



Times Higher Education  
**Impact Rankings**

**SDG**

**12**

Responsible  
Consumption and  
Production



## SDG 12.2.1 Ethical sourcing policy

### 1. Green procurement requirements.

NCUE has been committed to promote the procurement of green-designated items by government agencies. In 2022, NCUE procured a total of NT\$22,420,358 in green and eco-labelled products (NT\$386,020 and NT\$22,806,378, respectively), meeting the targets for the year and each of the quarters. NCUE's compliance performance with relevant regulations is 100% compliant for the procurement of green-designated items, as shown in Table 1

Please refer to appendices 12.2.1A - 2022 Scoring Method for Performance Evaluation of Annual Green Procurement and 12.2.1B - 2022 Annual Statistical Form for Amounts of Green Procurement. For more details, please refer to the following sites.

Greenliving Information Platform:

<https://greenliving.epa.gov.tw/newPublic/greenpurchase/government>.

The Green Procurement Portal of the Centre of Protection and Occupational Safety and Health:

[http://webadmin.ncue.edu.tw/el/web\\_edit/edit\\_show.asp?ClassID=628](http://webadmin.ncue.edu.tw/el/web_edit/edit_show.asp?ClassID=628).

Table 1. Achievements of the 2022 annual "Government Agency Green Procurement Designated Procurement Items" at NCUE

NCUE 2022 performance in the procurement of green-designated items by government agencies	
First Quarter	100%
Second Quarter	100%
Third Quarter	100%
Fourth Quarter	100%

### 2. Food procurement requirements for two canteens in the Jinde Campus and Baoshan Campus:

(1) NCUE adheres to two basic principles for food procurement:

(a) Seasonal ingredients.

(b) Preference is given to seasonal foods and local foods to reduce the carbon footprint, shorten food miles, and reduce energy consumption.

(c) Mainly use domestically produced food ingredients compliant with "3 Labels 1 Q".

(2) According to the three-tiered management system for campus food safety and hygiene practices, NCUE cooperates with the Ministry of Education during the Ministry's on-site guidance once every academic year; NCUE's catering management committee is responsible for coordination across different departments; and a dedicated nurse inspects hygiene practices in catering spaces once every week. To ensure food safety, NCUE encourages the canteens to

do the following:

- (a) Give preference to labelled or traceable foods, such as "Traceable Agricultural Products", Taiwan Fresh Pork "TFP", Total Quality Food "TQF", products meeting "Certified Agricultural Standards", and produce livestock, and aquaculture products with traceable QR codes; as shown in Figures 1-3.



Figure 1. Label used by livestock producers



Figure 2. Label used on egg products



Figure 3. Picture caption: Labelled and traceable foods are preferred

- (b) To ensure food safety within NCUE's canteens by examining fresh vegetables and fruits according to the 'Criteria for Monitoring Pesticide Residue in Agricultural Products' issued by the Taiwan Food and Drug Administration, Ministry of Health and Welfare (as below): <https://www.fda.gov.tw/TC/site.aspx?sid=2428&r=1485767145>.
- (c) To make sure vendors login to the Ministry of Education's 'Filing Platform 2.0 for School Foods' every day to fully disclose relevant food information: <https://fatraceschool.k12ea.gov.tw/frontend/>.

3. Preference is given to products and services from disability welfare institutions, organisations, or sheltered workshops.

In compliance with the ‘Persons with Disabilities Rights Protection Act’ and the ‘Regulation for Obligated Purchasing Units / Institutions to Purchase the Products and Services Provided by Disabled Welfare Institutions, Organizations, or Sheltered Workshops’, particularly promoting the employment of people with disabilities and the protection of vulnerable groups, NCUE has developed an ‘Implementation Plan for Preferential Procurement of Products and Services from Disability Welfare Institutions, Organisations, or Sheltered Workshops’. The target is that for designated product and service items, those contracted or subcontracted by such institutions, organisations or sheltered workshops should account for more than 5% of total annual procurements made by NCUE for the product and service items.

Considering regional characteristics, the products and services (excluding plan development) currently covered are bento, meal boxes (single purchase of 20 or more boxes), and printing services (business cards, posters, books, and magazines) with fees of NT\$10,000 or more in a single transaction. They should be listed on the preferential procurement platform. Only when no disability welfare institutions, organisations, or sheltered workshops are willing to contract, or their products or services are disqualified could NCUE contact general vendors.

