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

[6.5.5] Does your university as a body cooperate with local, national, global governments on water security?

Yes, based on NCUT's sustainability and USR documentation, the university actively cooperates with local, national, and global governments on water security through education, policy alignment, and technology collaboration.

NCUT's Cooperation on Water Security

1. Local Government Partnerships

- **Taichung City Government**:
  - NCUT works with the Environmental Protection Bureau on sewage treatment, water recycling, and pollution prevention compliance**.**
  - Water quality and quantity reports from NCUT's treatment plant are regularly submitted for oversight
- **District and Township Offices (Central Taiwan)**:
  - NCUT collaborates with 40 township offices and Farmers' Association Evergreen Academies.
  - Around 1,200 local residents annually visit NCUT to learn about sustainable practices, including water conservation and recycling

2. National-Level Cooperation

- **Ministry of Education (MOE):**
  - NCUT receives MOE funding through the USR program to run projects such as the Xinshe Mushroom Industry Innovation Project, which addresses climate change, labor shortages, and water resource efficiency
- **Water Resources Department (Taiwan):**
  - NCUT has been recognized by the government for excellence in water conservation and efficient water appliance installations (e.g., 98.7% water-efficient facilities on campus)
- **National Energy and Environmental Policies:**

- Through the Institute of Global Energy & Environmental Technology Science, NCUT supports Taiwan's vision of becoming a green technology island, focusing on water-energy conversion systems for drought resilience and industrial water security

3. Global Collaboration

- NCUT promotes sustainable water use internationally through:
  - Faculty research collaborations and exchange programs that focus on climate change, water-energy balance, and SDG-aligned water management.
  - Professional training and certification programs for global technical personnel in water-energy management, disseminated via NCUT's Institute of Global Energy & Environmental Technology Science
  - Institute of Global Energy & Environmental Technology Science: NCUT leads international partnerships focused on water-energy integration, highlighted by its pioneering Water Energy Conversion System that balances industrial water use with ecological sustainability.
  - International Research and Forums: NCUT participates in global water security initiatives, shares best practices, and hosts faculty and student exchanges in regions facing water scarcity.
  - Professional Certification Programs: NCUT trains technical personnel worldwide in water-energy management, expanding global capacity for sustainable water solutions.

Impact and Contribution to SDGs

- **SDG 6 – Clean Water and Sanitation:** Supports governments in ensuring clean and sustainable water management.
- **SDG 9 – Industry, Innovation, and Infrastructure:** Develops water-energy integration technologies for industrial resilience.
- **SDG 11 – Sustainable Cities and Communities:** Builds local and regional water resilience through community education.
- **SDG 13 – Climate Action:** Advances disaster prevention and drought resilience strategies.
- **SDG 17 – Partnerships for the Goals:** Strengthens cooperation with local, national, and global governments for sustainable water security.

Plan Points

The institute acknowledges that the earth's ecosystem thrives on the balance between energy and the environment. However, excessive human activity, especially in the use of energy, has disrupted this balance, contributing to global issues such as **climate change** and **extreme weather**. To counteract this, the institute focuses on reestablishing this balance through sustainable energy use at the local level.

Sustainable development seeks to achieve intergenerational equality by balancing environmental protection, social equity, and economic growth. To that end, NCUT's research in energy-environment sustainability drives the development of technologies that encourage local energy balance, preventing global displacement of emission responsibilities.

