Chung Yuan Christian University Water Resources Management Policy and Practices (Regulatory Draft)

I. Overview of Water Resources Management Policy

Chung Yuan Christian University water resources management policy is founded based on four main principles: “Water Conservation,” “Effective Management,” “Flexible Allocation,” and “Diversified Development.”

Through these principles, the University aims to enhance the efficiency of water supply and demand while promoting sustainable use of water resources.

II. Water-Saving Goals

The overall objective of the University’s water-saving plan is to achieve *“negative water consumption growth.”*

To achieve this objective, several strategies will be implemented in four stages:

1. Assess current water usage conditions.
2. Identify characteristics of water use by category.
3. Evaluate and implement feasible water-saving programs.
4. Continuously monitor and improve outcomes.

The main principals emphasize multiple layers of efforts, including minimizing waste, utilizing renewable energy & carbon resources, and promoting diversity. The proposed timeline is as follows:

2019-2020	2021-2023	2024-2029
1. Install smart water meters 2. Maintain & Upgrade water-saving devices 3. Install water tower monitoring systems	4. Install smart water meters 5. Maintain & Upgrade water-saving devices 6. Install water tower monitoring systems	1. Install smart water meters 2. Maintain & Upgrade water-saving devices 3. Install water tower monitoring systems

		4. Install rainwater recycling systems

III. Water Conservation Strategies

Water conservation is both critical priority and shared responsibility for all communities.The University continuously explores the opportunities to improve theuse of reclaimed and rainwater resources, strengthen monitoring system to prevent leaks, enhance equipment efficiency, and promote water-saving practices as part of daily life. Four aspects are considered as follow:

Water Management	Water Reduction	Water Storage and Utilization	Water Recycling
1. Establish water conservation assessment indicators 2. Develop a detailed breakdown of water usage 3. Formulate water conservation plans 4. Implement Water leak prevention measures	1. Promote Water conservation awareness 2. Adjustment of water control equipment 3. Replacement with water-saving equipment	1. Planning of Rainwater collection area and volume 2. Planning for Rainwater collection management 3. Evaluation og Rainwater collection and treatment 4. Evaluation of Rainwater replacement rate	1. Assessments of Water quality and quantity atconsumption and production points 2. Planning and zoning of Pipeline 3. Assessment of water recycling and treatment equipment + regeneration rates

IV. Current Implementation and Effectiveness

The University monitors school-wide water use includingtap water, groundwater, recycled water, as well as stored water in the supply tanks.
By compiling data and developing water balance charts, consumption is tracked and evaluated to adjust control systems accordingly.
Water usage data are also compared with those of similar institutions to identify potential savings and reduction targets.

Tap Water Consumption (2022 - 2024)

Year	Total (A)	Membrane Lab (B)	Engineering Lab (C)	Life Sciences Lab (D)	Domestic Use (Z=A–B–C–D)	Non-Domestic Use (W=Z–A)
2022	259,141	2,929	10,572	5,169	240,471	18,670
2023	288,458	2,651	16,404	4,740	264,663	23,795
2024	210,886	2,810	17,439	4,374	186,263	24,623

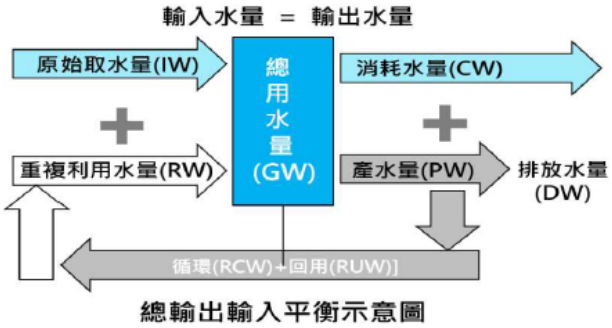
V. Water Management and Potential Savings Analysis

(1) Water Usage Audit (Water Balance Diagram and Records)

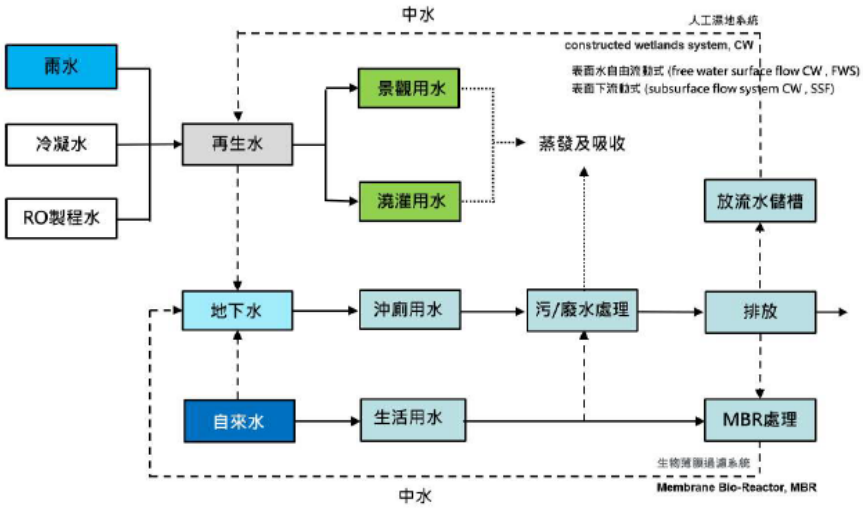
To understand the flow, volume, and reuse of water on campus, a water balance diagram is prepared for each unit.
The total inflow equals total outflow, enabling precise analysis from the building-level to the campus-wide scales.

