

SDG 17.3.12

NUK's efforts in SDG12 are as follows:

1. It continues to promote and implement green procurement and restricting the use of single-use plastics.
2. Since 2019, a sustainability report has been issued every year to explain the results of SDG12 planning and implementation: various measures to ensure sustainable consumption and production models.2. See the website : <https://ces.nuk.edu.tw/p/412-1011-5978.php?Lang=zh-tw>
3. The attachments are:
 - (1)An excerpt from the 2024 Sustainability Report under SDG 12;
 - (2)The policy and promotional materials for reducing plastic bags and single-use (disposable) items in student cafeterias and convenience stores.



Attachment 1

▼ Campus Safety Maintenance Funding and Utilization Results 2018-2024

Project	Year	Item	Total Funds	Result
823 Rainstorm Damage Recovery and Repair	2018-2019	Repair of school buildings and campus facilities	11,281,104	Handle emergency recovery from heavy rains and typhoons, as well as restoration of safety-related items.
	2024-2025	Recovery Plan for Krathon Typhoon	7,100,000	
360° Safety Protection Network	2021	Reinforce safety of campus facilities	11,710,000	Complete the safety facilities in dangerous areas, multi-dimensional distress system, and interface with the police reporting APP
Books & Equipment	2019-2025	Improve safety of campus facilities	21,498,845	Improve emergency response, access control, and driveway access control facilities at all buildings.
		Fire safety	12,579,000	Improve smoke detectors, emergency lighting, firefighting piping, broadcast blackout and zone control modules.
		Lab & campus safety		Improve laboratory environmental sanitation system, extraction system, personal protection, centralized double sinks.
Total			64,168,949	

5.2.5 Disaster Prevention and Relief Planning in Cooperation with the Government

🌱 Building Disaster-Proof Communities and Promoting Resilient Cities

The project is hosted by Prof. Ming-hao Wu of the Department of Civil and Environmental Engineering, who dedicates himself to promoting resilient community disaster prevention by utilizing his professionalism and influence. The goal of the project is to support the Kaohsiung City Government in conducting scientific research on disaster prevention and relief, analyzing potential areas for various types of disasters, formulating disaster prevention and relief plans, implementing and integrating resources, counseling the community to prevent disasters on their own,

and planning for micro-storage pools. The project is aimed at realizing "SDG11 Sustainable Cities" and "SDG13 Climate Action" through on-site investigations and integrating various resources in the community. Students are led to participate in disaster prevention and rescue drills and autonomous disaster prevention community observation activities to promote the goal of "SDG4 Education Quality"; and the Kaohsiung City Government's Bureau of Water Resources co-organized educational training and drills on new temporary flood prevention equipment, and students who passed the test obtained the qualification of Ministry of the Interior's Disaster Prevention Officer. It improves the capacity of the community's disaster prevention and rescue organization and helps the community operate as a resilient community.

🌱 Disaster Awareness Courses

Based on the types of disasters that each community is dealing with, and in conjunction with each type of disaster management, the courses are planned and designed for students and community residents. Through "Special Theory of Urban Disaster Prevention", "Disaster Prevention Officer Training Course", "Application of GIS in Resilient Cities", "Disaster Prevention Technology", and "Intelligent Disaster Prevention Workshops", students can participate in the course activities; during the counseling period at the community sites, education and training or publicity will be conducted according to the needs of each community's disaster management, teaching and learning of disaster prevention mapping, disaster prevention and rescue drill planning, and the writing of disaster prevention and rescue plans for resilient communities, so that the courses can be localized to train disaster prevention personnel and enhance the professional knowledge of residents in the community on disaster prevention and rescue, and to assist the community in promoting disaster prevention in response to the UN's sustainable development goals such as SDG4 Quality Education, SDG11 Sustainable Cities and Communities, and SDG13 Climate Action in order to improve the capacity of the community's disaster prevention and rescue organization and assist the community in developing into a resilient community.

5.2.6 Carbon Neutral Commitments and Emission Reduction Programs

"As a citizen of the world, everyone has the responsibility to slow down the pace of global climate change and avoid damaging the natural environment." At the opening ceremony of the 2022 Sustainability Week, the President of the University signed "Net Zero 2050". NUK follows the national policy of actively linking industries and society, cooperates with the government to promote energy transformation, and simultaneously takes stock of the six major directions of "Green University", "Campus Carbon Neutrality", "Low-Carbon Transportation", "Green Building", "Zero Waste and Low-Carbon Diet", and "Citizen Participation".



