



University : National Chin-Yi University of Technology  
Country : Taiwan  
Web Address : <https://www.ncut.edu.tw>

## [SDGs 7] Affordable and Clean Energy

### [7.4.3] Does your university as a body provide direct services to local industry aimed at improving energy efficiency and clean energy (energy efficiency assessments, workshops, research renewable energy options)

Yes — NCUT provides **direct services to local industry** that focus on improving energy efficiency, renewable energy adoption, and ESG readiness. These services are delivered through specialized centers, academic-industry collaboration, and targeted training.

## NCUT's Direct Services to Local Industry on Energy Efficiency and Clean Energy

### 1. Energy Efficiency Assessments and Consulting

- NCUT achieved ISO 50001 certification (2021), building internal expertise that is shared with local industries.
- Faculty and students conduct energy efficiency audits and carbon inventories for SMEs, helping them identify high-consumption systems and optimize operations.
- The Carbon Neutrality Center provides carbon footprint analysis and strategies for emission reduction, aligned with ISO 14064-1 and ISO 14067 standards.

### 2. Renewable Energy Research and Technology Development

- NCUT's Department of Electrical Engineering supports industries with applied R&D in wind power, solar photovoltaics, and fuel cell technologies.
- Specialized laboratories, including the Solar PV Certification Site, Wind Power Generation Test Site, and Renewable Energy Experimental Classroom, serve as platforms for joint R&D and technology transfer.
- Projects include hydrogen energy and fuel cell research, showcased through national symposiums and competitions hosted by NCUT.

### 3. Industry-Academia Workshops and Training

- NCUT regularly organizes forums, symposiums, and workshops on green technologies. Examples include:
  - **2024 Green Technology Engineering and Application Conference** – strategies for industrial sustainability and eco-friendly manufacturing.
  - **2025 GTEA Symposium** – international collaboration on smart manufacturing, green energy, and carbon cycle technologies.



- The New Taipei Green Collar Talent Cultivation Program (2024–2030), co-led by NCUT, develops green-collar professionals through training, seminars, and internships tailored to industry needs.

#### 4. ESG and Carbon Management Services

- NCUT is building a full-service ESG platform, offering:
  - Carbon inventory support for SMEs.
  - Carbon optimization consulting.
  - International certification assistance.
  - Carbon trading education to prepare companies for emerging markets.

#### 5. Carbon Neutrality Center

- Established in July 2022, the Carbon Neutrality Center helps small and medium-sized enterprises (SMEs) conduct:
  - Carbon inventories (GHG inventories, product carbon footprint inventories).
  - Carbon reduction capability building and sustainability planning.
  - Guidance for adapting to supply chain carbon requirements and national carbon border adjustment mechanisms

#### 6. ESG Sustainable Development Center

- Founded in January 2023, the ESG Center supports:
  - Carbon inventory and reduction training.
  - International certification support (carbon rights, emissions trading).
  - Talent cultivation in net-zero carbon emissions management.
- NCUT signed an MOU with France’s Bell International Inspection and Certification Group and Bangtai Group to launch international certification courses for industry

#### 7. Industry Collaboration and National Projects

- In 2024, NCUT’s Manufacturing Transformation Promotion Plan supported by the Ministry of Economic Affairs resulted in 24 approved cases under the *Carbon Inventory Value-Added Application Proposal Plan*. These projects help industries optimize carbon management and support low-carbon manufacturing
- NCUT also engaged in the Industrial Park Interregional Low-Carbon Transformation Plan and Digital Manufacturing Management Carbon Inventory Application Plan, offering services to upgrade industries’ sustainability performance

#### 8. Research and Technical Services



- Sustainability-related R&D projects (2022–2024) received over USD 15 million annually, supporting applied research in renewable energy integration, AI-powered HVAC optimization, PEM fuel cell stacks, and low-carbon materials
- These projects provide testing, analysis, and verification services (e.g., HVAC system efficiency for hospitals, factories, and green museums), directly benefiting local industries

### Contribution to SDGs

- **SDG 7 – Affordable and Clean Energy:** Industry support for renewable energy adoption.
- **SDG 9 – Industry, Innovation and Infrastructure:** R&D collaborations on clean technologies.
- **SDG 11 – Sustainable Cities and Communities:** Strengthening local industries' sustainable practices.
- **SDG 12 – Responsible Consumption and Production:** Carbon management and efficiency optimization.
- **SDG 13 – Climate Action:** Industry-wide reduction of emissions through consulting and innovation.
- **SDG 17 – Partnerships for the Goals:** Strong university–industry–government collaboration.





# GREEN INNOVATION LEADING THE FUTURE – NCUT HOSTS “2025 GTEA SYMPOSIUM ON GREEN TECHNOLOGY AND ENGINEERING APPLICATIONS”