Key steps:

1. Maintain accurate metering and recordskeeping.
2. Apply scientific management methods to identify water conservation opportunities.
3. Develop practical water-saving plans.
4. Train management personnel who are familiar with the system.



總輸出輸入平衡示意圖



(2) Leak Detection System

- Maintain records for all campus water meters.
- Clean building water tanks twice a year.
- Record monthly water meter readings for dormitories and facilities.
- Investigate abnormal consumption promptly and carry out leak repairs.

(3) Operation and Maintenance

- Maintain Piping systems through certified electricians and plumbers.
- Conduct Repairs during facility renovations projects.

(4) Water Control and Efficiency Improvements

- Replace automated irrigation with manual watering based on real-time weather conditions.
- Improve pump monitoring and control systems.
- Implement efficiency recommendations proposed by sustainability and water management experts.

(5) Education and Training

- Students: Promote water-saving awareness through videos and poster design competitions.
- Facility staff: Provide training on water dispensers maintenance and leak prevention.
- Technicians: Ensure proper maintenance of water-saving fixtures.
- Promote awareness of clean water as a valuable resource and a fundamental on human right.

(6) Government Collaboration

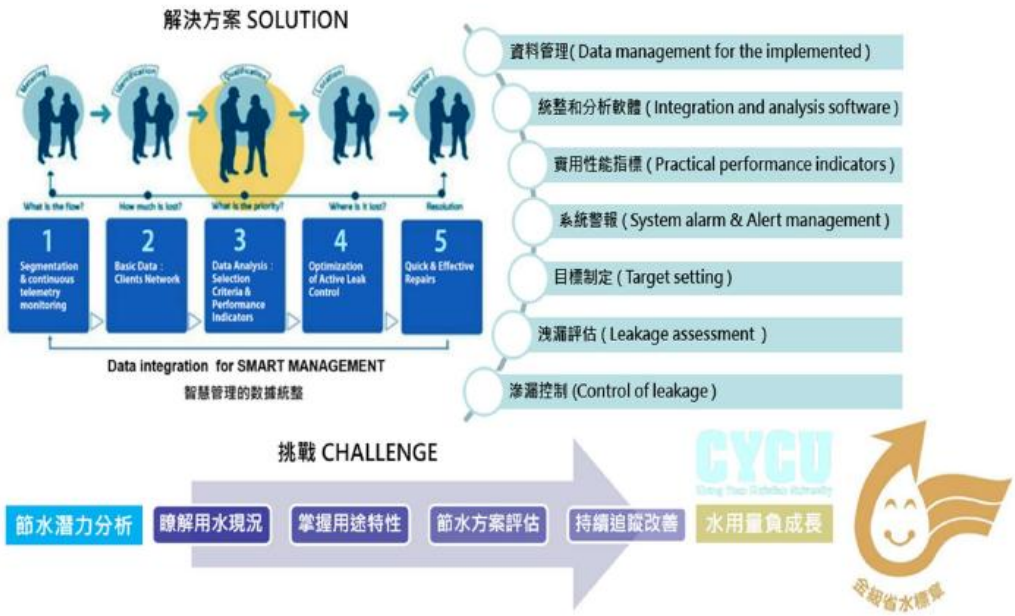
Install water conservation reminders and dual-flush indicators in restrooms, swimming pools, and dormitories to raise public awareness to save water.

(7) Free Access to Drinking Water

There are 281 water dispensers across the campus, offering free access to students, staff, and visitors to promote “zero-waste drinking.”
This initiative reduces plastic bottle waste and supports a circular economy (3R: Reduce, Reuse, Refill), with the long-term goal of achieving 100% refill-based drinking on campus.

