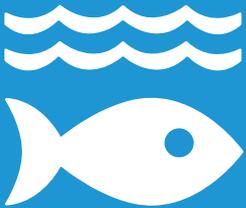




# SDG REPORT 2024-2025

SUSTAINABLE DEVELOPMENT GOALS



# SDG 7 AFFORDABLE AND CLEAN ENERGY



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7 AFFORDABLE AND CLEAN ENERGY



# ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

## ENERGY-EFFICIENT RENOVATION AND BUILDINGS

ALL BUILDINGS ARE EQUIPPED WITH ENERGY-EFFICIENT ELECTRICAL MACHINES



ALL BUILDINGS' STRUCTURE IS DESIGNED TO MINIMIZE ENERGY CONSUMPTION



ALL BUILDINGS ARE EQUIPPED WITH GREEN MATERIALS



## CARBON REDUCTION AND EMISSION REDUCTION PROCESS

### CLEAN ENERGY



SOLAR ENERGY

WIND POWER



REFUSE DERIVED FUEL

### TRANSPORTATION



PEDESTRIANS

BUSPOOL

ELECTRIC VEHICLE

### E-SERVICE SYSTEMS FOR CAMPUS MANAGEMENT

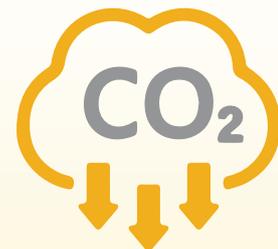


WU-DOMS, E-MEETING, E-BOOKING, E-SERVICE, etc.

## WU TOTAL GREENHOUSE GAS EMISSION REDUCTION



**7,926.252**  
**tonCO<sub>2</sub>eq**





## THE PLANS FOR ENERGY-EFFICIENT UPGRADES

Inefficient energy use is a key barrier to achieving Green University status, which represents environmental responsibility and sustainable innovation. WU, however, leads this shift with 80.80% of its infrastructure now classified as Smart Buildings. By integrating advanced technologies to boost efficiency, cut carbon emissions, and optimize operations, WU has plans to upgrade existing buildings to higher energy efficiency and sets a model for sustainability in higher education.

### Smart Buildings & Energy Efficiency Enhancements



The university has implemented various energy-saving plans, including automated lighting and climate control systems that adjust based on real-time occupancy, significantly cutting energy waste. Real-time energy monitoring ensures continuous optimization, while fire suppression and security systems operate efficiently without compromising safety. Additionally, the adoption of LED lighting, motion sensors, and natural light utilization further reduces overall energy demand.

### Strategic Energy Efficiency Upgrades

Room	Activities	Occupancy	Permission	A/C state
1201	Free	Occupied	Denied	Off
1202	MTH-340	Occupied	Denied	Off
1204	Free	Occupied	Approved	Off
1206	Free	Occupied	Denied	Off
1207	Free	Occupied	Denied	Off
1209	Free	Occupied	Denied	Off
1211	กิจกรรมนักศึกษา	Occupied	Denied	Off
1212	กิจกรรมนักศึกษา	Occupied	Denied	Off
1214	กิจกรรมนักศึกษา	Occupied	Denied	Off
1216	กิจกรรมนักศึกษา	Occupied	Approved	On
1217	Free	Occupied	Denied	Off
1201	Free	N/A	Denied	Off
1210	PHS-363 กิจกรรมนักศึกษา	N/A	Approved	On

**Air Control System @ Walailak University**

To advance sustainability, The university is upgrading its infrastructure with Wi-Fi-controlled air conditioning that adjusts to real-time conditions, supported by regular maintenance and expanded automated climate control. The Smart Campus System is also being strengthened through digital correspondence (DOMs), the E-Car System for green transportation, and HRMS to streamline physical processes and reduce energy use.

### Renewable Energy Integration & ICT-Driven Sustainability

WU is planning on the use of renewable energy through real-time solar power monitoring and AI-driven energy management system, while new solar projects further reduce reliance on non-renewable sources.



The integration of Information and Communication Technology (ICT) is central to the university's energy and climate initiatives. The Carbon Neutrality Steering Committee leverages ICT tools for data-driven decision-making to cut emissions. Additionally,

Wi-Fi-based air conditioning scheduling and smart energy management platforms ensure optimal energy efficiency through real-time tracking and control. This helps reduce electricity wastage on campus, contributing to the fight against climate change.

## THE CARBON EMISSION REDUCTION PROCESS

Excessive carbon emissions present a major challenge for many educational institutions, impeding their progress toward sustainable development and environmental responsibility. To address this issue, WU has an effective carbon management process to reduce carbon dioxide emissions across the three scopes of greenhouse gas emissions. This approach integrates renewable energy adoption, emission control measures, and sustainable practices to align with the university's long-term environmental goals.

by 2,027 tons of CO<sub>2</sub> equivalent in 2024. Energy-efficient practices, including LED lighting upgrades and appliance optimization, reduced emissions by an additional 347.76 tons of CO<sub>2</sub> equivalent.



### Direct Emissions

To manage direct emissions, WU maintains efficient combustion systems and has transitioned its fleet to electric vehicles, reducing emissions by 47.31 tons of CO<sub>2</sub> equivalent in 2024. Regular inspections of refrigerant systems minimized fugitive emissions, achieving a reduction of 855.05 tons of CO<sub>2</sub> equivalent.

