

SDG 17.3.7

NUK's efforts in SDG7 are as follows:

1. Offer learning courses and assist manufacturers:

NUK offers various courses related to renewable energy and assists the industry in understanding clean energy.

2. The campus is installed with various smart energy-saving measures:

(1) Set up a smart energy management system, and power-saving measures have achieved good results.

(2) All buildings are built based on green concepts. 1254.16kwp of solar panels have been installed on the roofs, and more will be installed in the future.

(3) Apply for green energy certificates to assist in promotion, and strive to promote and use clean energy.

3. Since 2019, a sustainability report has been issued every year to illustrate the results of SDG7 planning and implementation. See the website .

(<https://sustainability.nuk.edu.tw/>)

4. **The attachment** is the summary of SDG7 in 2021.

4-1 SDGs Curriculum and Research

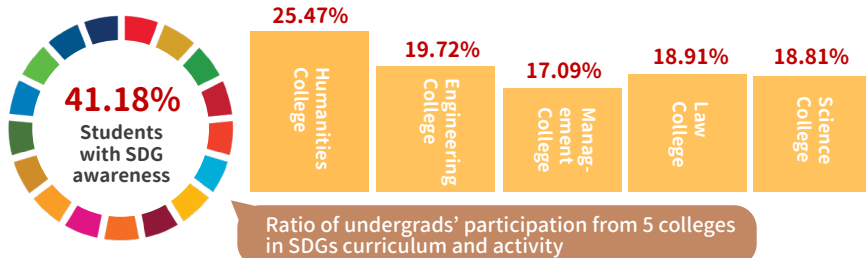
4-1.1 Use Sustainable Topics as Media to Connect Faculty as Community and Offer Interdisciplinary Classes

- ① Offer innovative thinking courses, develop innovative thinking pedagogy, encourage faculty cooperation in different disciplines with sustainable topics, and develop interdisciplinary teaching. NUK consolidates the UK "Sustainable Development Goal Curriculum Guidelines" in the curriculum for faculty to plan their courses.
- ② Connect the government and non-profit organizations with IF School to cultivate students' competency to design proposals for practical topics.
 - ① Cooperate with the Kaohsiung City Government to investigate summer flooding and road maintenance and repair what Kaohsiung residents must frequently confront, and propose innovative solutions.
 - ② Cooperate with Taiwan Institute of Sustainable Energy to hold CSR university lectures, offer sustainability elite training courses, and co-found a sustainable future workshop, with 263 participants from industry, government and academia.
 - ③ Combine industrial resources for instructors in innovative thinking-related courses and micro-credits of SDGs social enterprise to expand future cooperation with enterprises in different fields. In 2019, offering local sustainability practical courses, NUK cooperated with NPO Channel, a charity fundraising platform, and Baoshan Community Development Association to assist charity groups selling products online, and also revitalized the local tea industry by fixing the abandoned school buildings of Baoshan Primary School. NUK also cooperates with social enterprises such as Taiwan Yunus Foundation, the Big Issue Taiwan, OKOGreen, OurCityLove and Impact Hub Taipei. NUK has been promoting sustainable citizenship by holding 43 events with a total of 2,462 people participating. In 2020, IYSL workshops, SDGs English lesson plan workshops, and Prof. Gao Youling's mobile courses were held on campus. Off-campus activities included SDGs exchange with International Class of Xinzhuang Senior High School, visits to sustainable cities and Taiwan Climate Action Expo, and organizing SDGs x Seeds of Hope and Action and SDGs Board Game Workshop with external organizations.

4-1.2 University SDGs Impact Evaluation and Value-added Features of NUK as Green University

- ① Integrate SDGs into NUK campus and obtain domestic and international recognition
 - ① Compiled the NUK Sustainability Report 2018 in accordance with the GRI Standards guidelines published in 2016, certified by the impartial third-party British Standards Institute, and won Gold Label in Sustainability Report category for Enterprise Sustainability Award by Taiwan Institute for Sustainable Energy 2019 and National Sustainable Development Award of the Executive Yuan. In 2021, it won the Gold Award of 2020TCSA Corporate Sustainability Reports in the university category.
 - ② Participate in 2021 Taiwan Climate Action Expo to exhibit SDGs achievements and receive the honor of the Best Academic and Research Action Award.
- ② SDGs are substantially integrated into existing courses and activities with 33.6% of integration in 2019, 48.31% in 2020 and 41.18% in 2021. There is a substantial increase.
 - ① In 2018-2021, an average of 254 sustainability-related courses were offered annually, with 9,169 students attending.
 - ② In 2018-2021, NUK was engaged in 505 research projects, and published 252 journal articles with SSCI index related to SDGs.
 - ③ In 2021, 41.18% students participated in existing courses and activities of SDGs, with growth of 7.58% compared to 2019.
 - ④ In the analyses of the percentage of university students participating in SDGs courses and activities in the five colleges shown in 2018, Colleges of Humanities and Social Sciences was the highest at 27.76%, and the other colleges were at 7%-23%. In 2019, College of Management accounted for the highest percentage of 29.4% and the other colleges were at 11%-25%. In 2020, Colleges of Humanities and Social Sciences were the highest at 28.78%, and the other colleges were at 13%-19%. On the whole, compared with the previous two years, the proportion of undergraduate students from different colleges participating in SDGs courses and activities has an above average trend. In 2021, Humanities and Social Sciences College topped out with 25.47%, but Science College showed obvious growth at 18.91% in 2021 compared to 13.58% in 2020.