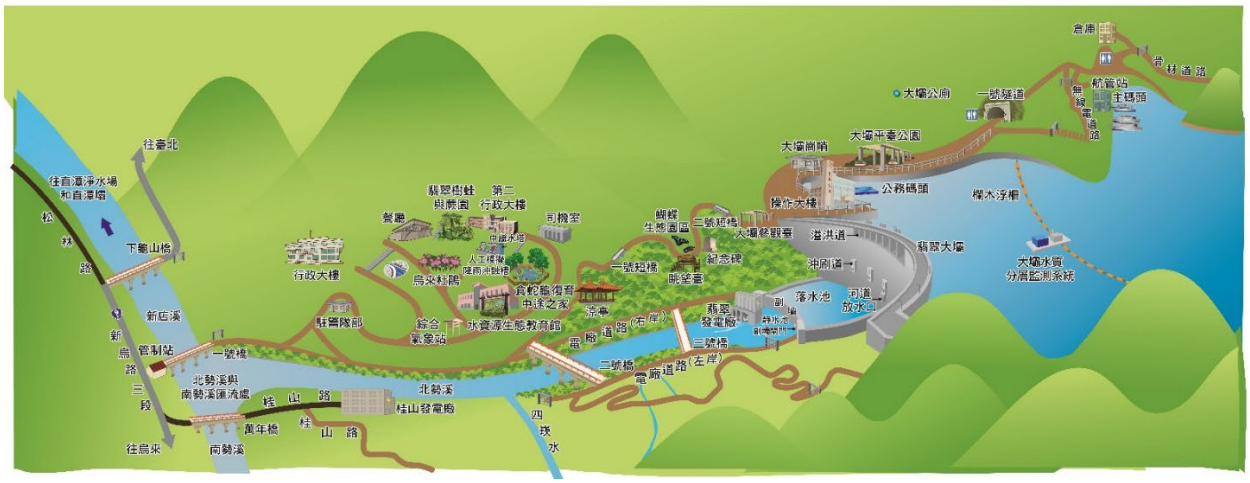
Service Offerings

The Institute offers various services to help industries and governments adopt sustainable practices:

- **Double Certification**: Assists industries with innovative standards, product certification, and third-party verification.
- **Talent Training & Certification**: Trains professionals in energy and environmental management.
- **Intellectual Property Strategy & Technology Transfer**: Provides guidance on intellectual property rights and facilitates technology transfer.
- **Entrepreneurship Counseling & Government Subsidy Application**: Supports startups and aids industries in securing government support.
- **International Cooperation**: Fosters industrial exchanges and collaboration on a global scale.

Product Technologies

The institute has developed technologies focused on **smart energy management**, integrating supply, transmission, conversion, and storage technologies. These innovations culminate in the **Water Energy Conversion System**, which showcases how local energy balances can be achieved through water resource management. This approach helps industries maintain ecological balance while improving efficiency and reducing operational costs, thereby contributing to sustainable human activities at the regional level rather than deferring emissions responsibilities globally.



Safety Assessment Technology for Reservoir Dams

In collaboration with the Ministry of Science and Technology, NCUT is engaged in a specialized research project through its **Department of Natural Science and Sustainable Development**. The project focuses on **Disaster Prevention Technology**, targeting three core objectives related to water security:

Key Research Objectives

1. **Water Supply Enhancement**: NCUT is researching ways to improve water supply systems, especially during natural disasters or crises. The goal is to build more resilient systems to ensure a continuous and reliable water supply.
2. **Water Purification**: The project emphasizes advancing purification technologies to improve water quality, eliminate contaminants, and make safe drinking water more accessible.
3. **Reservoir Safety**: Reservoirs are critical for managing water resources. NCUT's research seeks to improve reservoir safety through enhanced monitoring systems, structural upgrades, and robust emergency response protocols.

Impact on National Water Resource Safety

NCUT's research is expected to contribute significantly to the national water security framework:

- **Data-Driven Policy**: By providing detailed research reports and improvement plans, NCUT helps inform national strategies for water resource management and disaster prevention.
- **Enhanced Resilience**: The project aims to strengthen the resilience of water supply and purification systems, making them less vulnerable to natural disasters.
- **Environmental Stewardship**: The research aligns with national environmental goals, promoting the protection of ecosystems while addressing water-related challenges.

Collaborative Approach

The collaboration between NCUT and the Ministry of Science and Technology reflects the university's commitment to solving critical societal challenges. By addressing water supply, purification, and reservoir safety, NCUT not only safeguards local communities but also contributes to national water resource safety and environmental security.

Through its comprehensive approach involving research, education, collaboration, and policy advocacy, NCUT is making a significant impact on water security and sustainability both locally and globally.