ÖZYEĞİN ÜNİVERSİTESİ

Sürdürülebilirlik Platformu
Özyeğin Üniversitesi

2023-2024

SDG 13 REPORT

13.
Climate Action

Scholary Output:
33

International Collaboration:
1

Field-weighted Citation Impact:
0.93

Number of Current Projects:
18

Number of Annual Events:
10

1- Özyeğin University Student Emre Yiğit Ay Represents Türkiye at COP 28 International Climate Change Conference

OzU Climate Ambassoddor Emre Yiğit Ay, a sophomore student at the Faculty of Law at Özyeğin University and President of the OzU Social Awareness Club, represented our University within the framework of the Climate Ambassadors project conducted by the Ministry of Environment, Urbanization, and Climate Change in collaboration with UNICEF between 2023 and 2024. Our student Emre Yiğit Ay was named one of the five students who were selected as climate ambassadors among approximately 150 university representatives from Türkiye at the 2023 United Nations Climate Change Conference, COP 28, which is held annually by UNICEF and took place in Dubai, United Arab Emirates, from November 30 to December 9 2023. On the opening day of the conference, Ay presented the climate agenda of the Turkish youth and gained firsthand experience in the negotiations as part of the Turkish delegation.

The Conferences of the Parties (COP), initiated by the United Nations in Berlin in 1995 and now in its 28th edition in 2023, is organized annually to assess progress in the battle against climate change and chart a course of action in line with the guidelines of the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement, signed by all countries at COP21, aimed to limit the temperature increase to 1.5°C. Throughout the conference, countries conducted deliberations in alignment with this goal, making decisions to combat the climate and biodiversity crisis on a global scale.

CLIMATE ACTION NO.13 Sustainable Development Goals and Türkiye Symposium and International Student Seminar Series I Poster

2. Nature-Based Solutions for Climate Change in Urban Areas

Beyza Şat and her graduate student Emine Şen conducted a systematic literature review on the implementation of bioswales as nature-based solutions, addressing the growing challenges posed by climate change in urban areas. Their research aligns with Sustainable Development Goals (SDG) 13 and 15, focusing on climate action and ecosystem preservation. With urban areas facing heightened risks from climate change, including increased stormwater runoff, bioswales offer a strategic approach for both adaptation and mitigation. The study analyzed bioswale design and performance based on factors such as materials, orientation, and location within urban landscapes, aiming to establish a framework that enhances ecosystem services and improves the quality of life for city residents.

The research underscores the importance of bioswales not only as a technological tool but also as a
bridge between natural and socio-economic systems for urban resilience. It found that, with proper integration and regular maintenance, bioswales can yield sustainable benefits by reducing flood risks, improving water quality, and providing green spaces in urban environments. Additionally, the review highlighted the need for further case studies and real-life applications to better understand the accessibility and engineering considerations required for successful nature-based solutions in diverse urban contexts. This work is critical for informing policies and guiding future urban design strategies, making bioswales a valuable component in sustainable, resilient city planning.

The corporate carbon footprint is calculated and regularly reported in accordance with the ISO 14064 standard. Within this scope, it is aimed to reduce our impact on climate change through the established goals and objectives.

3. Enhancing School Buildings Energy Efficiency Under Climate Change

Touraj Ashrafian conducted a research on the importance of incorporating future weather predictions into building assessments to enhance resilience, energy efficiency, cost savings, occupant comfort, and sustainable infrastructure development in response to climate change. His study explored the interplay between climate change and building performance, primarily focusing on energy usage, cost implications, and occupant comfort in school buildings across different climate zones.

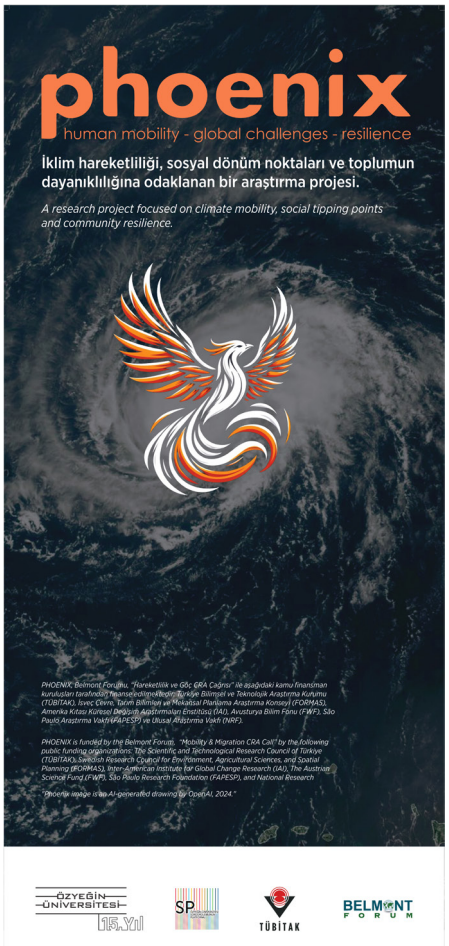
The research emphasized the need for tailored climate adaptation strategies specific to various regions and underscored the importance of considering future performance impacts, even for highly energy-efficient buildings. Utilizing a comprehensive simulation-based approach, Ashrafian implemented and validated future weather data in a Turkish school building, integrating envelope improvements and photovoltaic applications to enhance energy efficiency. A distinguishing aspect of the study was its rigorous validation of future weather predictions against current measured data, enabling a regional-level assessment of climate change effects on building energy consumption.

