Annual Report
on SDG6 Clean Water and Sanitation

6.5 Water in the community

6.5.3 Water conservation off campus

Thaksin University is firmly committed to promoting **water conservation** and the **protection of aquatic ecosystems** both on and off campus through an integrated approach combining institutional policy, research and innovation, teaching, and community service. This effort is guided by the **university's Green University Policy** and its alignment with the UN Sustainable Development Goal 6 (Clean Water and Sanitation) as well as **Thailand's Bio-Circular-Green (BCG)** economy strategy. The university's green policy establishes a comprehensive framework for sustainable water management, emphasizing efficient water use, wastewater reduction and reuse, and the active participation of staff, students, and surrounding communities in the protection of water resources. Faculties and research centers are encouraged to develop innovative technologies for wastewater treatment and community-based water reuse that can be implemented in rural and industrial settings.

Many faculties have developed several **eco-technologies for wastewater purification and reuse.** Among these are microbial fuel cells (MFCs) using *Enterobacter* sp. TS1L, which achieved more than 70 percent dye removal from textile wastewater while generating electricity; photosynthetic microbial fuel cells (PMFCs) using Chlorella sp. BF01, which removed nearly 80 percent of melanoidin from palm-oil mill effluent while producing value-added algal biomass; and laccase-producing bacterial systems immobilized on activated carbon that degraded over 80 percent of melanoidin and generated small amounts of clean electrical energy. These low-cost technologies have been transferred to community enterprises such as palm-oil producers

and weaving groups across southern Thailand, helping to reduce local water pollution and encourage water reuse.

Teaching programs in **Environmental Chemistry, Environmental Science, and Energy Engineering** incorporate field-based learning on **water analysis, pollution control, and sustainable water use.** All conduct off-campus projects that involve **water-quality monitoring,** developing affordable filters from local biomass such as Krajood reeds, and collaborating with rural industries and schools to improve water management systems.

Community outreach further extends these efforts. In Phatthalung Province, the project **"Loy Khlon, Pluk Khao, Lek Khan Wi Thi Nale" (Muddy-field rice planting at Pak Pra)** revives the traditional coastal rice-farming system, restoring the balance between freshwater and brackish-water use for sustainable agriculture and soil–water conservation. Another outreach initiative, **"Blackchin Tilapia Awareness for Songkhla Lake,"** educates high-school students about invasive aquatic species and their ecological impact, cultivating environmental awareness and responsibility for water resources. At the same time, TSU researchers participated in **"Laem Tanod Agricultural and Innovation Fair,"** showcasing sustainable aquaculture feed and biodegradable materials that support efficient coastal resource use.

These initiatives reflect the university’s central role as both **a research hub** and a community partner in advancing **sustainable water management**. By combining policy commitment, scientific innovation, and civic education, Thaksin University contributes to cleaner water systems, restored ecosystems, and the creation of environmentally conscious citizens who help drive regional and national progress toward water security and sustainability.

Supporting evidence:

- "Green University Policy" - Section 4: Water Management
  https://sdg.tsu.ac.th/detail.php?id_list=163&aNum=20231108221217
- https://sdg.tsu.ac.th/detail.php?id_list=339&aNum=20240617114333
- Research Paper
  http://dx.doi.org/10.15576/ASP.FC/183478
  https://doi.org/10.21924/cst.10.1.2025.1700
  https://doi.org/10.1007/s10924-023-03141-0