▲ Signing Net Zero 2050

In response to global climate action, the Taiwan 2050 Net Zero Carbon Emission Pathway Plan, and the cultivation of globally sustainable human resources, NUK has been promoting campus climate action since 2022 from the perspectives of campus environmental organization and regulations, environmental management, energy-saving strategies, and environmental education.

The University has integrated UN Sustainable Development Goals into the organization and operation of the University, and has formulated a carbon neutral plan, which aims to utilize the University's professional knowledge and scientific research capabilities to actively reduce the environmental carbon footprint of the campus, and to gradually achieve carbon neutrality of the campus. Specific practices are described below:

✓ Action Plan 1: Campus Carbon Inventory

- 1. Description of Current Status:** At the opening ceremony of the Sustainable Development Week on May 23, 2022, the President of the University announced and signed "2050 Net Zero Carbon Emissions" declaration, which aims to achieve carbon neutrality and move towards the goal of net zero emissions by 2050 gradually.

- 2. Implementation Strategies and Practices:** In order to understand the carbon emissions of the school, a carbon inventory is expected to be conducted from 2023 to 2026 to calculate the greenhouse gases emitted directly or indirectly by the school in all aspects of administration, teaching, research, and student learning, so as to further develop appropriate measures to reduce the emissions of the school.

- Carbon inventory will be conducted annually and the results of the inventory will be made public.
 - Annual carbon inventory conducted by a professional consultant.
 - Carbon check certified by a third-party impartial organization
- Setting up emission reduction measures based on the results of inventory and verification to gradually move towards carbon neutrality (SDG 7, SDG 13)
 - Develop and review a campus-wide reduction plan based on the results of the current year's inventory.

- 3. Implementation results in 2024:** The school conducted the first 2022 GHG inventory in 2023 and therefore set 2022 as the base year for the inventory. In 2024, the school continued to conduct the 2023 GHG inventory.

- Organization of the inventory : The University has 13 administrative units; academic units include the Colleges of Humanities and Social Sciences, Law, Management, Science, and Engineering, and the Center for General Education, as well as 21 university departments and 2 independent research institutes. The program emphasizes cross-disciplinary integration and the cultivation of talents to meet the needs of industry and academia in Southern Taiwan. This inventory is organized according to ISO 14064-1, the greenhouse gas inventory team of the University. The composition of the team and their responsibilities are as follows.
- Boundary of the report : In accordance with the ISO 14064-1 standard, the University defines the organizational boundaries of our inventory as follows in accordance with the Law of Control Rights:



● Scope of exclusion: Duty accommodation



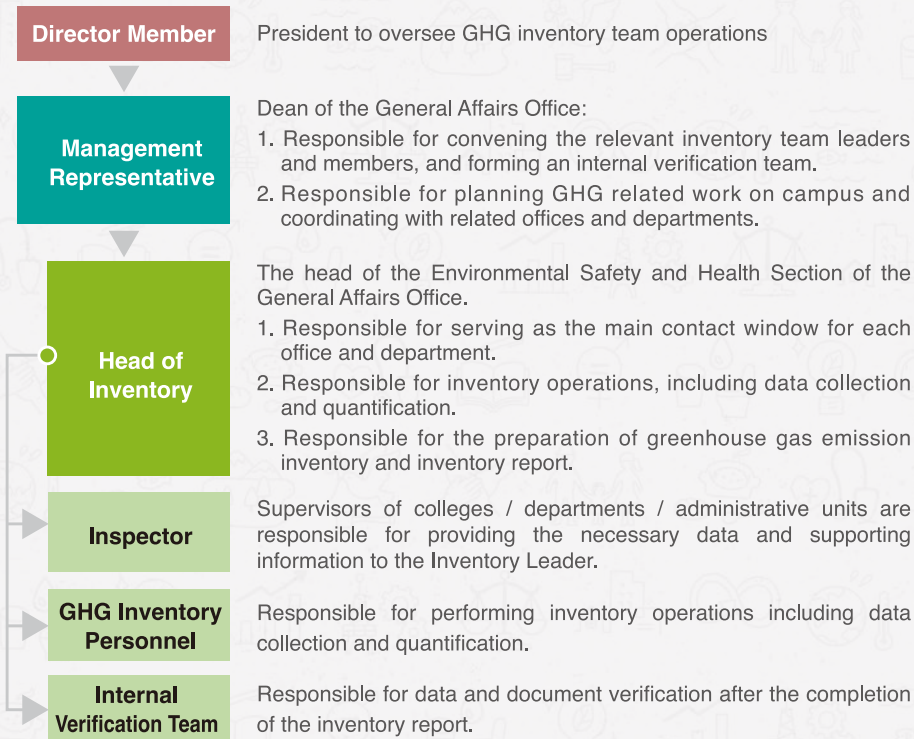
▲ NUK Floor Plan Configuration (Excl Boundary in red)