Ratio of Undergrads' Participation in SDGs curriculum and activity



4-1.3 Strengthen the Enrollment of International College, and Inter-office Cooperation for Overseas Students' Study and Counseling

- 1 Established the NUK Office in Medan, Indonesia, increased sister schools and Indonesian students and changed the structure of overseas student source origin.
 - 1 In 2018, Indonesian Medan Office was established in conjunction with the alumni association network to open up opportunities for local internships, overseas study and exchanges. In 2021, 90 Indonesian students enrolled in NUK, of whom 28 were recommended by the Medan Office, accounting for 31.11% of overseas Indonesian students.

Ratio of foreign student origin

	2018	2019	2020	2021
Asia	93.00% (Indonesia 41.90%, Japan 13.10%, Malaysia 12.80%)	96.60% (Indonesia 34.00%, Malaysia 18.50%, Hong Kong 12.00%)	94.45% (Indonesia 35.71%, Malaysia 15.48%, Hong Kong 14.68%)	93.00% (Indonesia 41.90%, Japan 13.10%, Malaysia 12.80%)
Europe	2.60%	-	1.98	2.60%
Americas	4.20%	2.90%	3.57	4.20%
Oceania	0.30%	0.50%	-	0.30%

- 2 Indonesian students are the main source of overseas students from 2018 to 2021; accounted 35.71% in 2021.

- 2 Establish International College and integrate all-English courses
 - 1 In 2021, an all-English curriculum of 55 credit courses across 4 disciplines was established, along with different levels of Chinese class to provide overseas students a better learning environment.
 - 2 The Language Center offers free Chinese lessons in small classes, and holds language proficiency tests to place students accordingly.
- 3 Strengthen the local integration and counseling mechanism of international students, and improve the assistance network for overseas students.
 - 1 Since Fall 2018, the International Office and the Student Affairs Office have established a counselling reporting mechanism, including the counseling assistance network for overseas students, the emergency contact network for the NUK overseas exchange students, and linked the counselors of the Student Affairs Office and the International Affairs Office to establish SOP for handling special incidents of foreign students in NUK.
 - 2 International Office organizes local visits. It has worked with Edu-Connect Southeast Asia Association, Kaohsiung to organize Indonesian Mother's Day for students to experience how the new residents from Southeast Asia celebrate their culture and festivals locally.
- 4 Promote mobile courses and increase award subsidies; promote student exchanges and substantial cooperation with sister schools.
 - 1 In 2019-2021, the number of overseas students is 950; NUK students going abroad for exchange are 343. In 2020-2021, due to the impact of the Covid19 pandemic and border control, the number of NUK students going abroad or international students decreased. In 2021, through online endeavor, the enrollment of overseas students grew 22.22% from 2020.

Statistics of exchange students

	2019	2020	2021	Total
NUK exchange	73	58	15	146
Foreign exchange	272	140	0	412
Overseas	194	207	252	653
Foreign internship	25	1	0	26

- ② NUK signed dual degree programs with 9 international partners, a total of 13 dual degree programs; by 2021, 15 students completed their master's degrees.
- ③ Due to the pandemic, the training of legal Japanese talents and mobile courses have been moved on line. By bilateral learning and discussions, integrated with SDGs and ESG themes, students are able to learn Japanese without disruptions.
- ④ In 2021, NUK held 13 series lectures with 7 universities in 5 countries, showing films directly to 27,000 viewers, which provides a new model of transnational, trans-cultural and interdisciplinary academic exchange.

4-1.4 Develop International Cooperative Network through SDGs-Inside

- ① The SDGs ambassadors promote SDGs literacy.
 - ① They cooperated with University Tanjungpura, Indonesia to hold a 3-day online learning camp to study Indonesian culture with 40 students from both universities attending.
 - ② They planned SDGs English exchange with Xin-zhuang Senior High School, leading the bilingual class to explore the topics of sustainability.
 - ③ They were invited by Taiwan Think Tank to act as receptionists for 3-day Taiwan Climate Action Expo 2021 on December 3-5, 2021.
- ② Connect with domestic and foreign partners to broaden students' international experience and vision.

On October 16-24, 2021, International Youth Sustainability Leadership Online - SDGs Innovation Competition 2021 was held, with international schools participating. The competition encouraged creative proposals with SDGs and ESG as the main axis. A total of 61 domestic university students (including 42 foreign students) participated and produced 12 conceptual proposals, including establishing public and maternal health care system in the Philippines, assisting Bajau children in the Philippines to improve their education, integrating forest ecological conservation and Vietnam's economic development needs.

4-1.5 Promote the SDG Literacy Test

The SDG literacy test was given for the first time in 2020, and the Chinese and English question bank and the Kaohsiung University SDGs literacy test system were also established. The analysis and feedback of the test results are used as a reference for the integration of SDGs into teaching and research.

