

Waste (WS)

The significance of treating the waste generated by the university's numerous activities has been recognized by Kasetsart University. Recycling is one of the factors of sustainability in environmental conservation. Projects and activities related to waste treatment and recycling, waste disposal processes, wastewater treatment, as well as a policy to reduce the use of paper and plastic on campus have been initiated by the university.

Recycling Program for University Waste

Since a huge amount of solid waste has been generated in the university, waste management and recycling is a major concern at Kasetsart University. Waste segregation is also a matter of special attention to universities because some types of waste can be reused, recycled, or can be used to create value for waste. The university encourages all departments to participate in the reduction, sorting, and recycling of some waste. There are urges and warnings to personnel, students, and the general public to use resources wisely and to use them wisely.

Waste Management Project

Kasetsart University has realized the importance of waste management. Every university campus has a waste separation management system. The university encourages students and personnel to sort the waste into the right type for easier management.

The Waste Bank Project is a form of operation to promote solid waste segregation for students and university personnel to understand how to separate solid waste, as well as to create awareness among students and personnel in the university to separate waste at the source, create a solid waste recall mechanism to reduce the amount of solid waste that must be taken to landfill, and have also created separate bins to be used in the purchase of bins.



Waste Management Process

1. Collect waste from buildings and different points in the university by placing bins for students and personnel to separate according to the type of waste.
2. Sort waste
 - Recycling waste



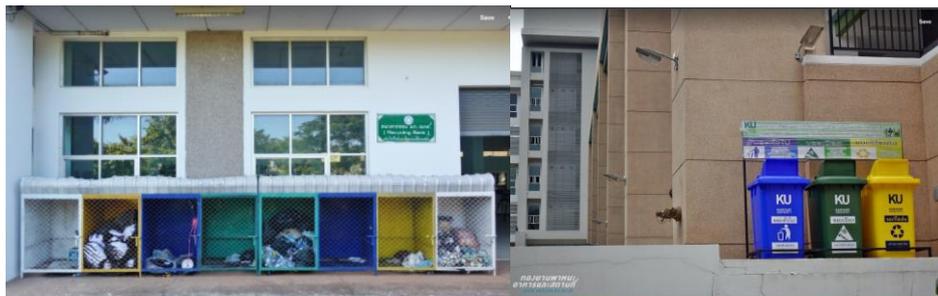
- Organic waste is sent to the nursery for composting and fertilizing the trees within the university.

- General solid waste from the university will be disposed of by the BMA, and the campus will be sent to the municipality for disposal.

รายงานผลการดำเนินงาน ประจำปี ๒๕๖๓												
ประเภท	ปริมาณขยะ (kg)					ปริมาณขยะ (kg)					รวม	
	รวม	รีไซเคิล	อินทรีย์	อันตราย	อื่น ๆ	รวม	รีไซเคิล	อินทรีย์	อันตราย	อื่น ๆ		
รวม	11,000	1,000	10,000	0	0	11,000	1,000	10,000	0	0	11,000	
แยกประเภท	11,000	1,000	10,000	0	0	11,000	1,000	10,000	0	0	11,000	
แยกประเภท - อินทรีย์	10,000	0	10,000	0	0	10,000	0	10,000	0	0	10,000	
แยกประเภท - รีไซเคิล	1,000	1,000	0	0	0	1,000	1,000	0	0	0	1,000	
แยกประเภท - อื่น ๆ	0	0	0	0	0	0	0	0	0	0	0	
แยกประเภท - อันตราย	0	0	0	0	0	0	0	0	0	0	0	

3. The amount of each type of waste is recorded according to the office building for comparison during the year.

Students work together to create plastic bottles disposal to separate plastic bottles waste by installing in the student dormitory.



Waste separation





Waste separation bin contest



CEE Waste Bank



Waste sorting point

Kasetsart Fair, Kasetsart University, Bang Khen Year 2020 has set 11 main waste separation points. There are volunteer students to suggest how to separate waste and place the bins for the main segregation. People have to separate waste by themselves. There is also a training in waste separation for students and personnel, reusing waste in various forms, as well as organizing a campaign campaign for students.