b. Report Boundary:

- Inventory of greenhouse gas types: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃
- Identification of GHG Emission Sources: According to categories 1, 2, 3, 4, 5, and 6, each emission source in the organization boundary is listed separately.
- Direct and indirect GHG emission sources are covered in Table 5-20.

c. Total GHG Emissions: This report is prepared, produced, and provided with information by the University's Greenhouse Gas Inventory Team, and is published annually on a regular basis. The inventory is based on all greenhouse gases generated within the reporting boundary from January 1 to December 31, 2023, and it is hoped that the results of the greenhouse gas inventory will provide an important reference for the subsequent planning of greenhouse gas mitigation measures, and at the same time, to ensure that the content of the school's GHG inventory maintains the same quality and consistency, so as to facilitate the subsequent implementation of the internal and external verification needs. The following are the requirements for the internal and external verification.

In compliance with the requirements of ISO14064-1: 2018 and with reference to the EPA's operational guidelines for GHG emissions reporting, the exclusion thresholds are that the emissions from each single-emitting emission facility or operation account for less than 0.5% of the total emissions and are cumulatively lower than less than 5.0% of the total emissions, and that the University did not exclude any significant sources of GHG during the 2022 GHG inventory process.



Note: GHG inventory personnel should receive 3 hours of GHG inventory training or obtain a certificate of completion of external training in accordance with "Education and Training Procedures" in order to be qualified for the position.

a. Organizational boundary

- Teaching, research, and activities in the Administration Building, Library and Information Building, the Colleges of Humanities and Social Sciences, Law, Management, Science, and Engineering, staff Student Activity Center, Hong Sze-Chuen Sports Dome, First General Building, the Kinesiology, Health and Leisure Building, and Student Dormitories I and II.





d. Our greenhouse gas emissions are as follows.

GHG Inventory Category	GHG Emission Source	MTCO ₂ e/Yr
Category 1, Direct GHG Emissions and Removals	Total	149.7564
1.1 Stationary Combustion	Emergency generator (diesel)	9.6745
1.2 Mobile Combustion	Public Transportation Vehicle (Gasoline & Diesel)	12.1790
1.3 Industrial process emissions (direct process emissions from school operations)	Lab alcohol for Combustion (Methanol, Ethanol, Others), Lab Specific Gas Cylinders (CO ₂ , N ₂ O, Gas, Acetylene), Lawnmowers (Diesel)	2.4904
1.4 Fugitive emissions	Refrigerant (air conditioning, refrigeration & freezer equipment, bus air conditioning), septic tanks, fire extinguishers (dry powder, CO ₂ , foam extinguishers)	125.4125
1.5 Land Use, Land Use Change and Forestry Emissions	Nil	0
Category 2, Input energy indirect GHGe	Total	5,776.3739
2.1 Indirect emissions from imported electricity, including GHGe from the production and consumption of imported electricity by the related organization.	School Electricity - Purchased Electricity	5,776.3739
2.2 Indirect emissions from energy inputs, incl. GHGe from energy consumption (steam, heat, cooling and compressed air) of the organization's production through the physical network, except for emissions from electricity.	Nil	0.0000
Category 3, Indirect GHGe from transportation	Total	562.2858
3.3 Emissions from employee commuting	Employee commuting	249.4679
3.5 Emissions from business or employee travel and transportation	Faculty/staff/student travel (by high-speed rail, Taiwan Railway, air, and MRT only)	312.8179
Category 4, GHGe between products used by the organization	Total	1,291.3295
4.1 The organization purchases GHGe from raw material extraction, manufacturing and processing.	Procurement of electricity, water, gasoline and diesel for school	1,176.4162
4.3 Disposal of emissions from solid and liquid wastes depend on the characteristics of the waste and its treatment. Typical treatment types are landfill, incineration, biological treatment or recycling processes.	Waste incineration, waste removal and transportation	114.9133
Category 5, Indirect GHGe derived from products of user organization	Total	362.9148
5.2 Emissions from downstream leased assets	Outsourced manufacturers lease electricity, tap water, and natural gas	362.9148
Total		8,142.660