Please refer to annex 12.2.1C - Regulations on the Preferential Procurement of Environmental Protection Products by Government Agencies. The annual achievement rates of priority procurement at NCUE are as shown in Table 2.

Table 2. Annual achievement rate of priority procurement at NCUE

Year of implementation	Ratio of preferential procurement (%)
2019	7.98
2020	8.76
2021	10.63
2022	8.42

**Appendices (including supporting documents):**

12.2.1A - 2022 Scoring Method for Performance Evaluation of Annual Green Procurement;

12.2.1B - 2022 Annual Statistical Form for Amounts of Green Procurement

12.2.1C - Regulations on the Preferential Procurement of Environmental Protection Products by Government Agencies

### SDG 12.2.3 Policy waste disposal - hazardous materials

NCUE has developed ‘Guidelines for Disposal of Laboratory Waste in the NCUE’. Waste effluent, chemicals, and empty containers from NCUE laboratories are removed twice a year. Biomedical wastes produced by infirmaries and laboratories are removed once a week, as indicated in Figure 1 and Figure 2.

Please refer to appendices 12.2.3A - Guidelines for Disposal of Laboratory Wastes in NCUE and 12.2.3B - Wastes Removed in 2022.

Please refer to the waste management website of the Centre of Protection and Occupational Safety and Health: [https://webadmin.ncue.edu.tw/el/web\\_edit/edit\\_show.asp?ClassID=627](https://webadmin.ncue.edu.tw/el/web_edit/edit_show.asp?ClassID=627).



Figure 1. Removal of laboratory waste



Figure 2. Removal of biomedical waste produced by infirmaries and laboratories

Below is the weight of biomedical waste produced from NCUE laboratories and infirmaries in 2022, as indicated in Table 1.

Table 1. The weight of biomedical waste produced from NCUE laboratories and infirmaries in 2022

Month	1	2	3	4	5	6	7	8	9	10	11	12	Total
Metric tons	0.065	0.038	0.033	0.046	0.174	0.196	0.106	0.134	0.16	0.241	0.29	0.155	1.638

The weight of waste effluent, chemicals, and empty containers from NCUE laboratories removed in 2022, as indicated in Table 2.

Table 2. Weight of laboratory waste, chemicals, and empty containers generated and collected and transported at NCUE in 2022

Item	Metric tons
Waste effluent	3.685
General chemicals	0.431
Toxic chemicals	0.0228
Unspecified chemicals	0.16
Empty containers of waste chemicals	0.797
Silicone	0.085
Total	5.1808

**Appendices (including supporting documents):**

12.2.3A - Guidelines for Disposal of Laboratory Waste in NCUE

12.2.3B - Waste Removed in 2022

## SDG 12.2.4 Policy waste disposal - landfill policy

NCUE implements garbage classification and sorting, as shown in Figure 1. NCUE requests the Cleaning Squad of Changhua Municipal Office to provide monthly information on the weight of general waste and recycled materials from NCUE. Recycled materials include the following categories: paper, plastic, glass, iron and aluminum cans, paper containers (meal boxes), PET bottles, and dry batteries, as indicated in Table 1. Waste generated on campus for the past 3 years is shown in Figure 2.



Figure 1. Garbage sorting and recycling buckets in NCUE (paper containers, plastic, glass, iron and aluminum cans, beverage packs, paper, PET bottles, and compost)

Table 1. Weight of general waste and recyclable materials at NCUE in 2022

2022	Jinde Campus		Baoshan Campus		Subtotal of the two campuses		Total	Unit
	General wastes	Unit	General wastes	Unit	Recycled materials	Unit		
Jan.	10,560	kg	4,690	kg	11,870	kg	27,120	kg
Feb.	6,090	kg	1,660	kg	4,730	kg	12,480	kg
Mar.	11,970	kg	5,710	kg	11,525	kg	29,205	kg
Apr.	8,390	kg	4,370	kg	9,160	kg	21,920	kg
May	11,320	kg	4,680	kg	11,560	kg	27,560	kg
Jun.	9,860	kg	3,860	kg	10,895	kg	24,615	kg
Jul.	7,090	kg	2,850	kg	7,140	kg	17,080	kg
Aug.	7,750	kg	2,420	kg	6,815	kg	16,985	kg
Sept.	12,160	kg	5,680	kg	10,920	kg	28,760	kg
Oct.	11,450	kg	5,040	kg	9,995	kg	26,485	kg
Nov.	12,117	kg	5,460	kg	10,510	kg	28,087	kg
Dec.	12,800	kg	6,420	kg	12,450	kg	31,670	kg
Total	121,557	kg	52,840	kg	117,570	kg	291,967	kg

