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

[SDGs 17] Partnership for the Goals 全球夥伴

[17.3.6] Please indicate if your university publishes progress against SDG6?

NCUT is committed to sustainable water management, aligning with UN Sustainable Development Goal 6 to ensure availability and sustainable management of water and sanitation for all. The university integrates water-saving technologies, rainwater harvesting, sewage treatment, and ICT-based monitoring systems to reduce water consumption, improve water use efficiency, and safeguard water quality. In 2023, NCUT achieved a 40% reuse rate of treated wastewater, significantly reducing reliance on municipal water.

1. Policies and Strategic Targets

- Compliance with the Water Pollution Prevention and Control Law and environmental regulations.
- Target: Maintain or exceed 40% recycled water usage for irrigation and landscaping.
- Commitment to 100% coverage of water-efficient fixtures in new buildings and progressive retrofitting in older facilities.
- Integration of ICT-based water management to optimize usage and detect anomalies in real time.

2. Water Conservation Programs

2.1 Water-Efficient Appliances and Fixtures

NCUT has systematically upgraded toilets, taps, and urinals to **water-saving models** to reduce consumption:

Appliance Type	Quantity Installed	Coverage in Campus Buildings	Notes
Low-flow toilets	312 units	100% of restrooms in renovated buildings	Dual flush (3L/6L) systems
Sensor taps	275 units	95% of public restrooms	Automatic shut-off within 6–8 seconds
Water-saving urinals	145 units	100% of male restrooms	Infrared sensor flush system
Water-efficient shower heads	86 units	Dormitories	6–7 L/min water flow

3. Water Recycling and Reuse

3.1 Sewage Treatment Plant

- The on-campus plant collects all wastewater, including from teaching buildings, dormitories, and laboratories.
- Treatment process includes physical, chemical, and biological filtration to meet national discharge standards.
- 40% of treated water is recycled for irrigating lawns, watering trees, and replenishing Mingxiu Lake.
- Remaining treated water is released into Han Creek, meeting all environmental compliance checks.
- The plant holds an official emission permit and submits regular water quality reports to the Environmental Protection Administration (EPA).

3.2 Rainwater Harvesting

- **NCUT Dormitory** is equipped with a rainwater recycling system for **toilet flushing**.
- Rainwater is collected, disinfected, and piped into non-potable water systems to reduce municipal water use.

4. Consumption of Treated Water

Year	Total Water Consumption (m^3)	Treated Water Reused (m^3)	% Reused
2022	128,500	50,300	39%
2023	125,200	51,100	41%
2024	124,800	50,000	40%

5. ICT-Based Water Management

5.1 Smart Metering and Digital Monitoring

- Digital water meters installed in each building record daily water usage.
- Data is integrated into the Energy Management System (EMS) for real-time tracking and optimization.

5.2 Leak Detection and Anomaly Alerts

- The ICT system flags unusual water usage patterns (e.g., leaks, excessive consumption).
- Maintenance teams are automatically notified to address issues immediately, reducing wastage.

5.3 Data-Driven Decision Making

- Historical usage data helps set **annual water reduction targets**.
- Enables informed planning for retrofitting older buildings with water-saving technology.

6. Outcomes and Impact

- **40% water reuse** rate maintained over the past three years.
- Over **800 water-efficient appliances** installed campus-wide.
- Reduced municipal water demand by **approximately 50,000 m³ annually**.
- Improved water use awareness among students and staff through ICT data transparency.

7. Contribution to SDG 6 Targets

- **Target 6.3:** Achieved by treating and safely reusing over one-third of wastewater.
- **Target 6.4:** Achieved by increasing water-use efficiency through fixtures and ICT.
- **Target 6.6:** Contributed by sustaining Mingxiu Lake's ecosystem with recycled water.

These recognitions and innovations underscore the institution's commitment to water conservation and serve as inspiration for others