The findings demonstrated that in hot climates, there is potential for nearly doubling primary energy consumption, global costs, and CO emissions in the future, for both cost-optimal and nearly zero-energy scenarios. As a result, projected savings were found to decrease from 53-63% to 13–30%. Conversely, in cold climates, while primary energy consumption and CO emissions were reduced, global costs increased. The study also highlighted that a building retrofitted to a high energy efficiency level might experience substantial increases in future energy consumption and global costs, potentially approaching the levels of currently inefficient buildings.

The study’s novelty lay in its detailed assessment of climate change’s multifaceted impacts on buildings, innovative validation of future climate data, and contribution to developing a more localized, climate-specific approach to building energy-cost-comfort performance.

4. Project PHOENIX

Susan Rottman from the Faculty of Social Sciences is the principal investigator in the project Human Mobility, Global Challenges and Resilience in an Age of Social Stress (Phoenix) supported by Belmont Forum. This is a study about Global Changes , including environmental and climate changes, demographic changes, changing consumption patterns, energy and land-use, developments in the politics of food and mental health, and socio-cultural transformations. The project conducts two human-centric case studies of social tipping points: (1) food security and belonging and (2) cultural survival and resilience. These case studies provide new ways of looking at how climate (im)mobilities and their social tipping points are shaped by socio-cultural contexts and the psycho-social health of populations. Drawing on natural sciences like climate and sustainability studies and on the social sciences of political science, sociology, psychology, economics and anthropology, the project adds to the interdisciplinary diagnostic and prognostic toolbox of Global Change and mobility as well as vulnerability and resilience assessments.



Phoenix Rollup

5. Seminars on Climate Crisis

The Climate Crisis and Sustainable Climate Transformation Conference and the Climate Crisis, Climate Transformation, and Sustainability Seminar held at Özyeğin University on May 7-8, 2024, involved collaborative efforts from Sustainability Platform, Faculty of Law, Law Club, the Diplomacy Club, and the ÖzÜ Debate Club. These events featured discussions on environmental challenges, climate policy, and sustainable solutions, linking to SDG 13 (Climate Action) through education on climate transformation and resilience. Besides, these events aimed at strengthening climate governance and encouraging students to engage in policy discussions promotes just and effective institutions. This interdisciplinary approach encouraged students to advocate for sustainable practices across society and fostered learning about climate issues, empowering students with knowledge and skills.

Seminars on Climate Crisis

6. Energy-efficient Building Design Under Climate Change Adaptation Process

Touraj Ashrafian and his graduate student Gökçe Tomrukçu, from the Faculty of Architecture and Design, investigated the potential impact of climate change on residential buildings and explored strategies for improving existing structures to support long-term adaptation. This research used climate data scenarios developed by the Intergovernmental Panel on Climate Change (IPCC). Various building envelope and Heating, Ventilating, and Air Conditioning (HVAC) system scenarios were created, simulated, and compared to identify the most effective solutions.

The findings revealed that projected increases in outdoor air temperature due to climate change would have a significant impact on buildings' cooling and heating energy needs. While the heating energy consumption for a typical single-family house was estimated at 170.85 kWh/m² in 2020, it was expected to decrease to 115.01 kWh/m² by 2080. Conversely, cooling energy requirements were projected to double, rising from 53.14 kWh/m² in 2020 to 106.95 kWh/m² in 2080.

This study highlighted the need for strategies to increase the climate resilience of buildings, especially single-family homes, which constitute a substantial portion of the building stock. By analyzing energy performance improvement scenarios, the research aimed to identify practical adaptation measures to mitigate the impact of climate change on buildings, contributing valuable insights to SDG 13's objective of enhancing climate resilience in human settlements.

7. Emissions

ÖzU has several applications to restrict its carbon footprint including the use of wind power and solar panels on all the non-green roofs, as well as a trigeneration system for heating and cooling. It has recently started using a web-based carbon footprint calculator and carbon management software that provides the capacity to measure, track, report and manage its carbon footprints based on the guidelines of "The Greenhouse Gas Protocol" Özyeğin calculates Scope One and Two Emissions; emissions intensity and emissions reductions, using 2018 as the base year. ÖzU carbon emission calculation shows 9396 tonnes of Co2 for the year 2023 with a 1,039 tonnes per person annually. For the following years ÖzU intends to include scope 3 for annual calculations and started to work on the implementations.