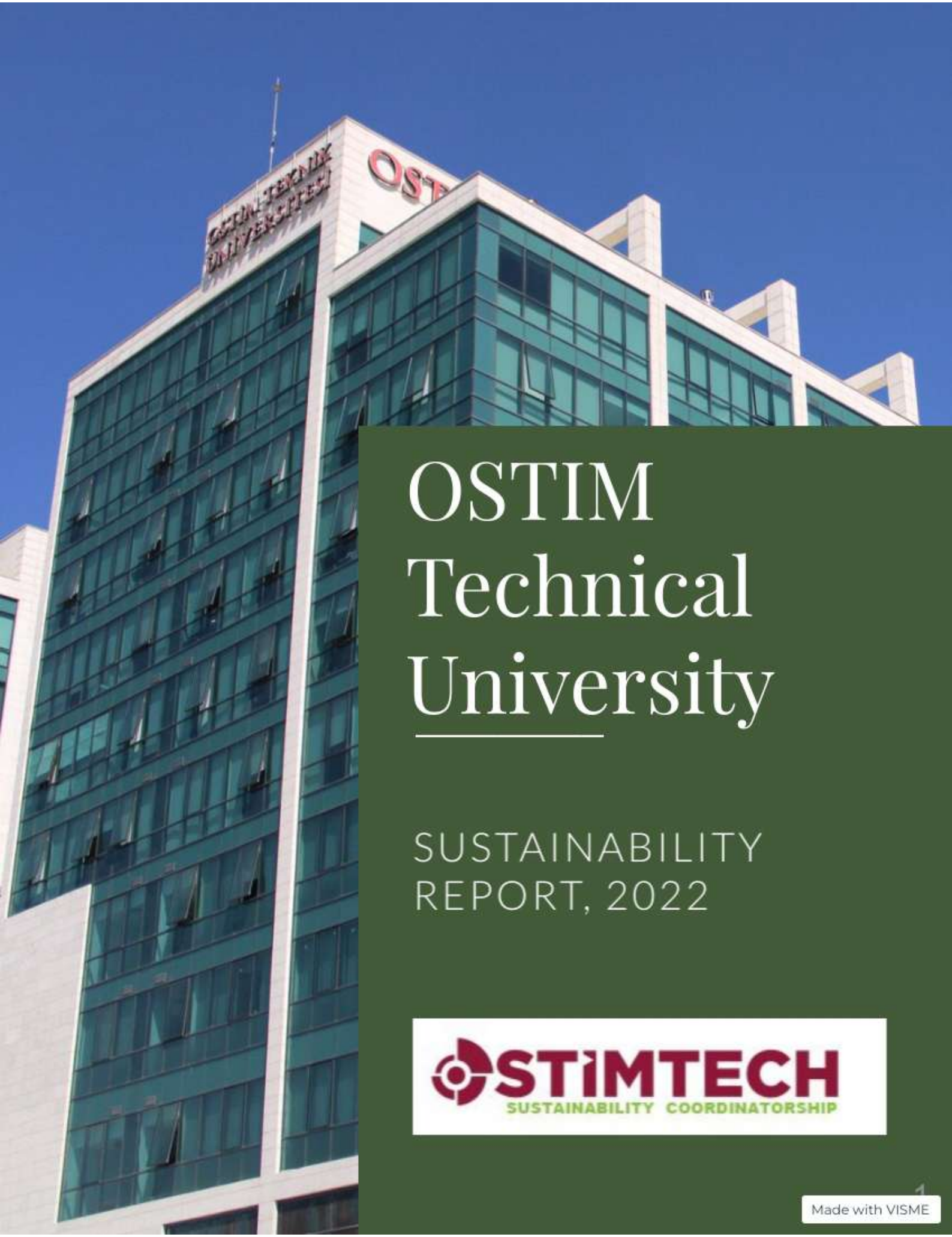


OSTIM Technical University

SUSTAINABILITY REPORT, 2022

OSTIM TECHNICAL UNIVERSITY

OSTIMTECH
SUSTAINABILITY COORDINATORSHIP

Strategic Importance of the OSTIM Industrial Zone and the Ecosystem

One of a kind university which encompasses science, technology, education, research, production, environment and training. Therefore our University represent a UNIQUE, 3rd generation, universal platform which needs to be avaluated as a NEW, EMERGING category for SUSTAINABILITY.