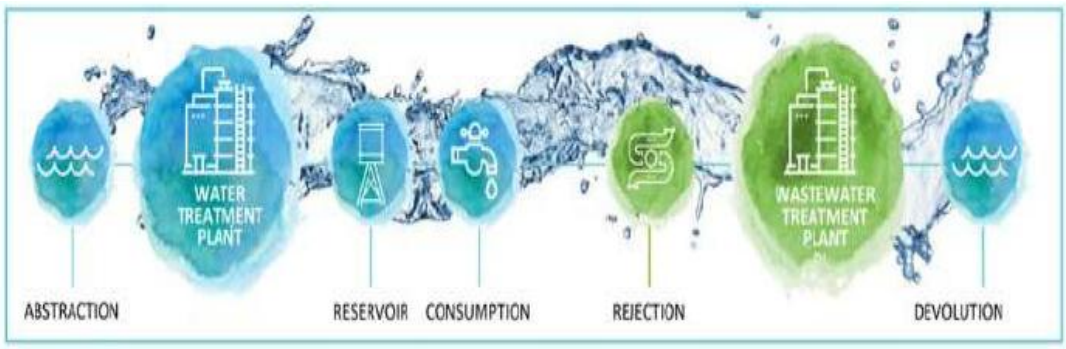
VI. Future Key Initiatives

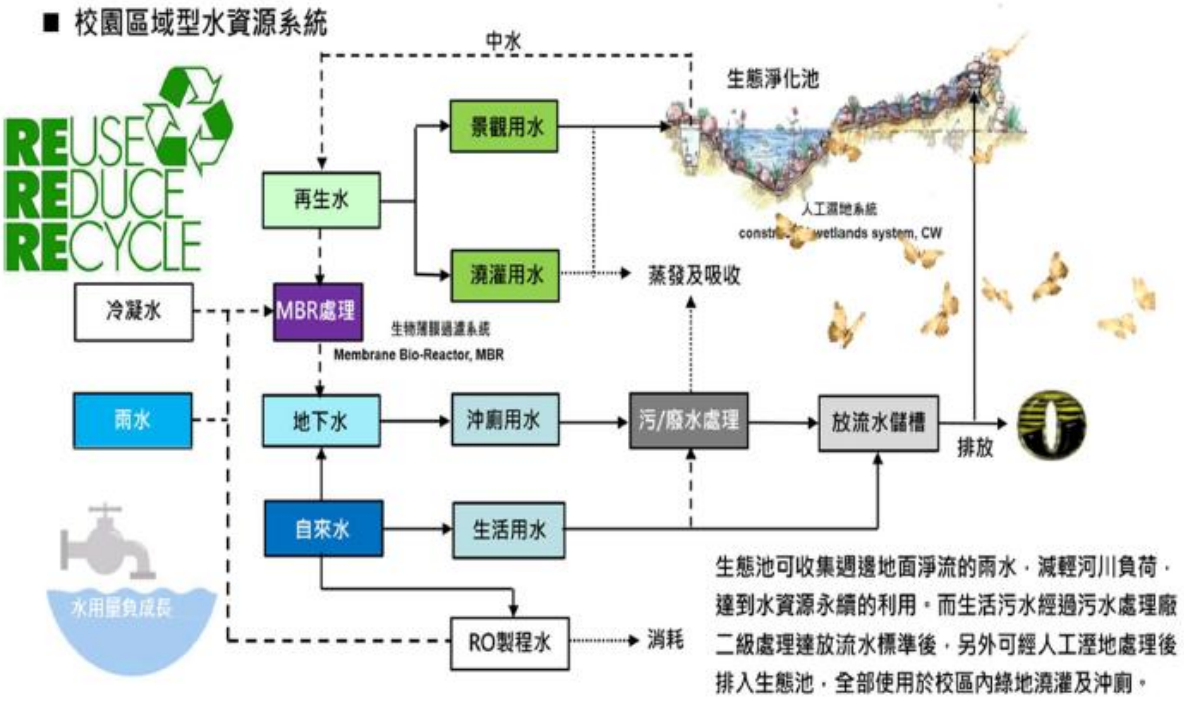
1. Establish a Comprehensive Water Monitoring and Management System
   Collect and analyze water usage data to identify potential savings and adjust control systems accordingly.
   The long-term goal is to achieve sustainable management through water conservation and resource regeneration.



2. Install Wastewater Discharge Monitoring Systems
   Separate rainwater, domestic wastewater, laboratory wastewater, and conduct regular sampling and monitoring to ensure compliance and operational efficiency.

3. Develop an Integrated Campus Water System
   Maximize reuse for toilets, irrigation, cooling, and landscaping, with the goal of achieving 100% reclaimed or rainwater utilization in these applications.





4. Implement Rainwater Infiltration and Storage Systems
   Restore soil permeability and enhance local climate regulation by integrating existing infrastructure into a comprehensive rainwater infiltration, catchment, and reuse systems.

■ 校園雨水貯留供水系統 (Rainwater Catchment Systems)