* The latest version of the announced GWP value is the IPCC 6th Assessment Report (2021),
so the IPCC 6th Assessment Report (2021) is used.

▲ NUK Inventory of GHG Emissions, 2023 (Base Year)

Action Plan 2: Campus Climate Action

1. Description of Current Status:

A. Global climate change is a critical issue for mankind, and we are a member of the Green University and one of the participants in global environmental protection. In 2019-2020, the University received funding from the Architectural Research Institute of the Ministry of the Interior and the Kaohsiung City Government to renovate the student dormitories into smart-energy residences, and to install a smart-energy management system and a centralized power monitoring system. For electricity usage, digital meters are installed in each building on campus to collect data on electricity usage in each building, and a "Power-BI" webpage has been built to provide students and faculty with information on electricity usage and remind them to conserve energy in order to fulfill their responsibilities as citizens of the earth.

B. In addition to the improvement of hardware and equipment, the environmental regulations and management of the University should also be included in climate issues. In response to the SDGs: 6, 13, 15 and UI Green Metric World University Rankings, the University intends to take stock of the current status of environmental and climate-related issues and regulations during 2023-2026, and to examine the potential risks in management in order to take measures to effectively reduce and eliminate them.

2. Implementation Strategies and Practices

A. The University's Sustainable Climate Change Program, which participates annually in UI Green Metric World University Rankings - Energy Climate Change, Education and Research (SDG 13).

a. Revise the Chinese and English sustainability reports annually and participate in the evaluation.

b. Participate in UI Green Metric World University Rankings annually to review annual implementation.

c. Inventory campus carbon emissions and develop medium- and long-term options for reducing emissions.

d. Annually review the appropriateness of the school's administrative rules and regulations.

B. Enhance smart power and introduce water management system to participate in UI Green Metric World University Rankings - Water Resources (SDG 6, SDG 15).

- Utilize smart power system monitoring to reduce electricity waste year by year.
- Water saving installations and water management.
- Sewage recycling.

3. Carbon emission : Using 2015 as the base year, the school estimates its own GHG emissions every year to get a complete picture of the current situation of GHG emissions. Total carbon emissions in 2024 was reduced by a total of 16.33% from 2015 levels, mainly due to the implementation of energy-saving measures such as the replacement of old air-conditioners and the use of energy-saving light bulbs.

▼ Carbon Emission Statistics by Year

Year	Carbon Emissions (MT CO ₂ e)	Savings over 2015 (%)	Carbon emissions per capita (MT CO ₂ e/capita)
2015	7,400.63	-	1.41
2016	7,617.74	-2.93%	1.23
2017	7,438.98	-0.52%	1.17
2018	6,754.27	8.73%	1.06
2019	7,090.45	4.19%	1.10
2020	6,786.91	8.29%	1.07
2021	5,732.90	22.54%	0.85
2022	6,041.62	18.36%	0.89
2023	6,173.00	16.59%	0.89
2024	6,191.99	16.33%	0.89

*Carbon emissions are quoted from electricity bills; per capita carbon emissions are self-estimated.