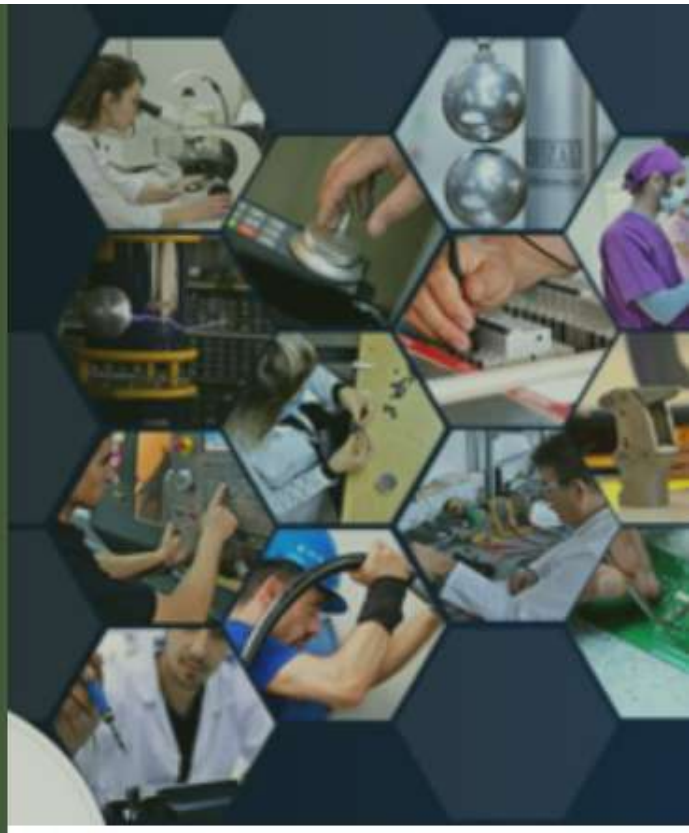
Industrial zone and the ecosystem of OSTIM TU has been inspired by the statement of IEA as qorted as follows. However it must be stated that our University is far ahead of IEA especially in terms of energy and exergy combination for ultimate sustainability as summarized in this report.

"Ongoing energy transitions and decarbonisation efforts are poised to bring profound shifts in the sector's employment, including massive new opportunities for job creation in clean energy. At the same time, traditional energy sectors will experience declining job opportunities. In most cases, this will require the development of both new programmes of education, certification and vocational training along with targeted upskilling or reskilling programmes for the existing workforce. Several governments, companies and industry organisations, among other stakeholders, are already developing robust educational and skills training programmes to meet the challenges of the workforce transition. Therefore, a review of existing skills and training programmes can provide valuable insights for others embarking on their own energy transitions."

https://www.iea.org/countries/turkiye

Mission & Vision

Our university pays the utmost importance and care to the environmental impact of all kinds of energy systems, according to the so-called exergy rational utilization of energy sources and waste energy sources. Exergy rationality is a matter of the second law of thermodynamics, which deals with the quality (useful work potential, added value to the society and the environment). Out university is the first university all across the world, which follows this law in the design and operation of the energy utilization, conversion, and distribution with energy storage systems necessary in a typical university campus. Since 2008 the University administration has initiated the exergy rationality program, which has been developed in the green administrative building with LEED Gold status-ready quality. This building serves as our model and it demonstrates that all energy is not created equal and their quality (exergy) are different. Our university recognizes that the exergy mismatches between supply and demand are the main causes of global warming and expressing this fact through various seminars, journal paper, education, and lectures. For example, the doctoral-level course ENE 724 is directly related to this subject matter in great depth, detail, and coverage, proudly speaking, this is the first of a kind course in the curriculum of universities world wide.



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Mission

The university is proud to develop for the first time, the following metrics and design guidelines, which are very strong tools for future campuses.

1. Fourth law of thermodynamics, which directly and linearly relates exergy mismatches among supply and demand points to the emission responsibilities (published). The aim is to minimize the exergy destructions due to mismatches.

2. Green EXERGY star campus rating metric as a function of the Rational Exergy Management Efficiency, named ψ_R. To be a green campus, ψ_R must be greater than 0.70. Our mission goal is 0.80.

3. Exergy-based coefficient of performance for chillers and absorption/adsorption machines.

4. New metrics for cogeneration, trigeneration, heat pumps and district energy systems in a campus environment

5. EXERGY-based human comfort and indoor air quality metrics

6. Dynamic control of infection spread in buildings,

7. Exergy-based HVAC controls and energy storage

8. Hydrogen economy and energy storage

9. New metrics for cogeneration and controls

10. Non-linear/non-pareto economic rules based on thermal Carnot-Cycle equivalency with a virtual temperature assignment to money. This method enables us to model the quadrilemma of the energy-exergy, environment, occupant and social welfare, and economy on a single platform.

Our university is well prepared and equipped to share the above short-list for a close cooperation and contribution for the Green Metrics program and other novel rating schemas.

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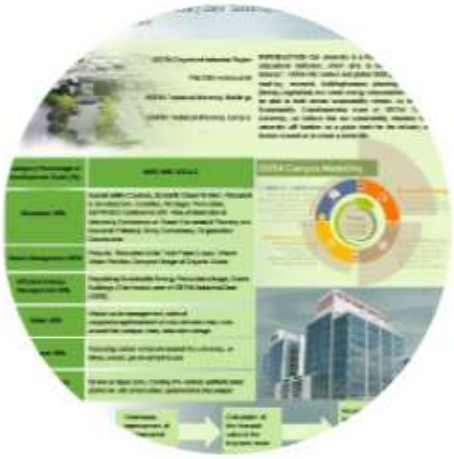

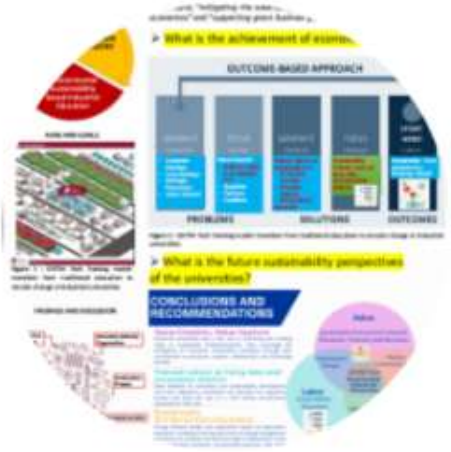

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