### Other Indirect Emissions

WU addresses other indirect emissions through waste management, digital transformation, and sustainable transport initiatives. Waste reduction and e-services saved 32.05 tons of CO<sub>2</sub> equivalent, while online meetings reduced air travel emissions by 42.08 tons of CO<sub>2</sub> equivalent. Promoting bicycles, walking, and carpooling, alongside EV infrastructure, contributed to further emission reductions.



WU's renewable energy mix includes solar power, biomass, and combined heat and power systems, which enhance energy efficiency and reduce reliance on fossil fuels. Plans to incorporate wind energy will further diversify its clean energy sources.

In 2024, WU successfully reduced more than 3,300 tons of CO<sub>2</sub> equivalent across all three GHG scopes through renewable energy adoption, emission control, and sustainable practices. These results demonstrate the university's strong commitment to long-term carbon management and emission reduction through a systematic process.

### Indirect Emissions

The university has significantly reduced reliance on grid electricity by adopting renewable energy, such as solar power, which cut emissions

# ENERGY EFFICIENCY PLAN FOR A SUSTAINABLE FUTURE

Despite WU's advancements in energy-efficient infrastructure, these efforts alone are insufficient to achieve the institution's ambitious energy consumption targets. Thus, WU continually has an energy efficiency plan in place to reduce overall energy consumption, aiming to lower energy usage of the campus annually and foster a culture of conservation across campus by combining appliance upgrades, renewable energy adoption, and smart energy management systems in the year 2024. WU remains steadfast to sustainability and reducing energy consumption in alignment with the Energy Efficiency Development Plan.

## Upgrading to Energy-Efficient Appliances

A key component of WU's plan involves replacing outdated equipment with energy-efficient models. The university has completed a full transition to LED lighting, reducing energy consumption for lighting by 80%. Additionally, 100% of WU's air conditioning units have been replaced with high-efficiency inverter models that cut electricity usage by 40% while offering advanced temperature control. To further enhance efficiency, all university computers are now Energy Star-certified, ensuring 20-30% energy savings compared to conventional devices.



## Renewable Energy Integration

WU has embraced renewable energy to diversify its energy sources and reduce reliance on fossil fuels. Solar panels have been installed across the campus to harness clean and sustainable energy. Waste management practices have been enhanced by converting refuse into Refuse Derived Fuel, which is used to generate electricity and thermal energy. The university also utilizes wind and biomass energy, aligning with its goals of carbon neutrality and sustainability.



*Renewable Energy (Biogas)*

## Smart Energy Management Systems

Advanced energy management technologies play a critical role in reducing consumption. Automated air conditioning controls ensure units operate only when rooms are in use, optimizing energy usage. Building designs have been updated to include features such as heat-reducing windows, translucent roofs, and sensor-operated lighting, improving overall energy efficiency across the campus.



## Impact on Overall Energy Consumption

According to energy efficiency plan, the implementation of these energy efficiency measures has resulted in a significant reduction in WU's electricity usage compared to its baseline year (2016). The university successfully decreased its electricity consumption by approximately 3,127 gigajoules (GJ), representing a 5.64% reduction. In 2016, WU's total electricity consumption was 55,401 GJ, which has now decreased to 52,274 GJ in 2024.

WU's energy efficiency plan has already yielded substantial results. In 2024, the university's appliance and lighting upgrades are expected to reduce greenhouse gas emissions by 7,926.252 tons of CO<sub>2</sub> equivalent, marking significant progress toward the university's sustainability target.

# COMMUNITY OUTREACH FOR ENERGY EFFICIENCY AND CLEAN ENERGY LEARNING

Within both the campus grounds under WU's surveillance and the local communities under the university's stewardship, the institution actively fosters the adoption of clean energy while promoting awareness of energy efficiency.

In 2024, WU continues to advance sustainability through impactful community outreach programs, equipping local communities with the knowledge and resources to embrace energy-efficient practices. These programs align with global sustainability framework, including the Sustainable Development Goals, reinforcing the university's commitment to environmental responsibility and collective progress.

## Establishing the Model Clean Energy Fish Holding Center

Led by Asst. Prof. Dr. Kamon Thinsurat and the Center for Academic Services, WU partnered with the Banleam Homestay Community in Tha Sala District, Nakhon Si Thammarat, to establish a Model Clean Energy Fish Holding Center. This program integrates solar energy systems into the community's aquatic farms, reducing energy costs and environmental impact. By adopting renewable energy, the community decreases reliance on traditional energy sources and enhances operational efficiency. Training sessions further equip local fishery communities with knowledge about clean energy technologies, supporting both sustainability and economic stability.



## Climate Change Awareness and Energy Efficiency Training

In 2024, the WU team, alongside faculty and students from the School of Engineering and Technology, conducted a workshop in Banleam Community. The program focused on reducing greenhouse gas emissions, adaptation of climate change, and clean energy promotion. The program highlighted the community's critical role in sustainable development by teaching practical environmental management and clean energy practices to reduce emissions and improve daily living.



By introducing solar energy systems and educational programs, The university ensures that local communities actively contribute to global sustainability. WU's outreach programs empower communities to adopt energy efficiency and clean energy practices. By fostering engagement and sustainable solutions, WU establishes a foundation for growth, positioning the campus and its partner communities as leaders in the transition to a greener future.