Waste sorting point

Kasetsart Fair, Kasetsart University, Kamphaeng Saen Campus 2020 and 2021 have set waste separation points. There are volunteer students who will suggest how to separate waste and put it in the bin for proper sorting, for easy management, or recycling.



Creative media contest activities for the correct separation campaign.

Kasetsart University has a waste sorting campaign project, which is a waste sorting before disposing that will help reduce the amount of waste in the university in each faculty and office, can reduce residual waste problems that make the environment and the campus scenery look clean and beautiful, reduce the use of natural resources, reduce energy consumption, and reduce pollution that will affect the environment. Students and personnel must work together to reduce and solve the problem of solid waste by separating the waste into the right type and bringing reusable materials into the recycling process in order to use natural resources cost-effectively and sustainably. Provision of bins and supporting equipment, categorized by type of waste: wet or food waste, general waste, recyclable waste, used paper, and hazardous waste. There is a placement of

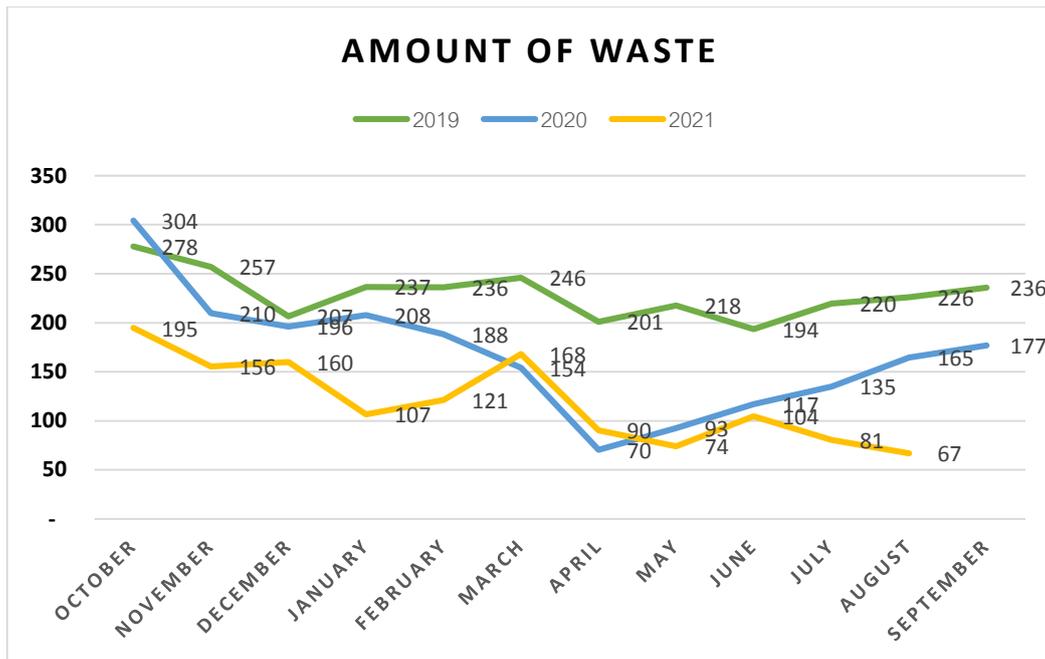


Diagram compares the amount of waste during 2019-2021

Kasetsart University, Bang Khen Campus has a record of the amount of waste every month. Recording the amount of waste can make it possible to determine the amount of waste according to the type of waste that makes it easy for the university to manage waste. The university found that recyclable waste is often larger in volume than other types of waste, so they figured out how to manage this type of waste. The university adheres to the 3R principles of Reduce, Reuse, and Recycle to reduce the amount of waste that occurs every day, reduce pollution to the world, and can also be reused in a cost-effective way.