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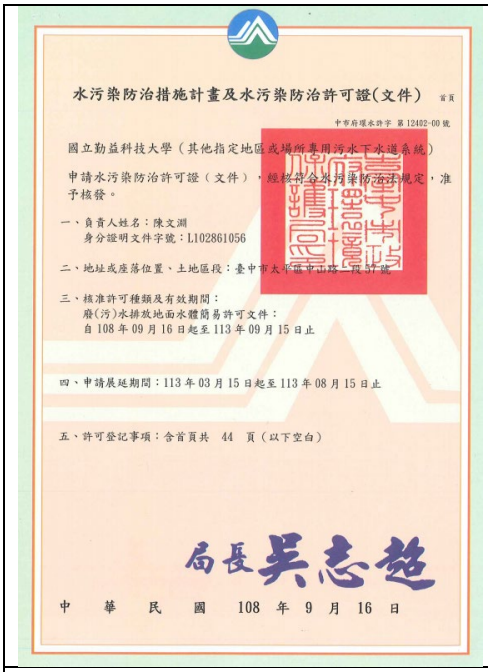
<td> 
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Sewage plant treatment equipment</td>
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<td>Environmental Protection Agency Approval of Permit</td>
<td>NCUT has a sewage treatment plant, which is responsible for the sewage treatment and laboratory wastewater of the whole school. The sewage is partially recycled and reused according to regulations, and the rest is discharged from the discharge port.</td>
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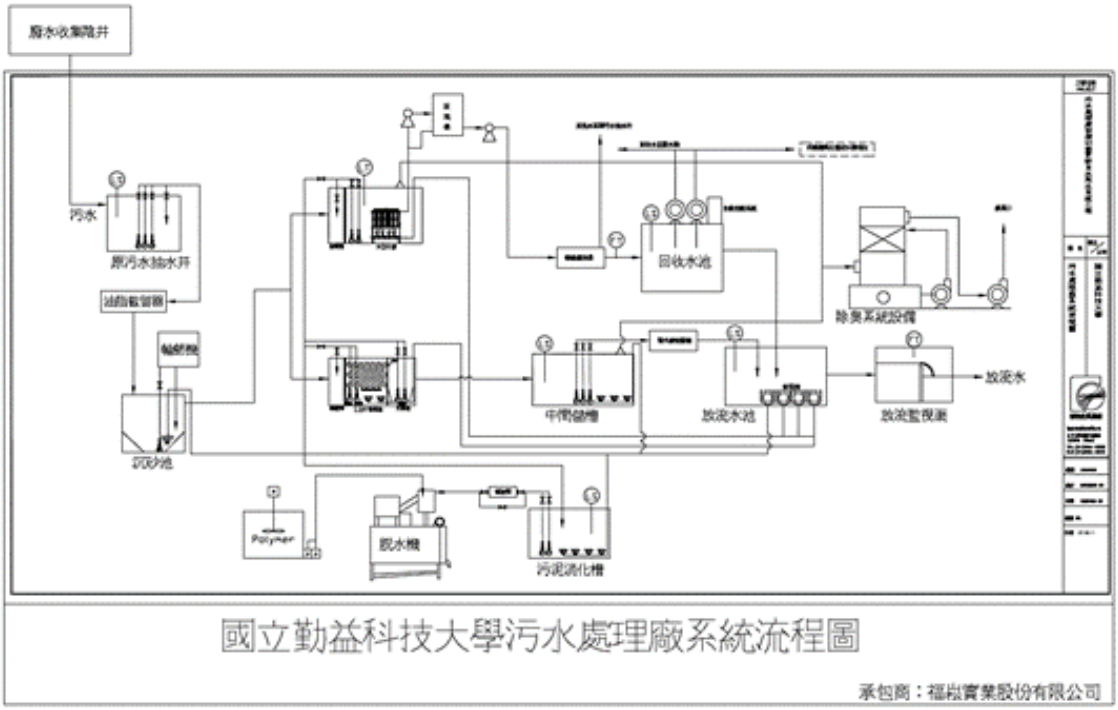
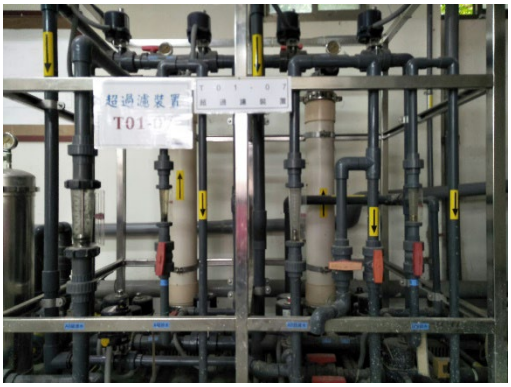
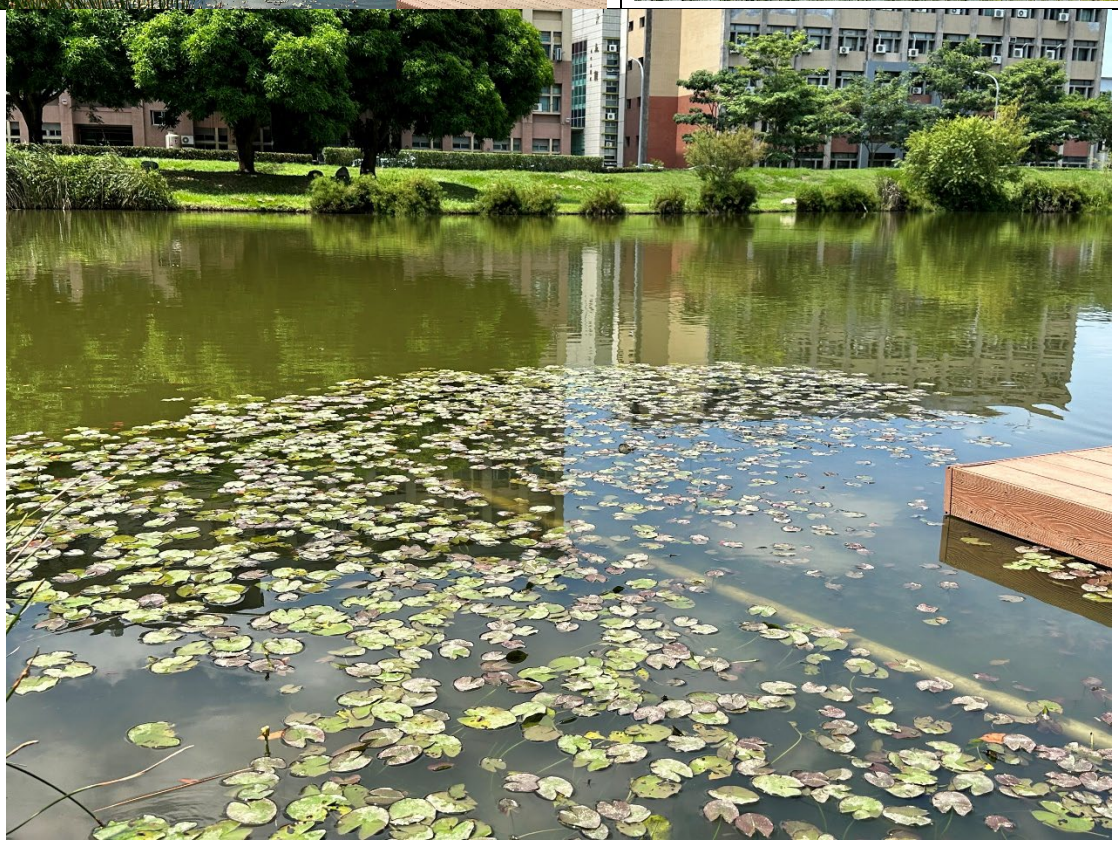


