

Annual Report on SDG14 Life Below Water

14.2 Supporting aquatic ecosystems through education

14.2.1 Educational programs on freshwater ecosystems and water management for local and national communities

Communities in southern Thailand, particularly those living around the **Songkhla Lagoon and Pak Phanang River Basin**, rely on freshwater and brackish ecosystems for agriculture, fisheries, and household water use. However, inappropriate water gate operations, poor irrigation planning, and limited awareness of ecosystem-based water management have led to conflicts, declining water quality, and the loss of aquatic biodiversity. There was an urgent need for **community-based learning programs** that integrate science, local wisdom, and ecosystem management for sustainable water use. To explain these problem, Thaksin University promotes “**Lifelong Learning for Freshwater Ecosystem Stewardship**”, integrating academic services, education, and research to support communities in sustainable water management. The approach combines **scientific knowledge, participatory learning, and local wisdom** to improve water irrigation practices, enhance community understanding of ecological systems, and strengthen cooperation between citizens and government agencies.

Thaksin University offers educational programs for local communities on **freshwater ecosystem management, irrigation practices, and water conservation**. Key projects include the *Pak Phanang Water Management Project*, *Laipan Canal Water Quality Monitoring* using freshwater bioindicators, and the *Fish Guardians (Three-Water)* conservation course. Over **600 participants** joined training and workshops from 2023–2025, enhancing community understanding of ecosystem-based water management. These initiatives combine **scientific knowledge and local wisdom** to promote sustainable freshwater resource use in southern Thailand. Thaksin University provided 3 main program to address these issues;

1. Pak Phanang Water Management Project

Thaksin University has implemented the **Pak Phanang Water Management Project** to address ecological imbalances and social conflicts arising from the mismanagement of sluice gate operations by the Irrigation Department. The initiative adopts a participatory and science-based approach that brings together multiple stakeholders — including local communities, government agencies, and university researchers — to co-develop an ecological database for adaptive water management. Through a series of consultations, workshops, and hydrological studies, the project has strengthened mutual understanding among stakeholders regarding the relationship between water flow, salinity dynamics, and ecosystem health. The collaboration has led to the design of an improved and more balanced water-release schedule that supports both agricultural productivity and aquatic biodiversity conservation. As a result, local communities are now more actively involved in monitoring water conditions and decision-making processes, while government agencies have gained a deeper appreciation of the eco-hydrological systems that sustain the Pak Phanang Basin. This project exemplifies Thaksin University's role in bridging science, policy, and community engagement to promote equitable and sustainable water governance in alignment with SDG 14 and 6.

2. Thaksin University implemented the Laipan Canal Water Quality Project To strengthen community knowledge and youth engagement in aquatic ecosystem monitoring. The project aims to educate students, teachers, and local residents on practical methods for assessing water quality through the use of freshwater macroinvertebrates as bioindicators. A series of training workshops and field surveys were conducted, where participants learned how to collect water and biological samples, identify aquatic invertebrate species, and interpret environmental data to evaluate the health of the canal ecosystem. Through these participatory learning activities, community members and youth groups gained the skills to independently monitor and analyze water quality in their local environment. The project has also fostered the establishment of a **youth–community conservation network**, promoting long-term collaboration in protecting the Laipan Canal. As a result, this initiative has enhanced local environmental awareness and empowered communities to apply science-based approaches to water management, aligning with the goals of sustainable freshwater ecosystem conservation (2023–present).

3. Thaksin University launched the “Three-Water Fish Guardians”

Program to strengthen knowledge and awareness of sustainable fisheries management among local fishers, youth, and community members living around the Songkhla Lagoon Basin — an interconnected system of freshwater, brackish, and marine environments. The program emphasizes participatory learning through community workshops and educational camps conducted under the course “*Fish Guardians: Sustainable Fisheries and Legal Practices.*” Participants learn about aquatic biodiversity, seasonal fishing restrictions, habitat protection, and the impacts of illegal fishing gear on ecosystems. The program also incorporates hands-on conservation activities such as the creation of fish conservation zones and the construction of *Living Fish Houses* to restore aquatic habitats. These efforts have led to the establishment of model conservation areas across five lagoon communities and the formation of inter-community learning networks that promote collaborative resource management. Through continuous engagement, the “Three-Water Fish Guardians” initiative has empowered both youth and local fishers to become active stewards of their environment, ensuring the long-term sustainability of aquatic resources in the Songkhla Lagoon Basin (2023–present).

Thaksin University promotes **lifelong learning for freshwater ecosystem stewardship** through community-based education, academic services, and applied research to address water management challenges in southern Thailand. The university’s programs integrate science, local wisdom, and participatory learning to improve irrigation practices, enhance understanding of ecological systems, and strengthen cooperation between citizens and government agencies. Three flagship initiatives exemplify this approach: the **Pak Phanang Water Management Project**, which fosters multi-stakeholder collaboration for adaptive water gate management; the **Laipan Canal Water Quality Project**, which trains communities and youth to assess water quality using freshwater macroinvertebrates as bioindicators; and the “**Three-Water Fish Guardians**” Program, which builds awareness and action for sustainable fisheries and aquatic conservation in the Songkhla Lagoon Basin. Together, these initiatives have engaged more than 600 participants from 2023–2025, empowering local residents to apply science-based water management, monitor freshwater ecosystems independently, and co-manage resources with government agencies. The programs demonstrate Thaksin University’s commitment to integrating education, research, and

community participation for the sustainable use and conservation of freshwater and brackish ecosystems in alignment with **SDG 14** and **SDG 6**.

4. Green Marketing Program



This program provides knowledge on green markets and the development of spaces where consumers can access safe food. It promotes the distribution and sale of safe, environmentally friendly products—including fresh produce, processed foods, and household items—at fair prices without middlemen. The initiative helps stimulate the local economy and serves as a learning and knowledge-sharing platform. It also focuses on waste reduction by encouraging the use of natural, biodegradable materials available within the community, helping to reduce environmental impact and mitigate climate change.

Meeting for Pak Phanang Water Management Project



Water quality assessment in Laipan Canal Water Quality Project



Activities in “Three-Water Fish Guardians” project

