University : National Chin-Yi University of Technology
Country : Taiwan
Web Address : www.ncut.edu.tw

[SDGs 17] Partnership for the Goals 全球夥伴

[17.3.2] Please indicate if your university publishes progress against SDG2

NCUT's Zero Hunger Project addresses SDG 2 through an integrated strategy combining food waste reduction, agricultural innovation, community food security, and farmer capacity-building**.**

By aligning academic courses, Ministry of Education University Social Responsibility (USR) projects, and industry partnerships, NCUT creates a multi-level impact that:

- Reduces agricultural waste
- Strengthens rural production capacity
- Supports vulnerable groups such as the elderly
- Promotes sustainable consumption and production

A. Food Waste Reduction – "Leftovers Revamp"

Lead Department: Business Administration (Enterprise and Humanities course)

Partners: Yinsh Precision Parts, Cultural & Positive Education Foundation, MOE USR Project (*Smart Innovation in Local Practice – Loquats & Lychees Create a Peaceful World*), Chin-Yi YSBC

Description:

- Repurposed overproduced pineapples into jam and enzyme products.
- Students gained skills in sustainable product development and business model design.
  Impact: Reduced post-harvest loss, created marketable products, and raised awareness of food waste issues.

B. Hunger Reduction – Elderly Meal Delivery & Community Care

Lead Unit: Yunus Social Enterprise Center

Partners: Good Shepherd Association, Spread Love Social Enterprise, Changhua Nursing Center

Description:

- Delivered hot meals and food packages to elderly residents in vulnerable situations.
- Provided students with direct experience in long-term care services and community engagement.
  Impact: Improved food access for disadvantaged elderly, built student empathy and problem-solving skills.

C. Food & Agriculture Education in Shinshe

Partners: Agricultural Bureau of Taichung City, Shinshe Farmers Association
Description:

- May 2023: Hosted an agricultural package tour for 300 elementary students from New Taipei City.
- Activities included farm-to-table education, DIY food-making, and tours of local mushroom and fruit farms.
  Impact: Promoted SDG 12 (Responsible Consumption & Production), enhanced youth knowledge of sustainable agriculture, and supported local tourism.

D. Applied Agricultural Research & Technological Innovation

Project	Year	Partners	Achievements & Outputs
Mushroom Industry Revitalization & Sustainable Operation	2022–2024	Local mushroom farmers in Xinshe	Installed smart environmental monitoring systems, developed negative pressure cooling pad, created smart clean rooms for spawn cultivation
Lychee Shelf-Life Extension	2022–2023	Local fruit growers	Developed minimally invasive drying with freezing technology; extended shelf life without quality loss
Smart Greenhouse Pepper Cultivation for Indigenous Communities	2022–2024	Indigenous communities in Nantou County	Implemented IoT-based smart greenhouses; doubled harvest period; improved product quality and yields
Agricultural Mechanization – Fertilizer Lifter & Shiitake Stem Cutter	2023–2024	Senmu Farm & local elderly farmers	Reduced manual labor requirements; improved safety and productivity

E. Circular Economy in Agriculture

1. Recycling of Mushroom Grow Bags

- **Scale:** Taiwan produces ~210M grow bags annually; Xinshe accounts for ~120M.
- **Action:** Developed drying equipment to process used bags into organic fertilizer; explored biomass energy conversion.
- **Impact:** Reduced waste, improved soil health, and provided renewable energy options.

2. Biomass Power Generation from Spent Substrate

- **Capacity:** 1,575.63 kW output
- **Annual Production:** ~13 GWh electricity – enough for ~2,500 households per month
- **Benefits:** Circular economy integration, carbon reduction, renewable energy promotion.

F. Value-Added Agricultural Products

Product Lines Developed:

- Tremella tea bags & coffee
- Tremella skincare (face masks, essence, lotion)
- Mushroom Energy Plum Bars (golden enoki extract)
  Impact: Diversified farmer income, enhanced product market value, met consumer demand for health-oriented goods.