**Recycled materials account for 40.27% of total waste**



Figure 2. Waste generated at NCUE over the past 3 years

Changhua City Office annually organizes the issuance of monetary incentives to schools within its jurisdiction for cooperating in promoting resource recycling. In 2022, the Changhua City Office disbursed a total of NT\$176,355 in monetary incentives, as shown in Table 2. Please refer to Annex: [12.2.4A](#) - Changhua City Office Official Document for details.

Statistics of resource recovery rewards distributed to schools within the jurisdiction of Changhua City for their cooperation.

Table 2. Monetary incentives issued by the Changhua City Office to NCUE in 2022

School name	Recycled in 2022 (kg)	Annual rewards (NT\$)
National Changhua University of Education	117,570	176,355

**Annex information (including supplementary documentary evidence):**

[12.2.4A](#) - Official Document of Changhua Municipal Office



## SDG 12.2.5 Policy for minimisation of plastic use

According to the 'Restrictive Use of Shopping Plastic Bags: Scope, Implementation, and Date' of the Environmental Protection Agency (the Executive Yuan), NCUE will not provide plastic bags for consumers to carry the purchased products when faculty, staff, and students of NCUE go to the canteens to purchase any products. Please refer to Annex 12.2.5A - Establishments Subject to Restrictions on the Use of Plastic Bags for Purchases, Implementation Methods, and Implementation Dates, which stipulates 14 types of establishments where it is prohibited to provide shopping plastic bags for free, as shown in Figure 1.



Figure 1. Posters informing the public about 14 types of spaces where free shopping plastic bags are not allowed to be provided

**For more details, please refer to the website for the regulation:**

Ministry of Environment Laws and Regulations Retrieving System - Regulations on the Target, Implementation Method, and Implementation Date of Restricting the Use of Plastic Shopping Bags:

<https://oaout.moenv.gov.tw/law/LawContent.aspx?id=GL006482#lawmenu>

12.2.5A - Restrictive Use of Shopping Plastic Bags: Scope, Implementation, and Date

## SDG 12.2.6 Policy for minimisation of disposable items

NCUE will take relevant measures according to the “Restrictive Use of Disposable Tableware: Scope and Implementation/Restrictive Use of Disposable Plastic Straws: Scope and Implementation / Guidelines for the Reduced Use of Disposable Tableware and Packaged Drinking Water in Administrative Agencies and Schools” of the Environmental Protection Administration, Executive Yuan, including no water cups or bottled water in meeting rooms and no disposable tableware in canteens. Please refer to appendices 12.2.6A - Restrictive Use of Disposable Tableware: Scope and Implementation, 12.2.6B - Restrictive Use of Disposable Plastic Straws: Scope and Implementation, and 12.2.6C - Guidelines for the Reduced Use of Disposable Tableware and Packaged Drinking Water in Administrative Agencies and Schools.

NCUE posts notices that the provision of disposable tableware and single-use plastic straws is prohibited. Additionally, we display posters on the reduction of the use of disposable tableware and bottled (packaged) water in government agencies and schools, as shown in Figure 1 and Figure 2. At meetings held on the campus of NCUE, cups of water or bottled water are not provided, as shown in Figure 3. Cafeterias and restaurants on the campus of NCUE do not provide disposable tableware for dine-in use, as shown in Figure 4.



Figure 1. Posters to inform the public that no disposable tableware or disposable plastic straws will be provided



Figure 2. Poster of "Implementation Guidelines for Reducing the Use of Disposable Tableware and Packaged Water in Government Agencies and Schools."



