Annual Report

on SDG6 Clean Water and Sanitation

6.5 Water in the community

6.5.5 Institutional Collaboration on Water Security

Thaksin University places water security and sustainable resource management at the center of its institutional strategy under the **Five-Year Strategic Plan (2023–2027)** and the **TSU Green Policy**. In alignment with Thailand's National Strategy on Water Management (2018–2037) and the United Nations Sustainable Development Goal 6 (Clean Water and Sanitation), the university collaborates with local, regional, and national government bodies, including the Department of Water Resources, Department of Groundwater Resources, the Provincial Waterworks Authority, and local administrative organizations to strengthen **sustainable access to clean water, reduce pollution, and protect fragile ecosystems in the Songkhla Lake Basin**. These partnerships emphasize the development of rainwater-harvesting and surface-water-storage systems, treated-water-reuse networks, and real-time monitoring systems that minimize groundwater extraction and ensure environmental balance on and off campus.

Research collaboration forms a key driver of this policy. Through the Faculties and Research Center, Thaksin University lead multidisciplinary research on eco-friendly adsorbents, photocatalytic materials, and activated-carbon composites for wastewater purification and reuse. A flagship project, **Activated Carbon from Krajood Residue for Sustainable Wastewater Treatment and Water Security in the Songkhla Lake Basin,** demonstrates how scientific innovation directly contributes to **community water security**. The project engages local governments such as Phanang Tung Sub-district Administrative Organization and Ko Saba Municipality in implementing **zero-waste treatment models** that convert craft waste into valuable water-filter materials. The outcomes **reduce pollution** in local waterways, improve household water quality, and create new sources of income, thus linking environmental stewardship with socio-economic development.

Water-security concepts are also **embedded in teaching and learning**. Courses in **Environmental Chemistry, Water Pollution Control, Green Chemistry, and Environmental Management** emphasize sustainable use, treatment, and reuse of water resources. Students conduct fieldwork and cooperative-education projects with government agencies and community water-supply units, gaining practical experience in water-quality monitoring, hydrological assessment, and environmental policy analysis. This learning approach ensures that graduates possess both scientific competence and civic awareness in safeguarding water resources.

Community engagement further extends the university's partnership with local authorities. Through outreach and training programs, Thaksin University works with municipalities, sub-district administrations, and the Songkhla Lake Basin Development Authority to promote community water literacy and environmental resilience. Workshops on rainwater harvesting, grey-water reuse, and pollution control are conducted for village leaders, schools, and households, while demonstration projects showcase how local materials such as biomass residues, can be transformed into efficient filtration systems. These initiatives empower communities to achieve self-reliant water management and enhance preparedness against droughts and floods.

Operationally, the university manages water use through **a Power BI-based Water Monitoring System** that records both consumption and reuse data in real time. In FY 2025 (2568), total fresh-water consumption reached 473,212 litres, while 23,931 m^3 of treated water (equivalent to 797 truckloads) was reused for landscape irrigation. These datasets are shared with the Phatthalung Provincial Office of Natural Resources and Environment and inform annual planning to ensure efficient and sustainable extraction. Through the integrated policy framework, scientific research, academic education, community partnership, and data-driven operations, Thaksin University actively cooperates with governmental bodies at all levels to safeguard water security, promote climate-resilient communities, and preserve the ecological integrity of the Songkhla Lake Basin. These continuous efforts demonstrate the university's strong commitment to achieving the goals of SDG 6 (Clean Water and Sanitation) and to advancing sustainable development for southern Thailand and beyond.

Supporting evidence:

- Water-supply and monitoring records (January–December 2026) - Division of Building and Environment, TSU.
  https://app.powerbi.com/view?r=eyJrIjoiMWFhNDI2N2QtZTUwMS00ZDNhLThmNDktNzE0ZWI0Y2FkN2M2IiwidCI6IjNkYTdmOTQ3LTY3NTAtNDYzMC04MDk2LWJiYTlmNzZlMjZhOCIsImMiOjEwfQ%3D%3D
- Green University Policy - Section 4: Water Management
  https://sdg.tsu.ac.th/detail.php?id_list=163&aNum=20231108221217
- https://www.tsu.ac.th/home/details.php?id=5572
- Research Paper
  https://doi.org/10.1016/j.diamond.2025.112618