Responsible Footprint

Reducing Energy Emissions and Enhancing Responsible Investment Practices

At OSTIM Technical University, we are committed to reducing energy emissions from non-renewable sources and mitigating the environmental impact of unsustainable travel to, from, and around our campuses. To align with our sustainability goals, we are enhancing environmentally, socially, and financially responsible investment practices. Our university has pledged to achieve net-zero emissions by 2050, with a carbon reduction strategy encompassing Scope 1 and Scope 2 emissions.

Key Sustainability Targets:

- **Net-Zero Emissions:** Achieve net-zero emissions from Scope 1 and 2 sources by 2050.
- **Sustainable Commuting:** By 2030, limit private motor vehicle commuting to no more than 10% of staff and 5% of students.
- **Waste Reduction:** Reduce solid waste by 80% by 2030.

Addressing Climate Change Risk

To support the global goal of net-zero emissions by 2050, our Sustainability Office—formerly the Net Zero Initiative—brings together over 30 researchers and industry collaborators to develop practical decarbonization solutions. Our research focuses on:

- Advancing carbon removal and zero-emission energy technologies.
- Reducing emissions through demand-side management.
- Assessing climate risk impacts on the built environment.

The private capital markets must play an active role in the transition to a net-zero economy. Investors in new assets must understand the risks climate change poses to businesses, infrastructure, and ecosystems. Predicting future risks informs today's investment decisions, influencing insurance premiums and long-term sustainability strategies. However, existing risk assessment tools face limitations due to locked-in climate change and non-stationarity.

Climate change is already visibly altering ecosystems. Agriculture is experiencing shifts in crop yields, planting times, and irrigation demands, while native flora faces habitat loss and increasing pest migration. Large forest ecosystems, such as those in Australia, California, and the Mediterranean region, are witnessing higher fire risks due to excessive fuel loads.

The rise of interconnected crises—including climate change, biodiversity loss, social inequalities, political conflicts, and pandemics—poses unprecedented challenges to societies and businesses. Addressing these threats requires well-coordinated responses and proactive resilience-building measures.

Our research aims to drive a paradigm shift in project planning and execution, particularly in response to grand-scale disturbances. We explore the complexities of decision-making in project conceptualization, financing, delivery, and long-term sustainability, contributing to a broader understanding of organizational responses to climate crises.

Climate Risk and Public Health

Recent research suggests that climate change—particularly humidity fluctuations—may increase the risk of dry eye disease. Our study aims to validate this link and develop adaptive strategies to mitigate its effects.

Additionally, we are analyzing the CO_2 emissions associated with cell culturing processes, with the goal of optimizing circular CO_2 technology for achieving net-zero emissions in biomedical research. Furthermore, we are investigating emissions related to surgical procedures, including:

- Direct emissions from anesthetic gases and CO_2 usage.
- Energy consumption and indirect emissions from instrument manufacturing, transportation, and waste management.
- Strategies for reducing emissions while maintaining clinical standards and operational efficiency.

Research Themes in Climate Resilience

- Climate-Resilient Water Management: Developing strategies to ensure drinking water supplies remain stable amid extreme weather events such as fires, floods, droughts, heatwaves, and storms.
- Energy-Efficient Water Systems: Optimizing low-energy solutions for drinking water and wastewater treatment.
- Reducing Greenhouse Gas Emissions in Wastewater Treatment: Adjusting processes to minimize fugitive emissions of CO_2, CH_4, and N_2O.