5.3 Sustainable Supply Chain

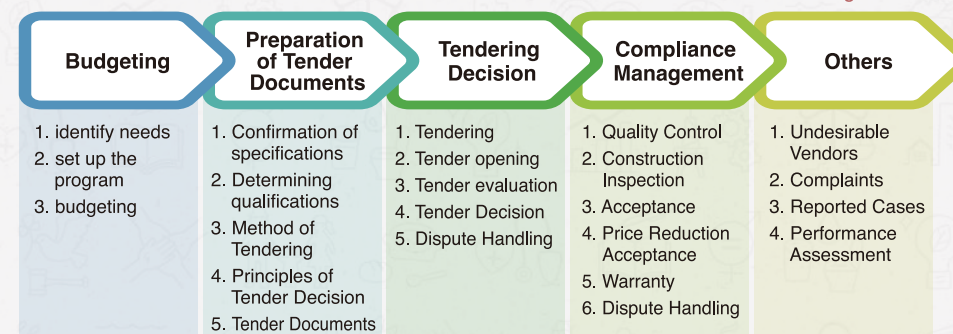
5.3.1 Green Procurement and Priority Purchasing

The services provided by the vendors mainly include business equipment, instrumentation, construction and cleaning services. As a public organization, the school is required to comply with the Government Procurement Act as stipulated by the Public Works Committee of the Executive Yuan, and to conduct open procurement for purchases exceeding NT\$150,000 according to the different amounts of the purchases, as well as to conduct performance management in accordance with the contract.

Scale of Procurement	Large Procurement	Checked Amount	Announced amount	Falling short of the declared amount and exceeding one-tenth of the declared amount	Small amount
Nature of Procurement	Project Property Labor	200 million 100 million 20 million	50 million 50 million 10 million	1.5 million	More than \$150,000 and less than one-tenth of \$1.5 million Less than \$150,000
Tendering / Awarding of Tenders	1. Open tender (Article 19) 2. Selective tendering (Article 20 , 21) 3. Restricted tenders (Article 22: in accordance with Article 22, item 1, paragraphs 1 to 16) Principles of Tender Award The lowest bid, the most beneficial bid (article 52), award of bid with fixed rate (fee)			Article 23: Measures for Tendering Unannounced Amounts of Purchases by Central Authorities" Article 2: 1. 22-1-1~15 2. 22-1-16 Restricted tendering 3. Publicly soliciting written quotations or business plans from vendors (openly available)	Article 23: "Measures for the Central Authorities' Procurement of Unannounced Amounts" Article 5: The Central Authorities may directly contact manufacturers for procurement without going through the announcement procedure, and may be exempted from providing quotations or business plans.

▲ List of Scale of Procurement and Method of Tendering

▼ Purchasing Flowchart



- Determining funding sources and purchase amounts
- Signing and filling out requisitions and purchasing specifications

- Purchase under a joint supply contract
- Decide on the best way to tender



Budget Amount Acceptance	Under \$100,000	Over \$100,000 to \$150,000	More than \$150,000 Less than \$1,000,000	Above \$1,000,000 but less than \$1,500,000	More than \$1.5 million
Procurement Approval	Requesting Unit Supervisor	Chief Secretary	Vice President	Vice President	President
Tender Document Approval	—	—	Chief Secretary	Chief Secretary	Administrative VP
Reserve Price Approval	—	—	Dean, General Affairs	Administrative VP	President
Lead Tender Opener	—	—	Chief of Construction & Maintenance or General Affairs or other appropriate officer as assigned	Dean, General Affairs or other appropriate officer as assigned	Administrative VP or other appropriate officer as assigned
Lead Inspector	Requesting Unit's own staff	Staff from requesting unit	Dean General Affairs or other appropriate officer as assigned	Dean, General Affairs or other appropriate officer as assigned	Administrative VP or other appropriate officer as assigned
Payment & Expenditure Voucher Approval	Requesting nit Supervisor	Dean, General Affairs	Chief Secretary	Chief Secretary	Administrative VP

Note:

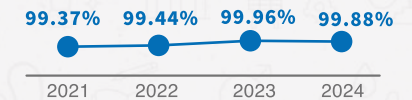
▲ Procurement process hierarchical accountability