- ① The number of students tested in 2021 was 1,218; the largest group representing 25% of test takers were the students in Management College. It is planned to have university-wide and external participants to take the test in 2021. Questions related ESG will be added to the bank.
- ② Through the SDG literacy test, it is to establish a sustainable talent cultivation system and feedback measures for the curriculum, understand what students learn and what they should improve in their training

4-2 Organizations and Regulations Related to Campus Environment

4-2.1 Organizations Related to Campus Environment

- ① First-level office
 - ① The Campus Environmental Safety and Health Center: Its duties include safety and health, environmental protection and campus planning.
- ② Eight Committees
 - ① The Campus Sustainable Development and Planning Committee: to review and implement the ideals of environmental development and establish a mechanism for sustainable development of the campus.
 - ② The Environmental Protection, Safety and Health Committee: to maintain the quality of the campus environment and ensure the safety of the laboratory operations of faculty-staff and students in accordance with relevant laws and regulations such as environmental protection and labor safety and health.
 - ③ The Energy Conservation Committee: to strengthen the management of energy and promote the rational and effective use of energy in accordance with the provisions of Article 6 Paragraph 1 of the Enforcement Rules of the Energy Management Law
 - ④ The Biological Experiment Safety Committee: to ensure the experimental safety of faculty and researchers engaged in genetic recombination-related research in accordance with "Genetic Recombination Experimental Code" of MST.

- ⑤ The Laboratory Animal Care and Use Committee: to supervise the management and use of laboratory animals in accordance with Article 16 Paragraph 1 of the Animal Protection Law, with English title “Nation University of Kaohsiung Animal Care and Use Committee (NUKACUC)”.
- ⑥ The Public Art Executive Panel: to budget public art funds and implement public art projects in accordance with “Regulations Governing the Installation of Public Artwork”.
- ⑦ The Public Art Selection Panel: to handle the selection and installation site of public art projects.
- ⑧ The Public Art Appraisal Panel: to conduct appraisal after public art is installed.

4.2.2 University Self-defined Regulations:

NUK currently has six regulations on campus environmental safety and health.

- ① NUK Environmental Safety and Health Policy
- ② NUK Safety and Health Management Regulations
- ③ NUK Code of Practice for Laboratory Safety and Hygiene
- ④ NUK Waste Disposal Act
- ⑤ NUK Measures for the Establishment of the Environmental Protection, Occupational Safety and Health Committee
- ⑥ NUK Measures for Establishment of the Environmental Safety and Health Center

4-3 Environmental Status and Management

4-3.1 Air Quality Status and Management

- ① Laboratory gas emission control
NUK has 94 laboratories equipped with forced air extraction equipment for exhaust cabinets: 55 in the College of Engineering and 39 in the College of Science. The gases are collected and discharged by a common pipeline in the activated carbon adsorption facility on the top floor of the buildings.
- ② Indoor air quality management
“Indoor Air Quality Management Act” was implemented in 2012, and the first sites needing compliance with the “Act” were announced in 2014. The University Library was on top of the list for management. In order to protect the health of faculty-staff, students and the public, priority is given to installing a set of fixed-point continuous detection modules in the Library lobby on the second floor of the building in 2016 which was rated as a site with good indoor air quality in 2021

Data of Regular Inspection of Indoor Air Quality in the Library

test item	unit	test data	legal standard
CO2	ppm	504	1,000
CH2O	ppm	<0.06	0.08
PM10	μ g/m3	31	75
Bacteria	CFU/ m3	564	1,500



Indoor air quality real-time monitoring panel



Good indoor air quality certificate

4-3.2 Water Resource Management

- ① Water resource treatment system
The main source of water for NUK comes from the tap water provided by District 7 of Taiwan Water Supply Company. The main source of water comes from the Gao-ping River, which is not significantly affected by the water intake.
Since 2010, NUK has cooperated with government agencies and implemented the Four-Saving Plan. Although the Plan ended in 2015, NUK has continued to implement water-saving measures. The annual water consumption will be reduced by 2% compared with the previous year. NUK intends to review the annual water conservation goals, but in recent years, the weather has been hot, and water consumption increases year after year. Due to the pandemic in 2020-2021, online teaching was adopted. Since the faculty and students were not on campus, the consumption of water decreased significantly.

Chart of Water Consumption

Management of water resource		Volume (Million liters)
Discharge divided by end point		
Water withdrawal (Divided by source)	(1) Surface water + ground water + sea water	0
	(2) Produced water (total)	0
	(3) Third-party water (total)	152.389
	Total water withdrawal	152.389^(*)
Discharge (Divided by end point)	(1) Surface water + ground water + sea water	0
	(2) Third-party water used by other organization	0
	(3) Third-party water (total)	14.883
	Total discharge	14.883
Total water consumption^(**)		137.506

*1: All fresh water ($\leq 1,000\text{mg/L}$ Total dissolved solids)

*2: Total water consumption = total water withdrawal - total discharge

List of removal rates of sewage treatment plant

Water quality standard	Removal rate
BOD	66.3%
COD	54.8%
SS	67.5%
Escherichia coli	98.0%

Discharge water quality test data and discharge water volume

Test Item	2019	2020	2021	Discharge standard
BOD(mg/l)	10.3	6.55	10.45	30
COD(mg/l)	42.7	31.9	39.9	100
SS(mg/l)	9.4	6.6	7.55	30
Escherichia coli (CFU/100mL)	28,850	34,250	23,988	200,000
Grease (mg/l)	0.88	1.55	0.7	10
Water temperature (oC)	26.9	27.3	28.7	35
PH	7.7	7.5	7.6	6-9
Discharge volume (CMD)	20,586	19,187		-

2 Sewage treatment

NUK sewage sources include laboratory washing waste, dormitory and office sewage, which are collected through pipelines and sent to the sewage treatment plant for treatment. The reclaimed water is mainly used as supplementary water for grass sprinkler and ecological waterways. When there is excessive displaced water, it will be discharged to the drain on the north side of the campus and eventually into the Dian-bao River. In addition to the traditional two-level biological treatment, the NKU sewage treatment plant is added with three-level treatment of filtering and ozone sterilization. The quality of the discharged water meets the discharged water standard revised on April 29, 2019. The discharged water standard is based on Article 7 Paragraph 2 of the Pollution Prevention and Control Law.