Figure 3. No water cups or bottled water in meeting rooms



Figure 4. No disposable tableware in canteens

**For more details, please refer to the website for the regulation:**

<https://oaout.moenv.gov.tw/law/LawContent.aspx?id=GL006481#lawmenu>

<https://oaout.moenv.gov.tw/law/LawContent.aspx?id=GL007530#lawmenu>

<https://hwms.epa.gov.tw/dispPageBox/getFile/Get.aspx?FileLocation=PJ-EPATW%5CFiles%5C&FileName=2650.pdf>

<https://hwms.epa.gov.tw/dispPageBox/getFile/Get.aspx?FileLocation=PJ-EPATW%5CFiles%5C&FileName=2650.pdf>

[ileName=2691.pdf](#)

**Annex:**

12.2.6A - Restrictive Use of Disposable Tableware: Scope and Implementation

12.2.6B - Restrictive Use of Disposable Plastic Straws: Scope and Implementation

12.2.6C - Guidelines for the Reduced Use of Disposable Tableware and Packaged Drinking Water in Administrative Agencies and Schools

## SDG 12.2.7 Disposable policy: extensions to services

Currently, NCUE outsources cleaning, canteen, and security services to relevant suppliers. Contract specifications for all suppliers are in compliance with the regulations of the Ministry of Environment, Executive Yuan. For example, no disposable tableware or plastic shopping bags are provided in canteens, and the cleaning staff should be responsible for implementing garbage sorting and resource recycling policies.

NCUE has outsourced external service providers for cleaning, cafeteria, and security. All contract specifications for external service providers are executed in accordance with the regulations of the Ministry of Environment of the Executive Yuan and the legal requirements of NCUE, as shown in Figure 1. Disposable tableware and plastic shopping bags are not provided for dine-in use on the premises of NCUE's canteens and restaurants, as shown in Figure 2 and 3. Cleaning staff practice garbage sorting and resource recycling, as shown in Figure 4.



Figure 1. The canteen staff in NCUE all wear masks, net caps, and aprons when working



Figure 2. No disposable tableware in canteens



Figure 3. The faculty, staff, and students of NCUE all use reusable tableware when dining in



Figure 4. NCUE's cleaning staff fully implementing garbage sorting and resource recycling policies

## **SDG 12.2.8 Minimisation policies extended to suppliers**

In contracts awarded by NCUE to vendors and contractors for outsourced works, the relevant specifications are included to comply with the regulations of the Environmental Protection Administration, Executive Yuan, and NCUE's relevant minimisation policies. Vendors and contractors are required to comply with the 'Waste Disposal Act and Enforcement Rules' of the Environmental Protection Administration. They must adopt measures of minimisation, reuse, and recycling to reduce waste products and packages.

Please refer to annex 12.2.8A - Waste Removal Act and 12.2.8B - Waste Removal Act Enforcement Rules.

**For more details, please refer to the website for the regulation:**

<https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=O0050001>

<https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=O0050036>

12.2.8A - Waste Removal Act

12.2.8B - Waste Removal Act Enforcement Rules

### SDG 12.3.1 Waste tracking

In 2022, NCUE generated 40.27% of recyclable resource waste, while 59.73% were non-recyclable waste. All recyclable resources are recycled at a rate of 100%. Non-recyclable waste is all entrusted to the Changhua City Office for disposal. NCUE requests the Cleaning Squad of the Changhua City Office to provide monthly information on the weight of general waste and recycled materials from NCUE. Recycled materials include the following categories: paper, plastic, glass, iron and aluminum cans, paper containers (meal boxes), PET bottles, and dry batteries, as shown in Table 1, and the waste generation situation at NCUE for the past 3 years, as shown in Figure 1.