1. All budget amounts above (below) are inclusive.
2. Listed personnel applicable duty agent
3. Tender opening officer who conducts the tender opening process and is responsible for the handling of the tender opening site and related decisions.
4. The chief inspector will preside over the acceptance procedures and conduct random checks to verify whether the vendor's performance results are not in conformity with the requirements of the contract, plans or samples, and to decide on the disposal of any non-conformities.
5. The most junior staff member handling the procurement case shall not be the principal inspector of the procurement or the inspector of samples and materials.
6. It is inappropriate for a mechanic, journeyman, administrative or program assistant to preside over the opening and deciding of tenders and to preside over the initial inspection and acceptance of tenders.
7. For procurement cases with a purchase amount of more than \$1,500,000 and the most favorable bid, the members of the procurement evaluation committee and the members of the working group should be established prior to the bidding process and be responsible for the approval according to the hierarchical level of "Approval of Purchase Cases".
8. For procurement cases with a purchase amount of less than \$1.5 million, the Administrative Vice President shall approve the members of the Purchasing Evaluation Team that should be set up prior to the bidding process if the bidding spirit is the most favorable to the bidder and the bidding decision is made by selecting the one that best meets the needs; the Administrative Vice President may waive the need to set up a working group.
9. For procurement cases under \$150,000, the requisition for expenditure should be sent to the General Affairs Office for endorsement.

In accordance with "Measures for Priority Procurement of Environmentally Friendly Products by Organizations" and "Measures for Evaluating the Performance of Green Procurement by Organizations", the achievement rate of green procurement has reached more than 99%. In addition, the University has implemented priority procurement in accordance with "Measures for Priority Procurement of Goods and Services Produced by Welfare Institutions for the Physically and Mentally Handicapped or Sheltered Workshops".

Green Purchasing Policy:

1. The University will conduct environmentally friendly green procurement in accordance with "Regulations on Priority Procurement of Environmentally Friendly Products by Institutions" and "Scoring Methods for Green Procurement Evaluation by Institutions" formulated by the Environmental Protection Administration (EPA).
2. The University actively promotes the green procurement of official supplies, especially the first category of products with environmental labels. Products or raw materials whose manufacture, use, and waste disposal comply with the requirements of recycled materials, recyclability, low pollution, or energy saving are considered as Category II products. These are all within the scope of green procurement under the Government Procurement Act.
3. According to the statistics, the achievement rate of the designated green procurement items in 2024 is 99.88%, which is increasing year by year. Purchased items include: computers and other electronic products, printers, copiers, shredders, refrigerators, lighting fixtures, air conditioners, and drinking fountains.



▲ List of Achievement Rates of Green Procurement Designated Items

Priority procurement policy

In accordance with Article 69 of "People with Disabilities Rights Protection Act" and "Regulations on Preferred Procurement for Products and Services Produced in Disability Welfare Care Facilities and Institutions and Sheltered Workshops," the University has implemented priority procurement. In 2023, the achievement rate of priority procurement was 5.99%. In 2024, it increased to 8.16%, which was in compliance with the 5% requirement stipulated in Article 3 of the above-mentioned Act and Regulations. It also demonstrates the school's social responsibility in purchasing.

5.3.2 Catering Hygiene Management Mechanism

1. Food safety for students : In order to provide teachers and students with satisfactory food quality and safety, the University has employed a part-time dietitian, who, together with a nurse of the Health Protection Section of Student Affairs Office and colleagues from the Environmental Safety and Sanitation Section of General Affairs Office, and representatives of the Student Association, will regularly implement various food and beverage sanitation tests, organize educational training for kitchen staff every semester, and, in accordance with the regulations of the Ministry of Health and Welfare, and the Ministry of Education, will provide counseling to vendors on the management of the place of origin and the registration of the food ingredients. This will help control the source of food materials on campus and quickly remove problematic foods from the shelves. In addition, the General Affairs Office has set up "Contracted Vendor Performance Evaluation Meeting", which is held every year.
2. Healthy food options : The school puts up large colorful posters such as "Diet Yellow-Red-Green Lights" in the kitchens of the student dormitories, the stairway to the cafeteria and dining hall on the first floor of the General Building, to teach faculty, staff and students about healthy dietary choices and to promote healthy food. It organizes weight control classes, and designs videos and activities to promote healthy diet.

During the semester, the school organizes food and hygiene education training, and adds relevant contents to encourage manufacturers to produce healthy food for faculty and students. In addition, "My Plate, Eat Smart, Nutrition Will Follow" placemat is designed and distributed to teachers and students during the program as a reference for healthy food options.



▲ Food Color Chart poster



▲ Placemat: My Plate, Eat Smart



國立高雄大學
National University of Kaohsiung

ESG × SDGs

To promote the plastic reduction policy at NUK

Attachment 2

學生餐廳、便利商店宣導限制塑膠袋與一次性(拋棄式)用品的減量政策