3 Drinking water

NKU has a total of 135 drinking fountains, and outsources regular monthly maintenance and regular replacement of filter materials, tank cleaning and disinfection. In accordance with the current drinking water laws and regulations, at least 1/8 of drinking fountains are inspected quarterly, i.e. 17 units, but the actual number inspected is 18 units. Water quality testing is based on the principle of sampling at least two drinking fountains in each building and once a quarter.

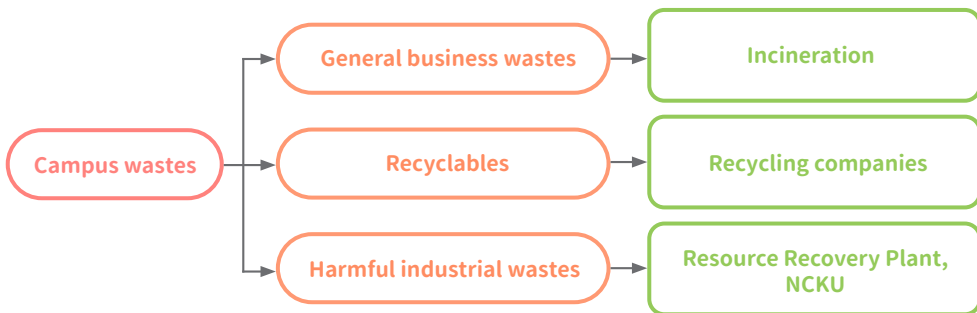
Test results of drinking fountains

Year	2019	2020	2021	Standard
Escherichia coli CFU/100mL	< 1	< 1	< 1	6
Total plate count CFU/mL	< 1	< 1	< 1	Nil

4-3.3 Waste Management

KU waste output can be roughly divided into general business waste and recyclables generated in the dormitory and office, and hazardous business waste generated in the laboratory. General business waste is entrusted to the manufacturer to be transported to the incineration plant for incineration; the harmful industrial wastes are cleaned and transported by qualified cleaning and transportation companies to Resource Recovery Plant of Environmental Resources Research and Management Center, National Cheng Kung University for disposal.

Waste treatment flow chart



List of general industrial waste disposal 2021

Industrial waste component	Hazardous waste		Non-hazardous waste		Note
	On-site	Off-site	On-site	Off-site	
Direct treatment					
Incineration (incl. recycling)	59	-	298.95	-	
Landfill	-	-	-	-	
Others	-	-	14.55	-	Recycling
Subtotal	59	-	313.5	-	
total	59		313.5		
sum	372.5				
Temporary storage	-				
Total waste	372.5				

- Note:
1. Waste weights are in metric tons.
 2. "On-site" is within the physical boundaries or administrative control of NUK; "off-site" is outside NUK's physical boundaries or administrative control.
 3. All industrial wastes are sent to the entrusted manufacturer for disposal.
 4. NUK has no transfer during disposal.

4-3.4 Occupational Safety and Health Management

1 Occupational Safety and Health Management System

In order to ensure the safety of the faculty and students of NUK, in accordance with the occupational safety and health laws and regulations and the NUK's applicable workplace safety and health code, the laboratory safety and health and campus inspections are regularly implemented, following the authority and the MOE's management and inspections to ensure the safety of all faculty members and reduce the occurrence of disasters. In addition, NUK cooperated with MOE and the Labor Inspection Office of the Kaohsiung City Government to implement the campus safety and health guidelines for the Southern Alliance of Colleges and Universities.



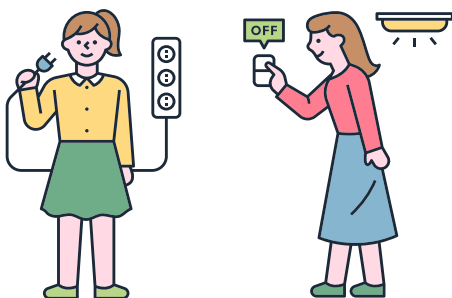
(1) Management organization

In order to integrate the management of workplace safety and health, toxic chemicals, radiation, and fire protection, NKU set up an Environmental Protection and Safety and Health Committee in accordance with relevant laws and regulations. The president-chair presides over the quarterly discussions on major environmental safety policies and topics which are recorded and compiled for future reference. The Committee includes the president as the chairperson, 3 administrative heads, 7 faculty representatives, 1 staff representative, 1 student representative and 1 occupational safety and health nurse, totaling 13 members.

(2) Establishment of occupational safety and health management system:

Establish and implement occupational safety and health management plans based on the Occupational Safety and Health Law, including management of machinery and equipment, marking and general knowledge of hazardous and harmful materials, planning and measurement of sampling strategies for hazardous working environments, and safety and health education and training. Formulate safety and health policies to announce to faculty, staff, students and all contractors. In addition, NKU Safety and Health Work Code was formulated in accordance with the Occupational Safety and Health Law, and was revised and approved by the administrative meeting on December 9, 2018, and reported to the Labor Inspection Division of the Labor Bureau of Kaohsiung City Government for reference.