Table 1. Weight of general waste and recyclable waste at NCUE in 2022

2022	Jinde Campus		Baoshan Campus		Subtotal of the two campuses		Total	Unit
	General wastes	Unit	General wastes	Unit	Recycled materials	Unit		
Jan.	10,560	kg	4,690	kg	11,870	kg	27,120	kg
Feb.	6,090	kg	1,660	kg	4,730	kg	12,480	kg
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Apr.	8,390	kg	4,370	kg	9,160	kg	21,920	kg
May	11,320	kg	4,680	kg	11,560	kg	27,560	kg
Jun.	9,860	kg	3,860	kg	10,895	kg	24,615	kg
Jul.	7,090	kg	2,850	kg	7,140	kg	17,080	kg
Aug.	7,750	kg	2,420	kg	6,815	kg	16,985	kg
Sept.	12,160	kg	5,680	kg	10,920	kg	28,760	kg
Oct.	11,450	kg	5,040	kg	9,995	kg	26,485	kg
Nov.	12,117	kg	5,460	kg	10,510	kg	28,087	kg
Dec.	12,800	kg	6,420	kg	12,450	kg	31,670	kg
Total	121,557	kg	52,840	kg	117,570	kg	291,967	kg

**Recycled materials account for 40.27% of total waste (or 59.73% of waste that is not recycled)**



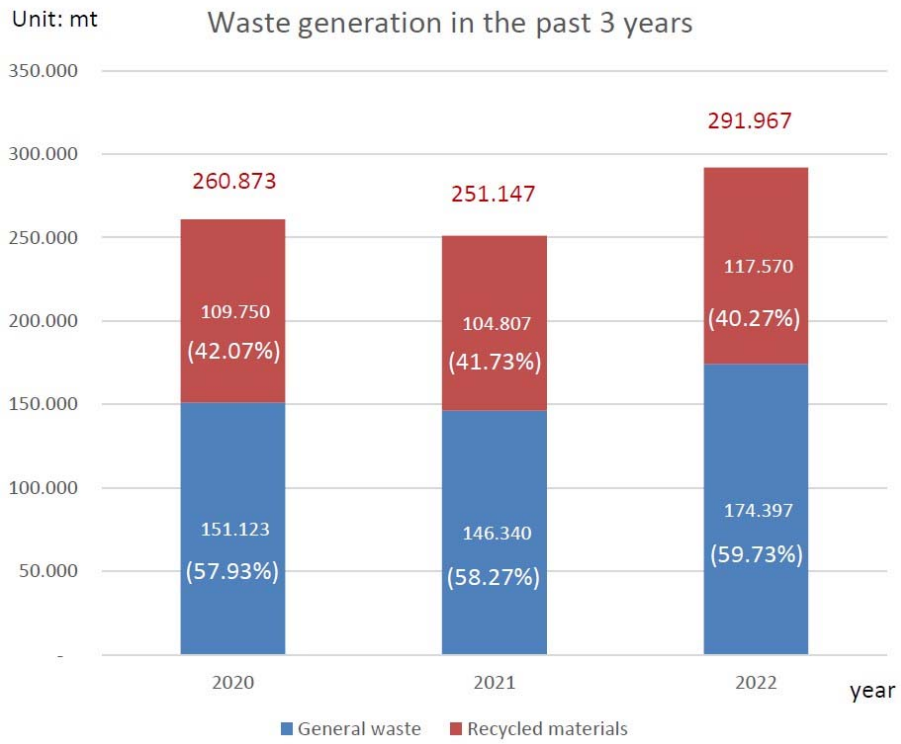


Figure 1. Waste generated at NCUE over the past 3 years

## **SDG 12.3.2 Proportion of waste recycled**

Please refer to the Tables in Section 12.3.1.

Proportion of waste recycled: 40.27% in 2022.

### **Amount of waste generated**

291.967 metric tons in 2022.

### **Amount of waste recycled**

117.570 metric tons in 2022.

### **Amount of waste sent to landfill**

174.397 metric tons in 2022.

## SDG 12.4.1 Publication of a sustainability report

### 1. NCUE's THE Report by Year:

2021:

[https://sdg.ncue.edu.tw/var/file/32/1032/img/257/110.11.5-Generel\\_Report-V.1-final-111.1.18.pdf](https://sdg.ncue.edu.tw/var/file/32/1032/img/257/110.11.5-Generel_Report-V.1-final-111.1.18.pdf).

2022: <https://sdg.ncue.edu.tw/var/file/32/1032/img/257/2022-allsdgs-reports.pdf>.