## 3rd Conference on Pandemic Prevention Air Conditioning, Water Pollution Treatment, and Energy Saving Engineering



## NCUT Teams Up with Siemens and Chien-Chiang Technology to Boost Smart Manufacturing Talent



## Sustainable Energy Competition: Our University Wins Gold in the Tertiary Short Film Category





## EU TREE PRUNING STANDARDS SEMINAR HELD AT NCUT TO PROMOTE SUSTAINABLE URBAN TREE MANAGEMENT



Sustainability Research activities

Item	Project	USD
NSTC 113-2221-E-167-012-MY3	Research on quality improvement and carbon reduction in industrial motor shaft manufacturing process	34,250
NSTC 113-2221-E-167-013-MY3	Management system and model establishment and analysis in smart manufacturing environment - Sub-project 4: IC packaging process quality assessment and green outsourcing supplier selection model in smart manufacturing environment (2/3)	35,000
NSTC 113-2221-E-167-017-MY2	2024 Manufacturing Transformation Promotion Plan - Carbon Inventory Value-added Application - Hand Tool Forging Industry Organized Carbon Inventory and Low Carbonization Guidance Plan	25,000
NSTC 113-2221-E-167-023	Development and implementation of crop pest image recognition system - taking Taiwan tomatoes as an example (3/3)	31,100
NSTC 113-2221-E-167-029	2024 Academic Community Promotes Local Industry Technology Value-added Innovation Plan - Digitalization, Intelligence, Leanness and Low Carbonization of Hand Tool Industry	34,500
NSTC 113-2221-E-167-012-MY3	Central Taiwan cross-school integrated scientific research industrialization platform project	50,310
NSTC 113-2221-E-167-013-MY3	Study on the preparation of flame-retardant polyurethane composites from biowaste coffee grounds for energy storage systems to prevent thermal runaway (1/2)	55,000



NSTC 113-2221-E-167-017-MY2	Preparation of flame-retardant backsheet materials for solar panels using self-assembled dual core-shell zeolite imidazole framework-8 (ZIF-8) and its fire retardant properties (1/3)	47,035
NCUT24TEM070	2024 College and University Teaching Practice Research Project - Net Zero Carbon Emission Sustainable Education and LCA Life Cycle Assessment Organization (campus, family and extracurricular activities) and Product Carbon Footprint Inventory and Carbon Label Application Practice	25,650
NCUT24TEM075	Green Energy Institute - Green material synthesis and processing commissioned test work	91,755
NCUT24TEM078	2024 Meishi Pharmaceutical Clean Room System Test Verification Analysis	91,207
NCUT24TEM081	2024 Manufacturing Transformation Promotion Plan-Carbon Inventory Value-added Application-Yuan Yang Industrial Co., Ltd. Service Plan	22,000
NCUT24TEM031	Greenhouse gas inventory and plant carbon emission source reduction technology	20,000
NCUT24TEM032	Circular Economy and Carbon Footprint Communication Resilience Strategy: The Double-edged Sword of Net Zero Carbon Emissions (1/2)	30,345
NCUT24TEM034	Analysis of greenhouse gas emissions from open space combustion heating processes	26,000
NCUT24TEM036	Air conditioning system measurement and performance verification for the first phase of the new construction project of the Kaohsiung Show Chuan Memorial Hospital Medical Building	75,000
NCUT24TEM037	Research and demonstration of new ion solution applied to outdoor air conditioning dehumidification system (2/2)	269,690
NCUT24TEM039	Coffee grounds recycling filter material service process planning	43,620
NSTC 113-2218-E-005-010	Low-carbon, energy-saving and intelligent machine tool fluid system and dynamic machining cutting fluid control optimization analysis research (1/3)	40,928



Total research fund dedicated to sustainability research in 2022 = 15,679,707 US Dollars

Total research fund dedicated to sustainability research in 2023 = 15,470,437 US Dollars

**Total research fund dedicated to sustainability research in 2024 = 15,737,791 US Dollars**

## **The goal of NCUT's carbon neutrality center To achieve energy saving and carbon reduction**

NCUT's Carbon Neutrality Center, established in July 2022, is dedicated to achieving energy savings and carbon reduction, aligning with global efforts toward carbon neutrality and sustainable development. The center plays a crucial role in helping small and medium-sized enterprises (SMEs) manage carbon emissions and navigate the complex landscape of carbon management, including emissions reduction and sustainability efforts.

### **Global Context and the Role of Carbon Neutrality**

As the world grapples with the adverse effects of global warming and extreme weather events linked to greenhouse gas emissions, achieving carbon neutrality has become an urgent priority. Carbon neutrality involves balancing carbon emissions by reducing greenhouse gas outputs and offsetting remaining emissions through external reduction quotas, ensuring no net increase in atmospheric carbon. This approach is a key component in combating climate change.

### **Taiwan's Commitment to Carbon Neutrality**

The Taiwanese government has taken a proactive stance by adopting the Sustainable Energy Policy Framework, which emphasizes:

- Quantifying and reducing carbon footprints
- Integrating carbon management into policy planning
- Addressing internal emissions reduction, followed by offsetting remaining emissions through external mechanisms

This policy aims to achieve carbon neutrality, making carbon reduction a national priority.

### **NCUT's Carbon Neutrality Center**

NCUT's Carbon Neutrality Center is designed to support SMEs in:

- Building greenhouse gas inventories
- Creating product carbon footprint inventories
- Enhancing carbon reduction capabilities

The center assists SMEs in meeting evolving international carbon reduction trends, adapting to supply chain requirements, and complying with the national carbon border adjustment mechanisms.



This is particularly important as businesses face increasing pressure to meet carbon reduction standards imposed by both national policies and global supply chains.

## **Mission and Vision**

The center's mission is not only to support businesses but also to contribute to Taiwan's national and global carbon reduction goals. By providing expertise in carbon management, it enables SMEs to adopt sustainable practices, thereby enhancing their competitiveness in a global market that increasingly values environmental responsibility.

In summary, NCUT's Carbon Neutrality Center is at the forefront of promoting sustainability, energy savings, and carbon reduction in Taiwan, especially among SMEs, positioning itself as a critical player in the fight against climate change.