1. NKU occupational disaster statistics are regularly compiled by Environmental Safety and Health Center on the Internet to report the monthly occupational disaster statistics, and keep records for the authority in charge to check. No accidents occurred in 2021.

**Statistical analysis of accidental injuries**

Status	Faculty		Staff		University hired	
	M	F	M	F	M	F
Gender						
Employee Disabling Frequency Rate (FR)	0	0	0	0	0	0
Employee Disabling Severity Rate (SR)	0	0	0	0	0	0
Incidence rate	0	0	0	0	0	0
Absenteeism rate	0%	0%	0%	0%	0%	3%
Total death	0	0	0	0	0	0

Note:

FR & SR do not include traffic accidents in commute

1. FR= number of disabling injuries/Number of man-hours worked

2. SR = days lost in a year due to accidents x 1000,000/number of man-hours worked

3. Absenteeism: Occupational Sickness Leave + Sick leave/total period (yearly work day x number of the gender) x 100%

4. The total working hours are accumulated based on the monthly working hours data of Personnel Office

2. Regularly and occasionally conduct environmental safety inspections of experimental sites, assist in the improvement of laboratory shortcomings and review the progress of improvement for unqualified items, and cooperate with the Laboratory Safety and Health Certification System promoted by MOE.
3. The Environment Safety and Health Center regularly cooperates with MOE to declare the number of dangerous machinery and equipment in NKU practice (study) sites in April and October yearly.

Statistics of dangerous machinery and equipment

Lab name	Equipment	Type	No. of room
Wood & Bamboo Design Studio	Grinding machine *1	danger	1
Wood & Bamboo Design Studio	Circular saw for wood *1	danger	1
Magnetism Semiconductor Lab	2 nd pressure vessel*1	danger	1
Nano-Optoelectronic Lab	2 nd pressure vessel*1	danger	1
Microbial Biochemistry Lab	Autoclave*1	danger	1
Plant Biochemical Lab	Small pressure vessel*1	danger	1

4. For machinery, equipment or appliances specified by laws and regulations, it is required to gradually improve appropriate protective facilities, and to post standard operating procedures, where the machinery and equipment are, clearly visible to comply with the regulations.
5. The mechanical equipment and appliances used in the contracted project are stipulated in the contract that the contractor must meet the legal standards and regulations, and the contractor will control the usage; otherwise they will not be allowed to enter the site.

(3) Implement the management of hazardous and harmful materials

1. The chemicals in the laboratory shall be classified and labelled according to "Hazardous Chemical Labeling and General Knowledge Rules" and "NKU Hazardous and Harmful Substances General Knowledge Plan", implementing "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)". NKU adopts laboratory supervising, educational training, and requires drug suppliers to cooperate in improving chemical labeling, so that the NKU drug management can gradually comply with the regulations of GHS.
2. NKU labs list hazardous chemicals and safety data sheets for the reference of lab personnel. The storage of hazardous and harmful materials is managed by the guidance of a supervisory laboratory according to the attributes of the drugs. In environmental safety inspection, they have to confirm the records are regularly renewed in compliance with laws and regulations. In addition, hazard warning signs are set up in controlled areas in accordance with laws and regulations for special hazardous workplaces.
3. Lab refrigerator storage cabinets clearly prohibit the storage of food in accordance with laboratory rules, and no eating or drinking is allowed in the laboratory.

(4) Management of Toxic Chemical Substances

1. NUK applies for permits for use of all toxic chemicals from the Environmental Protection Bureau of Kaohsiung City Government in accordance with laws and regulations. There are currently 80 kinds in total. In order to control the purchase of toxic chemical substances, records are filed and kept in accordance with regulations. The information is compiled and reported to the Environmental Safety and Health Committee in session.

2. In order to integrate and manage the safety and health, toxic chemicals, and radiation at the laboratories, the Environmental Protection and Safety and Health Committee is set up in accordance with statutory regulations, and meets quarterly.
3. The Campus Environmental Safety and Health Center regularly visits the operating sites of toxic chemical substances to understand the actual operating conditions of the laboratories to provide guidance and make improvements.

(5) Hazardous work safety and health management

1. Before assessing hazard risk in the experiment performed by every lab, each lab should first check the experimental conditions, and then the staff of the Environmental Safety and Health Center will assist in completing in records according to the assessed hazard level. Afterwards, it will evaluate whether construction improvement or personnel improvement is needed. Environmental Safety and Health Center will assist completing the necessary improvement.
2. Formulate standard operating procedures for various environmental safety and health services, and publish them on the website of Environmental Safety and Health Center for enquiries and follow-up by faculty, staff and students.
3. Implement lab work environment measurement in April and October yearly. The types, dosages and frequencies of hazardous substances in each lab are used to evaluate laboratory hazard exposures and be used as sampling points for the work environment. If the results or work environment measurement are not in compliance with laws and regulations, the deficiency will be immediately improved to meet the permissible concentration standard of harmful substances

(6) Occupational disaster prevention measures

1. Regularly test the radiation of the working environment.
2. Fire safety management

- (1) A fire protection plan is established and implemented in accordance with "Fire Services Act".
- (2) The fire prevention facility is entrusted to the fire prevention equipment company to carry out inspection, maintenance and supervision monthly. When any malfunction occurs, it will be immediately repaired to maintain normal functions.
- (3) NUK fire safety equipment is regularly inspected, maintained and repaired, and a fire safety inspection report is prepared.