G. Student Learning Outcomes

- **Hands-on agricultural skills** – IoT sensor installation, product development, and quality control
- **Social entrepreneurship experience** – business model creation for food waste products
- **Community engagement** – direct service to elderly and indigenous communities
- **Innovation mindset** – solving post-harvest and processing challenges through technology

H. Data Annex – SDG 2 Project Outputs

Initiative	Year(s)	Key Partners	Measurable Output
Leftovers Revamp (Pineapple Jam & Enzyme)	2022–2024	Yinsh Precision, Cultural & Positive Education Foundation, YSBC	265 Kg of pineapple repurposed, 78 Kg product units produced
Elderly Meal Delivery	2022–2024	Good Shepherd Association, Spread Love Social Enterprise, Changhua Nursing Center	250 meals delivered/year; 125 students involved/year
Shinshe Food & Agriculture Education Tour	2023	Taichung Agricultural Bureau, Shinshe Farmers Association	300 elementary students participated
Mushroom Industry Revitalization	2022–2024	Local mushroom farmers	15 monitoring points; improved yield by 12%
Lychee Shelf-Life Extension	2022–2023	Local growers	Shelf life extended from 30 days to 90 days
Smart Greenhouse Pepper Cultivation	2022–2024	Indigenous communities	Harvest period doubled; yield increase of 20%
Mushroom Grow Bag Recycling	2022–2024	Xinshe farmers	Recycled 120M+ bags/year into fertilizer or biomass
Biomass Power Generation	2023–2024	Jianguo University of Science & Technology	~13 GWh/year electricity generated
Value-Added Mushroom Products	2022–2024	Heshen Mushroom Farm	5+ product SKUs launched; generating a total revenue of NT$2,996,200

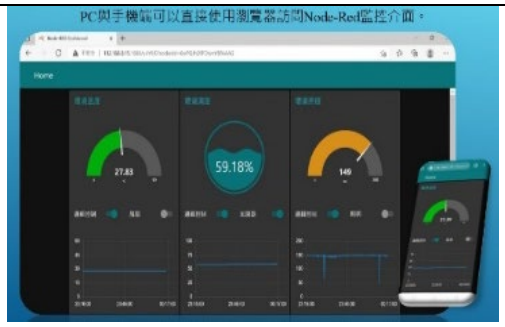
Fostering Social Impact through Education

NCUT's Zero Hunger Project exemplifies how educational institutions can lead innovative solutions to food waste and hunger while simultaneously training students to become socially responsible leaders. Through multi-stakeholder collaboration, practical learning, and community engagement, the project contributes to SDG 2: Zero Hunger and SDG 3: Good Health and Well-Being, demonstrating the power of education to drive social change and sustainable transformation.

Reduce hunger among vulnerable groups - community care and meal delivery for the elderly

NCUT jointly organized a food and agriculture education package tour in Shinshe, Taichung City, attracting 300 New Taipei primary school students to experience it

“End hunger, achieve food security and improved nutrition and promote sustainable agriculture"

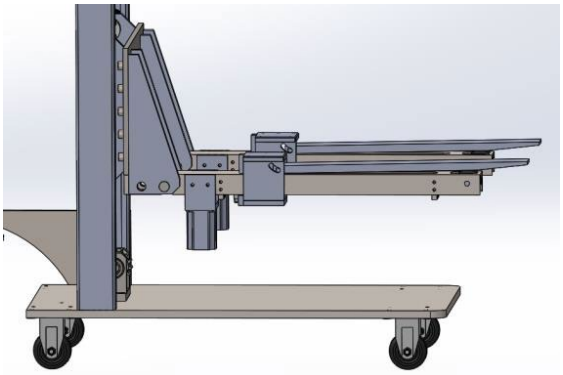
	
Environmental monitoring platform	On-site monitoring installation by students

Minimally invasive lychee dryer

Students working with their own hands on thematic studies course

Stacking fertilizer



Front fork back to position

Use smart technology to upgrade the cultivation of tomatoes, bell peppers and other crops

Better Environment for Growing Mushrooms

Taiwan produces approximately 210 million shiitake mushroom grow bags annually, with the Xinshe region in Taichung accounting for a substantial 120 million bags. This large-scale development has led to significant challenges in managing discarded grow bags, as their disposal is time-consuming and increasingly costly. To address this issue, NCUT's USR project has maintained active communication with mushroom farmers and conducted assessments to

consolidate relevant issues. Focusing on the primary mushroom production areas in Central Taiwan, the project adopts a circular economy approach to develop drying equipment for discarded grow bags. The equipment processes the organic materials inside the bags, such as wood shavings, by drying them and blending them with another substrate to produce organic fertilizer, which can then be returned to the soil. Various recycling methods are also being explored, including converting the grow bags into biomass energy for fuel-based power generation, ensuring efficient reuse of these discarded materials.

▲Teachers and Students Collaboratively Installing Waterproof Pipelines in Traditional Fields

On-Site Demonstration of the Shiitake Stem Cutter Equipment	▲Collaborative Discussions on Equipment Optimization Between Faculty, Students, and Farmers
	
	
Tremella Coffee & Tremella Extract Tea Bags	