

13

CLIMATE ACTION



2020-2024
Publications

176



2020-2024
Percentage of all
Taiwan Publications

4.2%



Course Units

78



Student Engagement
with Units on SDG 13

2,045



Research

Breakthrough in Negative-Carbon Technologies

An international team led by Associate Professor Sung-Fu Hung from the Department of Applied Chemistry, working with scholars in Hong Kong and New Zealand, developed a triazole-based organic small-molecule catalyst that boosts both the efficiency and stability of the converting of dioxide to methane. Compared with conventional, high-cost metal catalysts, organic approaches are more affordable and use readily available materials. The team overcame the long-standing limitations of efficiency and durability of organic catalysts, opening a practical pathway for carbon capture and utilization. This advance reduces dependence on expensive metals, improves material accessibility, and substantially raises the prospects for real-world deployment. The findings were published in the journal, *Nature Energy*.

Frontier Research in Decarbonization and Energy Storage

Associate Professor Liang-Yi Lin of the Institute of Environmental Engineering and Associate Professor Yu-Sheng Su from the International College of Semiconductor Technology have advanced scientific solutions to climate change and energy transition. Both scholars received the 2025 Wu Ta-You Memorial Award from Taiwan's National Science and Technology Council (NSTC), highlighting the NYCU's excellence in sustainability research. Prof. Lin focuses on greenhouse gas mitigation and low-carbon air pollution control, integrating renewable energy and sustainable materials to deliver end-to-end strategies that span emission inventories, abatement, resource circularity, and governance performance assessment. His work strengthens pollution control, improves energy efficiency, and supports net-zero pathway planning. Prof. Su combines battery-material design, interfacial engineering, and semiconductor processing to develop high-energy-density storage systems, including silicon-based anodes, lithium metal, and lithium–sulfur batteries. His research targets both high power and safety, providing key technologies for clean energy deployment and grid dispatch.

13 CLIMATE ACTION

Disaster Adaptation and Social Resilience

NYCU's College of Nursing, in partnership with Taiwan's National Science and Technology Center for Disaster Reduction, conducted a 10-year longitudinal study of 1,236 households whose homes were severely damaged by Typhoon Morakot. Families who moved rapidly into permanent housing experienced lower stress in the short term but rising stress over time, with no long-term psychological advantage. In contrast, those who did not relocate immediately and had a longer period for preparation and adjustment, including one or more transitional placements, showed significantly better long-term psychological recovery. The study implies that post-disaster governance should incorporate phased resettlement, adequate decision and preparation windows, and systematic psychosocial support with resource linkage to strengthen social resilience and improve survivors' long-term mental and physical health. The results were published in the journal, *Psychological Science*.

國立陽明交通大學
NATIONAL YANG MING CHIAO TUNG UNIVERSITY

經濟部iPAS「淨零碳規劃管理師」能力鑑定
資策會「ESG淨零策略管理師」ISO職能驗證
產官學大師匯聚

週末密集班課程資訊：

7/28-29 - 8/3-4 - 8/10-11 - 8/17
9:00-12:00 / 13:00-18:00
陽明交大台北北門校區
\$33,000 / 人

溫金寶 黃世忠 胡均立 謝修銘 黃文輝 王獻堂 陳厚樸

ESG淨零策略管理班

★ 6/25前報名，享早鳥價\$30,000/人
★ 3人以上團報另有優惠，請電洽

Social Impact

ESG Net-Zero Strategy Manager Program

To meet the global 2050 net-zero goals and corporate decarbonization needs, NYCU's Center for Taiwanese Enterprise Study (TES) launched the ESG Net-Zero Strategy Manager Program in 2024. Taught by a cross-disciplinary faculty with a hands-on focus, the curriculum covers the foundations and practice of ESG and net-zero strategies, including carbon accounting, carbon management, the circular economy, and green energy technologies. The program integrates case exercises and tool-based practicums, and offers value-adding certification support that prepares participants for the MOEA iPAS "Net-Zero Carbon Planning Manager" and the III "ESG Net-Zero Strategy Manager" credentials. Target learners include chief sustainability officers, members of corporate sustainability committees, net-zero reserve managers, certification seekers, and EMBA students, with the goal of systematically strengthening organizational net-zero capability, advancing climate action, and enhancing international competitiveness.

