



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

## [SDGs 6] Clean Water and Sanitation 淨水與衛生

### [6.5.3] Does your university as a body support water conservation off campus?

Due to the impacts of **global warming and climate change**, regions worldwide are facing an escalating crisis of **uneven droughts and floods**, which exacerbates the already unequal distribution of water resources. To address these challenges, the **active planning and formulation of effective water utilization policies** across sectors—**industrial, domestic, and agricultural water**—are critical for sustainable development. These policies not only foster **economic growth** and **industrial expansion**, but also ensure the **basic needs of communities** and maintain a stable **agricultural foundation**.

In water-scarce areas, **drought conditions** are becoming more severe, making **water conservation** strategies increasingly essential. To enhance **drought resilience** across the globe, advancements in **technology** and **water efficiency management** are urgently required. Implementing **economically viable water-saving measures** is a proactive approach to:

1. **Reduce the risks associated with water scarcity.**
2. **Lower wastewater treatment and water recycling costs.**
3. **Mitigate the impact of water shortages** on both urban and rural communities.

In the face of growing environmental pressures, optimizing water use and improving water efficiency are **unavoidable trends** that the world must adopt to secure a sustainable future. These efforts will play a key role in addressing global water resource challenges and supporting long-term ecological and economic stability.

In response to the increasingly severe **water shortage in Taiwan**, National Chin-Yi University of Technology (NCUT) is taking proactive steps to promote **water conservation** both on campus and in the broader community. Beyond raising awareness among students and staff, NCUT has designed **water resources management and water conservation education courses** for community colleges, fostering a deeper understanding of sustainable water use at the local level.

Additionally, faculty members from the **Department of Refrigeration, Air-Conditioning, and Energy Engineering** are actively collaborating with the government on the **High-tech Industry Water-Saving and Energy-Saving Technology Tutoring Project**. This initiative is crucial as high-tech industries in Taiwan are known for their significant consumption of water and energy.



As the Taiwanese government pursues its vision of transforming Taiwan into a **green technology island**, **water-saving technologies** in high-tech sectors have become a top priority. These technologies not only help in **reducing water consumption** but also align with the nation's broader goals of sustainability, energy efficiency, and environmental preservation. NCUT's contributions to these efforts exemplify its commitment to addressing Taiwan's water challenges and supporting the development of sustainable industrial practices.

NCUT has established the **Institute of Global Energy & Environmental Technology Science** to promote sustainable solutions and implement **local energy balance**, a critical foundation for fostering coexistence, prosperity, and long-term survival between enterprises and the environment.

At the core of this initiative is the "**Water Energy Conversion System**," which enables companies to utilize water as a source of energy. This system allows businesses to **balance ecological preservation** while simultaneously generating substantial economic benefits. By optimizing water usage through innovative energy conversion techniques, the system offers a sustainable approach that reduces environmental impact while enhancing operational efficiency.

Through the **Institute of Global Energy & Environmental Technology Science**, NCUT is pioneering advancements in water-based energy management, ensuring that enterprises can thrive without compromising the ecological balance necessary for long-term environmental sustainability.

## Water energy talent training

### Water resource energy conversion system professional and technical personnel training and certification program

#### 1. Background of the plan

In the global trend of attaching great importance to climate change and energy conservation and carbon reduction, "investing in green energy" and "green new deal" have become the main economic strategies and policy trends of countries around the world. Although major green energy industries such as solar photovoltaics, wind power generation, and LED lighting and photovoltaics have continued to expand in the past ten years, the environment is getting worse and the electricity is getting more and more tight. This is a very contradictory fact. And this contradiction comes from the fact that the industry, government and academia have not yet realized the importance of "implementing the local energy balance". This important gap will bring huge business opportunities.

#### The purpose of the plan

Everything we've done for decades has been to help humanity face the problems of climate change, the shaping of extreme climates and meteorological disasters that plague the world. Our biggest challenge is: "How to make human beings use energy to effectively balance the ecological environment and bring huge substantial benefits to enterprises." After verification, we found that the simplest and

most effective method is "Achieving local energy balance". Use water as energy, build closed reservoirs, store energy with water, and learn the laws of the earth's natural energy balance, so that enterprises can take into account the balance of the ecological environment and reduce a lot of operating costs. And this system is the "Water Resources Energy Conversion System".

"Water Resources Energy Conversion System" combines "Energy Smart Management Technology", "Energy Smart Conversion Technology", "Energy Smart Supply and Transmission Technology" and "Smart Energy Storage Technology", we believe this will become the "investment in green energy" and "The mainstream of the Green Energy New Deal. And it all started with the National Qinyi University of Science and Technology of the Republic of China. This is the first of its kind in the world. We have the responsibility to formulate regulations, establish standards, train relevant technical personnel, and effectively promote it in the world through the "Water Resources Energy Conversion System Professional Technical Personnel Training and Certification Program".

### The ability to implement plans

#### 1. Technical architecture of water resources energy conversion system:

- Energy smart supply and transmission technology: housing, business, industry, community, city, country, cross-border smart supply and transmission technology.
- Smart energy storage technology: electricity, thermal energy storage technology, small and medium-sized energy storage technology and ultra-large energy storage technology.
- Smart energy conversion technology: energy conversion, balance, detection and calculation technology inside and outside the building.
- Energy smart management technology: energy billing, IOT, certification and connection technology of various systems.