Activities to enhance knowledge on recycling



Activities to enhance knowledge on recycling

The Faculty of Fisheries, Kasetsart University has been aware of the impact and recognized the importance of solving the current plastic problem. Indorama Ventures Public Company Limited or IVL together with the Faculty of Fisheries, Kasetsart University organizes activities to enhance knowledge on recycling for faculty and personnel of the Faculty of Fisheries,

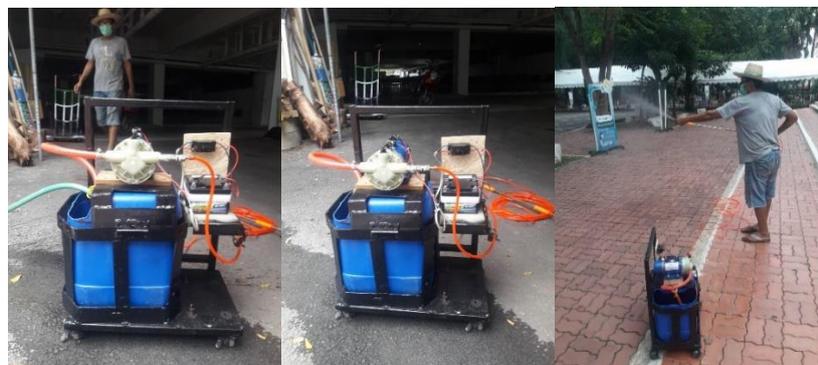
Kasetsart University to raise awareness of the value of PET recycling by educating about proper waste segregation, types of plastics, and PET recycling processes based on circular economy principles. In addition, the Faculty has organized a bottle exchange activity. Participants can exchange 100 PET bottles 500 ml or more for a shirt made from 100% recycled PET fiber under IVL's DEJA™ brand. The fiber that produces one shirt is equivalent to recycling 12 PET bottles. This activity was well received and more than 100 kilograms of PET bottles were collected, which will be recycled at IVL's recycling plant, Nakhon Pathom province.

Recycling is the conversion of used materials. The university has a policy to encourage students and personnel to use natural resources cost-effectively and sustainably so that they can be reused again. Upcycling is the creative development of scrap materials, the transformation process of waste materials, or the turning of materials or products that cannot perform their original function into new, higher-quality, cost-effective, environmentally friendly products. Upcycling is a resource-efficient process by transforming waste materials into new products with both design and commercial value, which is part of the drive for product creation. It is environmentally friendly and takes into account social responsibility. Faculty of Architecture, Kasetsart University has a team of designers in AKU Upcycling that will develop discarded items to be reused to add beauty and add new ideas to be reused again.

Removing scrap from old chairs or tables that have been deteriorated and reused to make a wheelchair



Scrap from old chairs to make a wheelchair



Disinfectant sprayer made of used material.

Bringing old tires to make a condo for raising frogs, make a vegetable garden, and make a traffic cones with base



Vegetable garden



Condos' raising frogs



Traffic cones



Table obtained from industrial waste





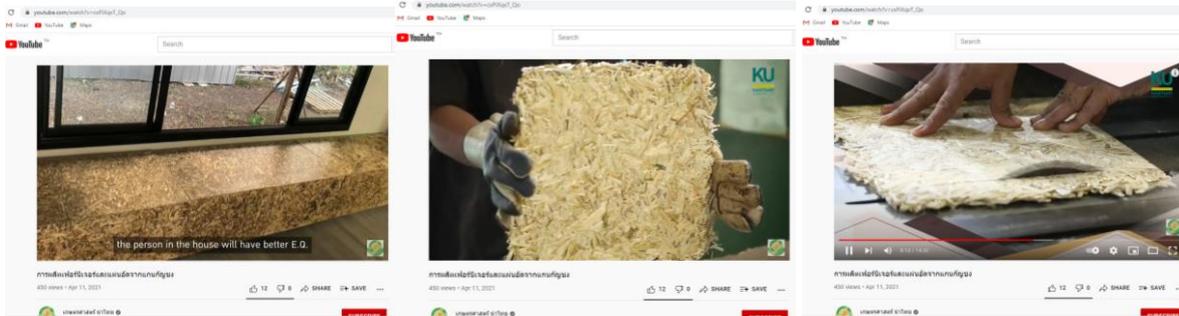
Waste sorting bin modified from air compressor