Industry–Academia Alliance to Accelerate the Net-Zero Transition

NYCU and Ennoconn established the Ennoconn–NYCU ESG Net-Zero Transformation and Innovation Research Center, which focuses on AIoT and Ennoconn Solution as a Service (ESaaS). The center links industry, academia, research, and startups to deliver system-level solutions for smart manufacturing, smart cities, energy savings, and carbon reduction. By 2024, it had helped 13 AIoT net-zero startups join the ESaaS ecosystem alliance, enabling software–hardware integration and modular deployment across sites, while speeding international market entry. On the talent side, the center co-hosted career talks with Ennoconn subsidiary eCare Cloud and the Niche Women in Tech team, introducing digital twin applications and green-collar skill development; nearly one-third of student attendees expressed internship interest, expanding the industry talent pipeline. Looking ahead, the center will combine NYCU's frontier research with Ennoconn's strengths in aerospace satellites, smart factories, and semiconductors to deepen collaboration, drive patent and technology transfer, accelerate decarbonization governance, and scale solutions for global markets.

13 CLIMATE ACTION

Education & Cultivation

Net-Zero Emissions Micro-Credential

Our school offers a "Micro Program on Net Zero Emissions," which is a systematic curriculum that emphasizes both theory and practice. It covers topics such as climate change science, corporate carbon inventory and emissions accounting, carbon management and reduction strategies, circular economy design, and green energy technology. It emphasizes case studies, practical projects, and cross-domain collaboration, cultivating students' practical skills in everything from data collection and inventory modeling to carbon reduction path planning and results tracking. Students are guided to implement resource circularity and decarbonization in everyday and workplace settings. The program also aligns with professional certifications, such as the MOEA iPAS Junior Net-Zero Planning Manager, addressing talent needs for Taiwan's 2050 net-zero policy and corporate transitions, and cultivating a new generation with a systems vision and execution capability.

Net-Zero and Sustainability Knowledge Series

In 2024, NYCU hosted a series of talks and themed activities to strengthen climate literacy, carbon governance skills, and local decarbonization action among faculty, staff, and students, thereby boosting campus momentum and environmental resilience, and advancing sustainable campus governance. Highlights included:

- Dr. Omar M. Yaghi (Tang Prize Laureate in Sustainable Development): Advances in sustainable technologies, focusing on metal-organic and related framework materials.
- Dr. Gunter Pauli (Blue Economy advocate): Blue innovation for net zero.
- Patrick Chu (CEO, OrgBetter): Practical carbon inventory, carbon footprint, and energy management.
- Assistant Prof. Chung-Pei Pien (NCCU International College of Innovation): Taiwan's decarbonization performance and challenges viewed through postwar economic development and firm characteristics.





Education & Cultivation

Laying the Foundation for Carbon-Emission Management

In 2024, NYCU obtained its first third-party external verification statement for the University's greenhouse gas inventory—a major milestone in institutionalizing campus GHG management. Led by the Office of General Affairs and the Environmental Protection & Safety & Health Center, the inventory followed the ISO 14064:2018 standard and systematically mapped all campus emission sources, including both direct and indirect emissions, to establish a complete baseline. The calendar year 2023 served as NYCU's first full, campus-wide inventory, and has been designated as the base year for future performance tracking and policy planning. To ensure transparency and credibility, NYCU engaged an independent, reputable verifier for external assurance, which improved inventory quality and aligned with international governance practices.

Leading Net-Zero Healthcare Through a Sector-Wide Pledge

In December 2024, NYCU joined the Ministry of Health and Welfare's Cross-Sector Sustainable Healthcare Alliance, and co-signed the Sustainability Initiative with the Ministry of Health and Welfare (MOHW), Ministry of Environment, Ministry of Economic Affairs (MOEA), Taiwan Institute for Sustainable Energy (TAISE), 26 MOHW hospitals, the Industrial Technology Research Institute (ITRI), and several universities. The pledge advances the integration of sustainability into hospital accreditation, whole-of-hospital greenhouse gas inventories, and seed-talent training. Hospital sustainability efforts are structured around four pillars: (1) sustainable environments and clinical decarbonization, (2) risk adaptation and resilient care, (3) healthy workplaces and social care, and (4) digital transformation and clinical excellence. This public-private collaboration accelerates the health sector's net-zero transition and strengthens disaster resilience, underscoring the leadership of universities in climate governance, knowledge translation, and healthcare decarbonization.