2. On 29 September 2020, in the presence of members of the Occupational Safety and Health Committee, the President of NCUE signed the "Protection and Occupational Safety and Health Policy of National Changhua University of Education", as shown in Figure 1. It specifies the following: to build a sustainable and green university, faculty, staff, and students at NCUE should fully comply with the relevant laws and regulations, participate in educational programmes, maintain campus security, prevent accidents, cherish the environmental resources, act on energy conservation and carbon reduction, and commit to pollution prevention and continuous improvement. As a member of the global village, everyone should fulfil their responsibilities to build an ecological campus free of accidents and pollution, as shown in Figure 2.

Please refer to annex 12.4.1A - Protection and Occupational Safety and Health Policy, as well as the Centre of Protection and Occupational Safety and Health's website for posting laws, regulations, and rules applying to faculty and staff:

<http://webadmin.ncue.edu.tw/el/ploy/UploadFiles/934/File/%E7%92%B0%E5%AE%89%E8%A1%9B%E6%94%BF%E7%AD%96%28%E6%96%B0%E7%89%88%29%5B1272%5D.pdf>.



Figure 1. NCUE President signing the 'Protection and Occupational Safety and Health Policy of National Changhua University of Education'

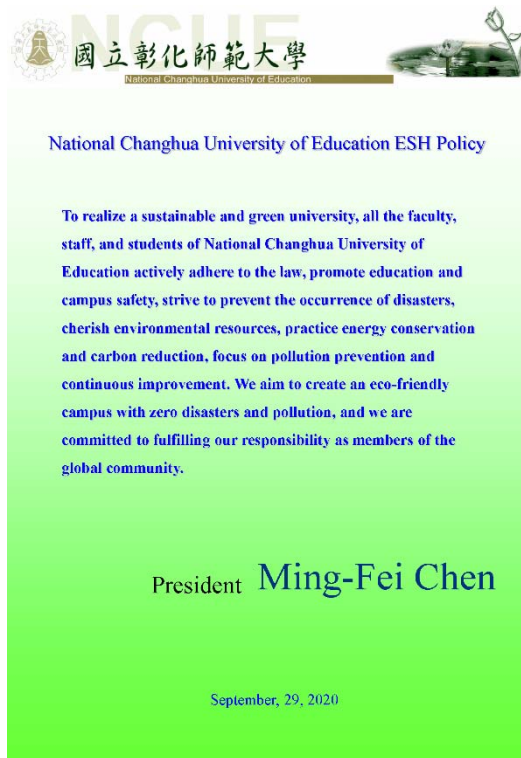


Figure 2. Protection and Occupational Safety and Health Policy of National Changhua University of Education

### 3. Solar Photovoltaic Power Generation Rooftops.

In response to relevant national policies, NCUE will complete the addition of solar photovoltaic panels on the roof of each building of NCUE by the end of July 2022, with a total capacity of 2091.375kWp for Jinde Campus and 571.5kWp for Baoshan Campus, as shown in Table 1. In addition to reducing the net load of the buildings, in some scenarios (such as off-peak months) the building can be fully dependent on solar photovoltaic electricity. Given the reduced electricity current of the distribution lines, line loss can be reduced by about 3% and energy efficiency can be improved. Moreover, solar panels can block direct sunlight from the roof. According to research data, they can reduce the heat energy of direct sunlight on the roof by 38% and reduce the temperature of the roof by 2.8°C. With the building's improved overall temperature environment, air conditioning use can be reduced to improve energy efficiency. The planning and design drawings (partial) of the building's rooftop solar photovoltaic panels in Jinde Campus and Baoshan Campus in 2021-2022 is shown in Figure 3 and Figure 4. Please refer to Annex [12.4.1B](#) - Rooftop Solar Photovoltaic Building Panels Planning and Drawings in Jinde and Baoshan Campuses.