Tables and chairs made from shipbuilding waste materials



Furniture from waste materials to add value



Manufacture of furniture and pressed sheets from hemp cores

The use of agricultural waste such as hemp core to produce hempboards furniture that are beautiful and has a unique pattern, can be produced for home walls, tables and other materials. They are durable, lightweight, good adhesion, water resistance, sound absorption and has insulation properties, formaldehyde free which brings the sheet pressed from the hemp core can be used as a replacement for cement board or can gypsum board. Research results by Assoc. Prof. Songklod Jarusombat and the research team from Department of Forest Products, Faculty of Forestry, Kasetsart University.



Cyst bag from the cyst of the dialysis fluid

Switching to cloth bags is an easy start for an eco-friendly lifestyle or turning to new products made from waste. Bags from 'Dialysis Bags' Innovative. There are only 30 million bags of waste left in Thailand. Assoc. Prof. Dr. Singh Intrachuto, Lecturer of the Department of Building Innovation, Faculty of Architecture, Kasetsart University, the architect, took 'Dialysis Bags' through

the upcycling process to turn leftovers back into fashion as an item that is not only good for an eye-catching design that is nice to use, but also saves the world. Cutting and extruding the dialysis bags is a career building for the unemployed and the elderly in the Din Daeng 1 Housing Community.



Buoyancy that wears off used to make vegetable plots and vegetable gardens



Old vinyl sign used to mulch the soil for keeping the soil moisture for trees

Kasetsart University has brought old bicycles to repair and change from a bicycle that used to be able to ride alone to a bicycle that can be ridden in pairs for service at Bua Chaloe Phrakiat Park, Sakon Nakhon Province to promote eco-tourism in Sakon Nakhon province.



Two people's bicycle which is a student's bicycle that cannot be repaired so it can be modified for reuse



Increasing the value of plastic bottle waste through the creation of plastic brooms-Integrated Social Economic Development Project, University to Tambon (U2T).



Using fallen trees to renovate the building at Lopburi Research Station

Lopburi Research Station has taken the fallen trees and transformed them into planks for the renovation of the accommodation buildings that are damaged due to the leaking roof, brought the wood to make the balcony of Building 6, and repaired the wooden floors of the accommodation buildings.



Table and chair set 100% Recycle, the shop likes fish, the fishery team.

Faculty of Fisheries, Kasetsart University There is a shop similar to ChobPlaChum. seafood restaurant both fresh and processed, as well as ready-to-eat food and a small coffee corner where residents of Kasetsart University can sit and sip tea and coffee and is a co-working for students and the general public. ChobPlaChum Restaurant, Faculty of Fisheries, also has another highlight. The furniture in the shop is 100% Recycle which has a pavilion structure, which Upcycling plastic chairs Recycle from the pavilion structure PTTGC, the bright pink wall structure of the Waste Side Story Pavilion, one of the interesting works of Bangkok Design Week 2018 which made from recycled plastic And after the exhibition was finished, the parts were redesigned again. until becoming a chair that is durable.

Upcycling adding value of rubber

Kasetsart University together with the research team upcycling the rubber that is the economic crop of Thailand. Initial processing can be used to produce a wide variety of products. including can add The added value to the rubber is enormous. Most of the rubber is used in the industry. At present, entrepreneurs in the rubber industry are interested in converting para rubber into a product in the group of construction materials. To be used in structural work for building and housing construction. taking into account that the use of para rubber will be beneficial in helping rubber farmers to achieve Use more products from rubber. and in terms of various functional properties when used in building materials to develop Get a building material with better properties. have a lower production price Reduces energy consumption and is more environmentally friendly.



