WALAILAK UNIVERSITY

SDG REPORT 2023-2024

SUSTAINABLE DEVELOPMENT GOALS

CLEAN WATER AND SANITATION

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- **Water Consumption Tracking Across the Whole Walailak University**
- **Wastewater Treatment System of Walailak University**
- **Free Clean Drinking Water within Walailak University for Students, Staff and Visitors**
- **Off-Campus Water Conservation Support Through Collaboration**

Water Consumption Tracking Across the Whole Walailak University

Walailak University (WU) is located in an area with heavy rainfall, receiving an annual average of 2,544.53 millimeters, which often leads to flooding issues on campus. To address this challenge, the university has been implementing sustainable and continuous water management practices every year to mitigate this problem. To manage water effectively, the university needs to know the amount of water consumed by its staff and students to analyze this data in conjunction with the available water within the campus to ensure adequacy. Consequently, WU measures the total volume of water used across the whole university for its staff.

In 2023, WU had a total population of 15,183 individuals, consisting of 12,420 students and 2,763 staff members. The population within the university uses water for domestic purposes from two primary sources: tap water produced using raw water from stormwater or rainwater that is taken from main reservoir, and recycled water treated by the university's wastewater treatment plant.

From the data monitoring water consumption across the whole university, it was found that in 2023, the total water usage for the year was 240,186 cubic meters, averaging 658.04 cubic meters per day. The water consumption ratio within the university per capita was 1.32 cubic meters per person per month or 0.04 cubic meters per person per day, which is sufficient for consumption. In 2023, the total water usage amounted to 134,389 cubic meters of raw water produced from stormwater or rainwater collected in the reservoir, accounting for 55.95% of the total water usage, and 105,797 cubic meters of recycled water used for watering plants, washing cars, or cleaning streets.

When comparing the data over the past three years, it was found that the water consumption ratio per capita within the university for the years 2020, 2021, and 2022 was 0.28, 0.22, and 0.05 cubic meters per person per day, respectively. This indicates that in 2023, the water consumption ratio per capita reduced from the previous year, even though the university's population has been increasing.

For the calculation of water savings, it was found that in 2023, the average water consumption showed a potential reduction of up to 85.71% when using the 2020 data as a baseline and the number of people as an index indicator. This demonstrates efficient water usage. As WU continues to grow, its ongoing efforts in water management will be crucial in ensuring that the campus remains resilient to the challenges posed by heavy rainfall and other environmental factors.

The volume of water in cubic meters person per day

Wastewater Treatment System of Walailak University

From water consumption within the university, Walailak University (WU) manages environmental issues sustainably, recognizing wastewater problems occurring within the university premises which originate from the usage by the university populations from activities such as washing, bathing, dishwashing, laundry, and restroom use. Thus, the university has process in place to treat and manage wastewater through a Wastewater Management System Development Project established since the year 2002 onwards. Continuous efforts have been made, especially in the year 2023, to treat wastewater in each building and reuse the treated water, considering environmental concerns and community well-being.

Wastewater treatment process

The wastewater treatment process begins with collecting wastewater from each building through a pipe system and utilizing grates to trap solid waste. Then, it is pumped into a wastewater pump station. Next, it goes directly to an aerated lagoon (AL) which can handle up to 4,000 cubic meters per day with a BOD value of 150 milligrams per liter. After, it is followed by two facultative ponds, an ultraviolet (UV) sterilization (changed monthly), and a wetland pond for water storage. Lastly, the treated wastewater discharged from the system has a BOD of 20 milligrams per liter. Importantly, this system relies on oxygenation from floating aerators to increase oxygen levels in the water sufficiently.

Focusing on the AL Water Treatment System, bacteria can decompose organic substances in the wastewater faster than natural decay, so the AL is highly efficient, reducing BOD levels by 80-95%. Additionally, the system has the program based on aerobic conditions, with aerators increasing oxygen levels in the water and inducing water agitation in the lagoon facilitating widespread decomposition of organic substances.

Water Microbiological Analysis

The treated wastewater undergoes quality checks through Nile tilapia aquaculture trials in four ponds before release into natural water sources and reuse for various purposes with the scientific analysis process, and the treated wastewater meets the standards set by the Pollution Control Department of Thailand.

In conclusion, the university acknowledges the efficiency of reusing treated water and utilizes it in agriculture and various activities such as fish farming, cooling systems for incinerators, watering plants on campus, and street cleaning or animal husbandry.

Free Clean Drinking Water within Walailak University for Students, Staff and Visitors

Water is essential for every human being, especially clean water that is free from disease-causing pathogens. Walailak University (WU) places great importance on this matter by providing free drinking water for students, staff, and visitors. This is done through a water production system that supplies potable water from raw water within the university's reservoir, which is a clean and reliable water source.

In 2023, WU produced drinking water using raw water extracted from its waterworks, resulting in the provision of free clean drinking water dispensers for students, staff, and visitors in every building. The water dispensers use a reverse osmosis (RO) system and provide both 4 liters of hot water (70-85 °C) and 5 liters of cold water (4-12 °C), with a production capacity of 190 liters per day.

Additionally, it features a 4-stage RO system that filters water to 0.0001 microns, removing contaminants, sediment, heavy metals, viruses, and pathogens, ensuring that the drinking water is clean, safe, and suitable for consumption, according to the Thai Industrial Standards Institute for Type 2 drinking water (non-packaged drinking water). The university replaces water filters every six months as scheduled, conducts monthly water quality inspections, and cleans drinking water dispensers monthly. These measures ensure public health for users by providing clean and safely managed drinking water.

Off-Campus Water Conservation Support Through Collaboration

In addition to conserving water within the university, collaboration with external agencies is equally important. Therefore, the university has been implementing and supporting water conservation off-campus through cooperation with local, regional, national, and global governments on water security.

WU monitored the progress of the pilot project on monitoring and evaluating the impact and benefits of living weir project by collaboration with Na Mai Pai's local governments, Department of Provincial Administration and the German Cooperation Organization (GIZ) in water security to support water conservation off-campus that has been continuously work together to ensure sustainable development of community water management, enhancing biodiversity and serving as a source of consumption. This includes promoting the use of innovative technologies for the benefit of the community to develop society and communities. The goal is to empower farmers and villagers to efficiently manage water resources and cope with drought, while fostering a culture of safety through active community participation in disaster management, following CBDRM principles.

Additionally, Asst. Prof. Dr. Pakorn Ditthakit, a water resource management expert from WU, has been appointed to local and regional committees to help develop, integrate, and implement water resource management plans.