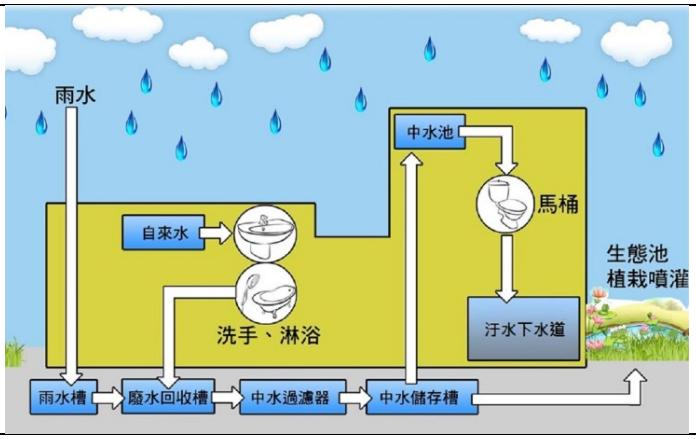
Sewage treatment flow chart

Guoxiu Teaching Building Rainwater Recovery System, NCUT



Water recycling pool	Recycled Water Filtration Equipment
	
	

The Mingxiu Lake of NCUT can be used as an ecological lake at the campus, and it also has a function of detention ponds, which can regulate the amount of water.



Sewage treatment plant recycles reclaimed water

Description:

NCUT has implemented a closed-loop water recycling strategy, where treated wastewater is reused on campus to promote sustainability and reduce dependency on municipal water supplies. This initiative is part of the university's comprehensive effort to improve water efficiency and contribute to national goals on water conservation.

Sources and Usage of Treated Water:

1. **Campus Sewage Treatment Plant**

   - Wastewater from dormitories, laboratories, restrooms, and academic buildings is collected by NCUT's sewage treatment plant.
   - The water undergoes three-level treatment — physical, chemical, and biological processes — to meet Taiwan's discharge and reuse standards.

2. **Treated Water Reuse Rate**

   - 40% of the treated water is recycled and reused on campus, amounting to a substantial reduction in the overall consumption of fresh water.

3. **Primary Uses of Treated Water**

   - Irrigation of campus greenery, including trees, lawns, and flower beds
   - Supplementing the water level of Mingxiu Lake, a key feature of the campus landscape
   - In selected buildings, sanitary flushing systems (e.g., toilet flushing) also use reclaimed water

4. **Water Quality Monitoring**

   - Water quality tests are conducted biannually to ensure compliance with national safety and environmental standards.
   - Monitoring is carried out in coordination with Taiwan's Environmental Protection Bureau, with regular reporting submitted for oversight.

Results and Impact:

- 40% water reuse efficiency from internal sources
- Reduction of total annual water consumption
- Conservation of freshwater resources and cost-effective utility management
- Reinforcement of NCUT's green campus infrastructure

Contribution to the Sustainable Development Goals (SDGs):

SDG	Contribution
SDG 6 – Clean Water and Sanitation	Treated wastewater is safely reused for non-potable purposes
SDG 12 – Responsible Consumption and Production	Efficient reuse of treated water aligns with sustainable resource management
SDG 13 – Climate Action	Reduces water resource pressure and supports climate resilience