

# 13

## CLIMATE ACTION

### Research

#### **"House for All" Complete Concept of the Green**

Over the years, the design team at NYCU's Transdisciplinary Design Innovation Shop (TDIS) has received numerous urban designs, innovations, and energy efficiency awards at the Solar Decathlon Europe and Solar Decathlon Middle East competitions for the team's green energy designs. This year, the design team represented Taiwan in international competitions with the project "House for All," which attempts to solve contemporary urban issues like overpopulation, climate crisis, and social isolation. "Because of the pandemic, health and comfortable living spaces are of utmost importance," said TDIS Director David Tseng. "The team not only proposed a healthy and energy-saving architectural space, but also attempted to establish mechanisms for mutual aid in neighborhoods during this time of increased social distancing."

#### **High-Performance Thermoelectric Materials and Green Energy Lab**

The "High-Performance Thermoelectric Materials and Green Energy Lab" led by Professor Hsin-Jay Wu, Department of Materials Science and Engineering, focuses on researching green energy development and its applications. The lab is committed to developing high-performance green energy materials to fully recycle and reuse energy. Thermoelectric materials can directly convert dissipated heat energy into electrical energy; therefore, these materials have long lifetimes, high stability, and are small in size, allowing them to have a wide range of applications for waste heat recovery. In the future, these research results can help recover a large amount of waste heat in the environment, drastically slowing the greenhouse effect and energy depletion problems.



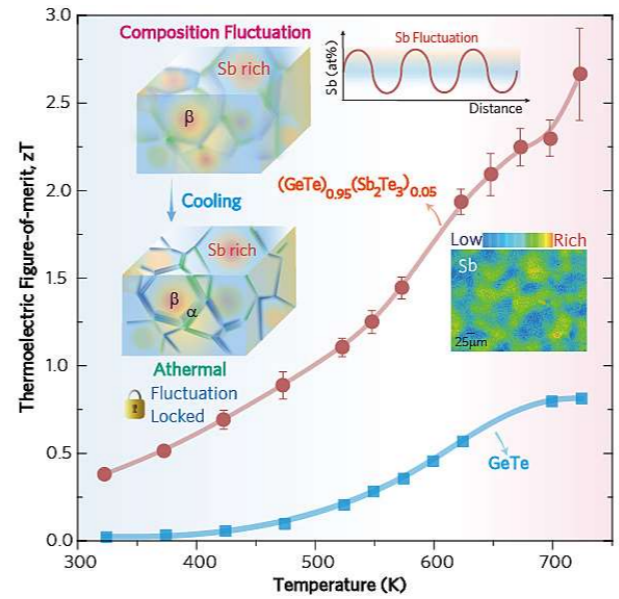
**42**  
Course Units

### Social Impact

Founded over 20 years ago, "the Disaster Prevention and Water Environment Research Center" is committed to researching natural disasters and water environment technology, and it has long assisted the government in developing disaster prevention policies, disaster investigation, and post-disaster reconstruction. The Center's latest research project focused on using big data to create a national smart disaster prevention system to facilitate early response to the impacts of climate change. Based on measured water data, the Center analyzed three of Shihmen Reservoir's most pressing issues, namely catchment area collapses, sediment transport, and the

raw water system, providing a reference for future catchment conservation and for improving sediment removal facilities and the water supply.

The Center also promotes the development of green water treatment technology, actively uses renewable energy, and reduces carbon emissions. The Center's research focuses on the integration and application of green water treatment technology, using biological filters to improve the efficiency of organic matter removal from raw water, and develop high-purity polyaluminum chloride (PAC) coagulant to enhance coagulation efficiency to enhance the water treatment and recovery efficiency of water treatment plants.



### Student Cultivation

#### Open Course Related to Climate Change and Sustainable Energy

NYCU invited experts to establish the open course "Responding and Adapting to Climate Change," using the climate change issues Taiwan faces to guide students to discuss natural disasters and how human activity has exacerbated climate change.

The University established the open-course platform "ewant." Colleges and universities across Taiwan can upload and share their general education courses on the platform, allowing the public to enrich their knowledge and achieve lifelong learning. In particular, the "Healthy Planet, Sustainable Future" series of courses introduces students to sustainable issues like "sustainable lifestyle design", "sustainable use of water and material resources", "renewable energy and the climate", and "nature conservation and community-based economics".

#### Student Club - Eco Designer

The student club "Eco Designer" organizes multiple campus events and environmental protection campaigns to raise awareness about the concept of carbon footprints, waste reduction and recycling, and zero-waste. The club regularly participates in the Taiwan Youth Climate Strike, pushing six urgent demands for climate reform, naming climate change as a national crisis, and proposing the Taiwan version of the "Green Deal" to implement industrial sustainable development and invite all students and faculty members to join the cause of climate reform.

### Stewardship

#### Carbon Management and CO2 Reduction

The NYCU Energy Management Committee formulates plans to save energy and reduce carbon emissions. In 2020, the committee set respective budgets of NT\$13 million and NT\$8.39 million to improve the University's lighting and air conditioning, replacing old T5 lights and air conditioning units that have been in use for more than 10 years. These measures are expected to save 1.43 million kWh of power each year. With 1 kWh of power being roughly equivalent to 0.554 kg of CO2 emissions, this means that the University is expected to reduce CO2 emissions by 792,220 kg annually.

**82**  
Publications in SCOPUS

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Students who chose the Course Units



**3.5%**  
Percentage of All Taiwan Publications