Table 1. Installed solar photovoltaic capacity in each building of NCUE

Campus	Building	Expected capacity (kWp)	Total	Expected electricity production (kwh/year)	Total
<b>Jinde Campus</b>	Qiau-si Building (Dept. of Mathematics)	69	2,091.375 kWp	196,875	2,714,531.25kWh
	Baisha Building (Main Administration Building)	191.625		147,656	
	Zhi-shan Building (Dept. of Special Education)	48		314,063	
	Ming-de Building (Dept. of Guidance and Counseling)	85.125		60,000	
	Teaching Building	92.25		80,156	
	Eighth Dormitory	189		120,469	
	Seventh Dormitory	181.5		249,375	
	Sixth Dormitory	88.5		226,875	
	Hu-bin Building (Dept. of Rehabilitation Counseling)	123		110,625	
	Library	133.5		153,750	
	General Building	103.875		166,875	
	Restaurant	146.625		144,375	
	Sheng-yang Building (Dept. of Geography)	99.375		265,313	
	Shiue-si Building (Dept. of Chinese)	36			
	Wang Jin-pyng Activity Center	160.65			
	Wang Jin-pyng Swimming Pool	239.4		124,219	
Old Activity Center	103.5				
<b>Baoshan Campus</b>	Ninth Dormitory	99.75	571.5 kWp	125,625	714,375 kWh
	Teaching Building No. 1	69.75		126,563	
	College of Engineering	139.5		174,375	
	Jing-shi Building (College of Management)	114.375		142,969	
	Li-xing Building (Dept.	148.125		185,156	

設計規劃 進德校區位置圖&配電併接點示意圖

併接電表位置

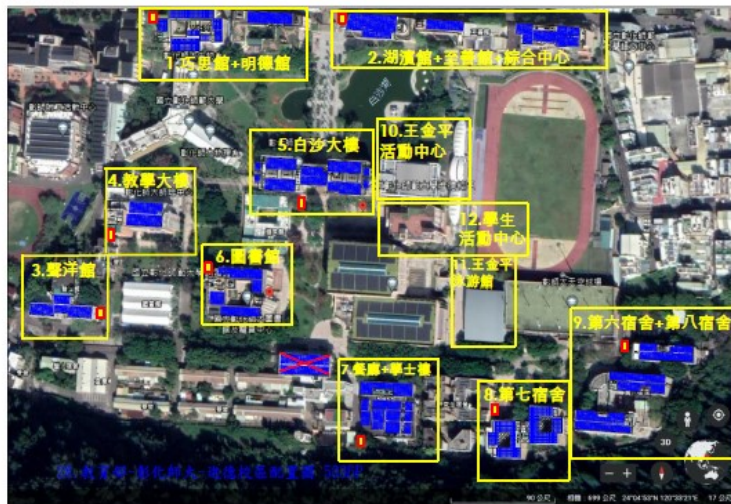


Figure 3. Planning and Design of Solar Photovoltaic Roofs of Buildings at Jinde Campus

設計規劃 寶山校區位置圖&配電併接點示意圖

併接電表位置：  
各校舍建物，個別併接至一個  
電表



Figure 4. Planning and Design of Solar Photovoltaic Roofs of Buildings at Baoshan Campus

- NCUE held second-hand markets and in 2021 received over 500 donated items with total proceeds of over NT\$10,000. Donated goods in 2022 exceeded 200 items, and proceeds exceeded NT\$5,000 from sales. Please refer to Annex 12.4.1C - Second-Hand Markets.
- NCUE organized the adoption of abandoned bicycles. Altogether, 30 bikes in 2020, and 31 bikes in 2021. Since the installation of YouBike stations at NCUE's school gate in 2022, the number of students riding their own bicycles has been decreasing. There are very few abandoned bicycles, so we have not conducted a reclaiming process. Please refer to Annex 12.4.1D - Adoption of Abandoned Bicycles.

6. NCUE library runs a second-hand book donation platform. 289 books were donated in the 2020-2021 academic year, 219 books were donated in the 2021-2022 academic year, and 316 books were donated in the 2022-2023 academic year. Please refer to Annex 12.4.1E - Claiming Second-hand Books.

7. NCUE's declaration of sustainability development:

The President of NCUE signed the "Commitment to Sustainability Development of National Changhua University of Education" in September 2022. Please refer to Annex 12.4.1F - Commitment to Sustainability Development

**Appendices (including supporting documents):**

Annex 12.4.1A - Protection and Occupational Safety and Health Policy (latest version)

Annex 12.4.1B - Rooftop Solar Photovoltaic Building Panels Planning and Drawings in Jinde and Baoshan

Annex 12.4.1C - Second-Hand Markets

Annex 12.4.1D - Adoption of Abandoned Bicycles

Annex 12.4.1E - Claiming Library Second-Hand Books

Annex 12.4.1F - Commitment to Sustainability Development