3. Distribution, labelling and management of protective gear

- (1) NUK is equipped with protective items and emergency equipment, including chemical absorbent cotton, protective clothing, emergency oxygen supply devices, and gas masks, which are placed in accessible locations according to regulations and clearly labelled.

List of lab protective gear

- | | | | | | |
|---|-----------------------------|---|--|---|---|
| 1 | Half Facepiece | 2 | canister (filter) | 3 | fire blanket |
| 4 | C grade protective clothing | 5 | acid and alkali resistant organic gloves | 6 | C grade acid and alkali resistant shoe cover |
| 7 | blue absorbent rope | 8 | absorbent cotton pad | 9 | fire extinguishing appliances and escape indicator lights |

- (2) The laboratories are equipped with sufficient personal protective equipment, first aid kits and fire extinguishers, and the laboratory rules are required to clearly stipulate that appropriate protective equipment should be put on when entering the laboratory.
- (3) Emergency shower and eyewash equipment are installed outside the lab, which the Campus Environmental Safety and Health Center regularly inspects and repairs. When malfunction occurs, the lab will immediately ask a professional company to repair it.
- (4) Personal protective equipment and fire prevention facilities in the lab should be managed by the lab itself for maintenance and self-inspection; the first aid kits should be replaced by the lab itself.

4. **Accident investigation:** When an accident occurs in NKU, the person who finds it must report to the department supervisor and immediately report to the Environmental Safety and Health Center. The department supervisor should take response and handle in accordance with the relevant emergency response procedures. After the accident is handled, the Environmental Safety and Health Center convenes relevant departments to investigate, analyze and confirm the circumstances and causes of the incident, and submit the "School Disaster Accident Report" to the management representative for confirmation, review and improvement. If necessary, the report is submitted to the Environmental Protection and Safety and Health Committee for explanation.

(7) Safety and health education and training

1. For freshman education and training, the Safety and Health Center hires experts and scholars in the field of occupational safety to schedule 3 hours of related courses every academic year. In addition, 3 hours of safety and health education and training are scheduled for lab personnel to strengthen the implementation of lab safety and health. In addition, lab instructors are invited to promote the safety and health rules of each lab for students in the first week of the lab course.
2. Ionizing radiation education and training are regularly held once a year for 3 hours. All faculty, staff and students who use radiation equipment must attend.

(8) Occupational safety management of contractors

1. For the safety and health of the faculty, staff, and contractors, our school, in accordance with Article 26 of the Occupational Safety and Health Law, when all or part of the University business is handed over to contractor, the contractor shall be informed in advance of the working environment, hazards, and safety and health requirements to take necessary measures. Before each outsourcing work is delivered to the contractor, both parties must jointly sign a contract. During the contract period, in addition to complying with the provisions of the contracted project, they must abide by the government's occupational safety and health, environmental protection, and fire protection laws and other relevant laws and regulations.

2. The school also requires the contractor to designate the person in charge of the contracted project in the design phase and before the construction of each project phase for the public construction project in the school, and to act as command, supervision and coordination work. According to its design planning, construction method or operation type, reports on hazard identification, risk assessment, and control measures taken based on the assessment results are submitted, and the formal construction can be carried out after the school's contracting unit has reviewed and confirmed it. In 2020, there was no occupational accident in the contracting of on-campus projects.

2 To protect the health of employees

- ① Assessment of hazard identification and risk: In order to maintain the health and well-being of NKU staff, prevent and deal with workplace violence, and ensure the physical and mental health of workers, the school has established the "National Kaohsiung University's Management Plan for the Prevention and Management of Illegal Violations in Executive Duties." Every year, professional nurses and safety and health managers go to various workplaces to identify the characteristics of potentially risky groups (such as night shifts, shifts, long working hours, high workload, insecure positions and working environment), and conduct risks evaluation, including possible types of violence, evaluation of frequency, severity, risk level, identification of existing violence control measures and risk reduction control measures.
- ② Regularly hold various health promotion activities and health checks: In order to protect the health of faculty and staff, in addition to regular general health checks, health checks for special hazards, and influenza vaccination, in response to the COVID-19 outbreak in 2021, NKU also has provided education and training for the pick-up staff in the International Office to receive international students at the airport as well as the epidemic prevention education and training for catering staff, and provides on-site consultation and inspection for special hazardous environments by physicians every 2 months. The service provides health and medical consultation and recommendations for inspection of special hazards to the environment to maintain the health of faculty and staff, improve the safety of the working environment, and reduce the occurrence of injuries. Furthermore, NKU continues to promote health awareness activities, encourage faculty and staff to participate at work, support faculty and staff emotionally and promote physical and mental health.

Item	No. participant	Activity
Health checks for employees	68	Regular health checks and special health-hazard checks for employees were carried out; St. Joseph Hospital provided the services on October 4, 2021.
Health risk management	12	Implement health hazard management for personnel working in the environment of health hazards (such as ionizing radiation, dimethylformamide).
Flu Vaccination	93	Free vaccination for the faculty and staff by Royal Artemis Hospital, April 20, 2021.
Medical on-site service	20	6 medical on-site services were carried out, for health and medical consultation, health education, inspecting special hazards to the lab environment and providing relevant suggestions and measures.
Prevention education and training for infectious disease	33 and 388 online	In response to Covid-19 pandemic, 2 preventive trainings were held (including on-line participation), including education for pick-up staff for foreign students in the International Office.
Maternal health protection	2	Provided 2 pregnant employees with education for pregnancy risk assessment.
Prevention for cerebral cardiovascular and heart disease	19	68 employees had health checks; 18 with hyperlipidemia (CHOL>200 or TG>150 or HDL<40 or LDL>130); 1 high blood pressure (BP>140/90); providing health education and follow-up examinations.
Prevention of ergonomic hazards	16	For faculty and staff with symptoms of musculoskeletal discomfort, conduct ergonomic hazards assessment and provide measures of prevention and promotion.
First Aid Education and Training	20	"First Aid Education and Training" was held, Feb 2-4, 2021 on campus by Kaohsiung Vocational Training Center affiliated to Industrial Safety and Health Association, ROC. At present, 20 NUK employees are qualified for first aid.
Weight control class	24	In 2020, 56 employees had health checks; 18 had BMI over 24kg/m ² , accounting for 32% of those undergoing health checks. In 2021, weight control classes were organized to support healthy weight loss.
Healthy lunch box (cancelled once due to the pandemic)		

Flu vaccination



Weight control workshop



Doctors on-site consultation



First aid education & training



4-4 Energy saving strategy

4-4.1 Energy Saving Measures

The main strategies and actions of NUK's energy saving measures are shown in the following table:

List of power saving strategies and action plans

Strategy	Action plan	Explanation
Energy saving control management	Central Power Monitoring System	Use the digital meter network connective function to monitor and control the electricity consumption of each building online.
	Implement space self-management	Each building manages its own electricity bill and implements user charge for energy conservation.
	Independent organization and outdoor court meter installation	Set up independent electricity meters for the electricity consumption of organizations stationed at NUK and outdoor courts to calculate and control their electricity consumption.
	Adjust air conditioning start and stop time	During the winter season (Dec to March of the following year), the administration building and general classrooms stop using air conditioning.
	Adjust opening hours of the Library	Set different opening hours due to the function and frequency of use in each space. It is not open on Saturdays and Sundays during winter and summer vacations.
Replace power-consuming equipment	Participate in the demand bidding measures of Tai Power	Participate in the demand bidding of Tai Power, saving energy and electricity costs
	Gradually build smart classrooms	This project uses network cloud technology and focuses on low-carbon and energy-saving to build smart classrooms and lecture halls in six teaching buildings with air-conditioning and scheduling management. Users use the course scheduling system and space borrowing system to transmit in real time, integrate air conditioning monitoring and database management, and establish comprehensive automatic air conditioning scheduling control, temperature monitoring, and opening and closing program control to improve the accuracy and reliability of classroom air conditioning management to achieve the Goal of promoting the sustainable development of the environment and improving the quality of the learning environment.
	1. Replace old air-conditioning system	Annual budgets are made to replace the old air-conditioning system with the one with an inverter. The replacements in College of Science and Engineering have been completed.
Use of renewable energy	2. Lighting fixtures are gradually replaced with LED lights	Annual budgets are made to replace lighting fixtures with LED lights, and the replacements of the campus roads, parking lots, classrooms and lecture halls of various buildings have been completed.
	Solar water heating system	A 100% solar water heating system is used to provide hot water in the student dormitories.
	Solar photovoltaic system	1. The Administrative Building and College of Law set up solar photovoltaic panels to generate electricity, with a total power generation of 36.4kwp, and 15 renewable energy certificates were issued. 2. In line with "A Million Solar Roofs" Project, solar power generation systems were installed on the roofs of the university buildings, with a total of 1,217.76kwp.

Statistics of electricity consumption

Year	Total electricity used (kWh)	Total electricity used (GJ)	Electricity saving PCT	EUI
2015	14,201,510	51,084.57	-	59
2016	14,528,086	52,259.30	-2.27%	60
2017	14,090,386	50,684.84	0.81%	36
2018	12,884,463	46,346.99	9.27%	33
2019	12,970,796	46694.89	8.67%	33
2020	12,733,420	45,840.31	10.28%	32.6
2021	11,292,628	40,620.97	20.43%	28.9

EUI=Total electricity used (kWh)/NUK Total floor area

2015 was selected as the base year for the implementation of the Central Four-Saving plan.

Solar panels



List of solar photovoltaic power generation equipment

Item	Site	(kwp)Total installed capacity (kwp)	Mode of operation
1	College of Law	26.4	REC
2	Admin. BL	10.0	REC
3	College of Engineering	209.45	FIT
4	Motor-and-Bicycle Parking Lot	246.62	FIT
5	Library & Info BL	348.395	FIT
6	College of Management	93.81	FIT
7	1st General BL	154.875	FIT
8	Admin. BL	57.525	FIT
9	Student Dorm	56.64	FIT
10	Staff Dorm	50.445	FIT
Total		1,254.16	

FIT: Feed-in Tariff;
REC: Renewable Energy Certificate

4-4.2 Gasoline Saving Measures

- (1) Regular maintenance and inspection of official vehicles on campus to maintain high fuel efficiency.
- (2) Replace old official vehicles, and purchase new vehicles with high efficiency and low fuel consumption.

Statistics of gasoline consumption

Year	Gasoline (L)	Diesel (L)	Total oil consumption (L)	Oil saving PCT (%)
2015	3,672.00		3,672.00	-
2016	1,612.66	1,955.90	3,568.56	2.82%
2017	6,236.45	4,373.36	10,609.81	-188.94%
2018	5,489.40	1,326.30	6,815.70	-85.61%
2019	5,227.26	880.41	6,107.67	-66.33%
2020	4,774.51	1,424.93	6,199.44	-68.83%
2021	5,690.06	847.16	6537.22	-78.03%

*2015 is the base period for calculation; there are no separate statistics for gasoline and diesel in 2015.

4-4.3 Carbon Emissions

Based on the government regulations, NUK set 2015 as the base year. Since then it has self-estimated greenhouse gas emissions annually to fully understand the current status. The total carbon emissions in 2019 decreased by 4.19% compared to 2015, mainly due to the implementation of energy-saving measures such as replacing old air-conditioners and using energy-saving light fixtures.

Carbon emissions

Year	Carbon Emissions (CO2e ton)	Reduction compared to 2015 (%)	Carbon Emissions per person (CO2e/pp ton)
2015	7,400.630	-	1.41
2016	7,617.742	-2.93	1.23
2017	7,438.977	-0.52	1.17
2018	6,754.273	8.73	1.06
2019	7,090.454	4.19	1.10
2020	6,786.914	8.29%	1.07
2021	5,732.896	22.54%	0.85

*Carbon emissions are self-estimated, activity data are collected from electricity bills, and carbon emissions are directly quoted from electricity bills.

* 2015 was selected as the base year for the implementation of the Central Four-Saving plan.

Date	Activity	No. Participant
3/31	Campaign on prevention of drug abuse, Jia-wei Primary School, Kao-hsiung City	about 33
4/13	Workshop on off-campus rental and legal knowledge	50
4/27	Workshop: What a university student should know about the laws of intellectual property, anti-bullying and traffic accidents	250
4/29	Celebrating Mother's Day -- Fragrance Brick DIY (Dorm activity)	36
5/13	Anti-smoking Committee, 2020	15
8/15-9/22	Freshman Week 2021: Campaign for campus safety	approx 1200
8/25/2021-3/5/2022	Infectious Disease Prevention Publicity and First Aid Training on campus (online film)	388
9/22	Dormitory fire drill	1250
9/22-30	Friendly Campus Week; petition for anti-drug & anti-bullying	320
9/28	Implementing National Disaster Prevention Day Earthquake Evacuation Covering Drill 2021	250
10/26-11/2	Officers meeting combined with anti-drug, anti-smoking, campus safety and traffic safety campaigns.	approx 120
11/3	Workshop on traffic safety and anti-smoking	50
11/10	Workshop on prevention of drug abuse and legal education	52
11/1-12/31	Class advisors' visits on off-campus rental housing	1,200
12/2	Workshop on moss balls (Dorm activity)	30
1/20-12/8	CPR+AED education and training for faculty and staff; Re-certified for safe site	350
12/24	Handling off-campus rental disputes	1

4-7 Environmental Education

4-7.1 Teaching Sustainable Development Course

NUK annually offers general education courses related to environment, sustainability and ecology. According to statistics of the last two academic years (2020-2021), an average of 5 teachers offered classes annually, and the total number of classes offered was 28. 1,400 students attended the courses, and on average, about one-fifth of the NKU students take such courses annually.

Statistics of environmental sustainability general education courses

Title	No. class	No. attendants
Introduction to Ecology	4	221
Introduction to Nature Conservation	4	235
Environmental Protection	4	179
Environmental Ethics	16	765
Total	28	1,400

4-7.2 Important Activities on Sustainable Development Topics

Since NUK signed the "Talloires Declaration" in 2004, it has organized a series of "Sustainable Week" activities every year. It has become an NUK tradition to promote sustainable education. Through different topics and activities, faculty, students, community members, and teachers and students in primary and secondary schools can obtain comprehensive environmental information and establish environmental ethics. In the early days, NUK held action dramas, road running competitions, several second-hand book and article sales, energy-saving workshops, and film appreciations to enhance the environmental awareness, and to conduct laboratory or fire drills. Electric vehicles were also displayed to encourage the use of green energy. Faculty and students can acquire the integrated knowledge of sustainable development and environmental protection in all aspects. Since 2021, complied with the national policy, NUK has used the rich ecological resources on campus to conduct various environmental education. In 2021, signing working partnership with Kaohsiung City Wild Bird Society, NUK began to conserve orioles. Through the workshops and a series of activities in Sustainability Week, the faculty, students and the general public not only gained a better understanding of avian conservations but participated in monitoring and guarding the birds' nests. The following activity records show NUK's determination to promote environmental sustainability.

Annual Sustainability Week Activity List

Year	Activity	No. Participant
2019	“Birds and Environment” and “Snakes and Environment” – Environmental Education Series, Sustainability Week	109
2020	On-line activities: “Review of the past Annual Sustainability Weeks”, “Trees, Tall Trees on Campus” & “History of Our Campus”	328
2021	<ul style="list-style-type: none"> · Sign Oriole Conservation Partnership in March · Co-hold “Oriole Environmental Education Series” (50 participants) · Hold Sustainability Week environmental education series in October · “Special exhibition of oriole ecology and conservation in NUK”(approx 100 participants) · Online lecture, “The Difficulties and Opportunities of Bird Conservation” (173 participants) · “NUK Oriole Environmental Education Volunteer training workshop” (31 participants) 	354

Signing working partnership for orioles conservation



Watching orioles workshop on campus



Oriole Education Volunteer training workshop



Exhibition of oriole ecology and conservation