Aerated concrete for walls



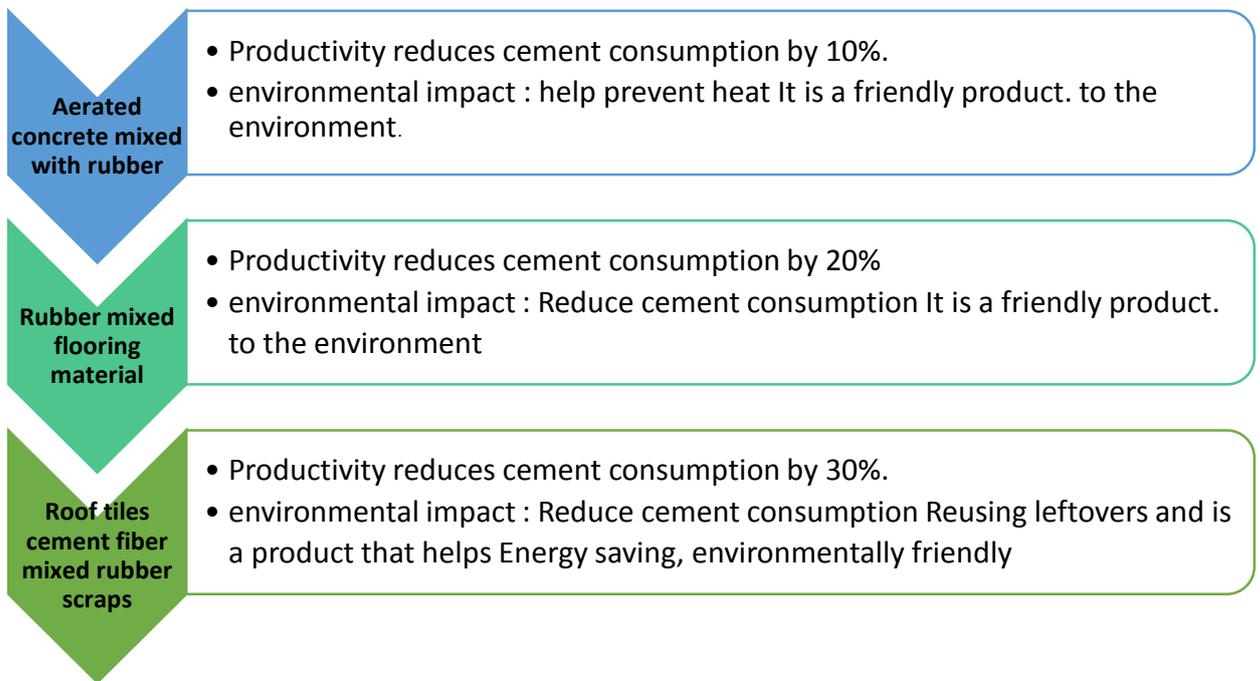
individual flooring materials



cement roof tiles, mixed palm fibers, rubber scraps for the roof.



sample houses are installed in commercial materials, and sample houses are equipped with finished research materials.



Concrete mixed with mussel shells

คอนกรีตผสมจากเปลือกหอยแมลงภู่

คอนกรีตผสมจากเปลือกหอยแมลงภู่ (Concrete mixed with mussel shells) is a sustainable building material. The poster highlights its benefits and provides contact information for further details.

คอนกรีตผสมจากเปลือกหอยแมลงภู่

คอนกรีตผสมจากเปลือกหอยแมลงภู่ (Concrete mixed with mussel shells) is a sustainable building material. The poster highlights its benefits and provides contact information for further details.

คอนกรีตผสมจากเปลือกหอยแมลงภู่

คอนกรีตผสมจากเปลือกหอยแมลงภู่ (Concrete mixed with mussel shells) is a sustainable building material. The poster highlights its benefits and provides contact information for further details.

Kasetsart University and the research team found a problem from mussel shells, so they figured out how to get rid of mussel shells by using shell remains as an ingredient in concrete production. Shells are the effects of mussel consumption and processing, resulting in a large amount of leftover mussel shells. Most of the disposal is to landfill. However, because shells with meat particles attached to them can rot and cause a foul smell, the researchers came up with a new way to dispose of shell remains. Leftover mussel shells are used as an ingredient in the production of concrete in various concrete products such as chairs, plant pots, and walkways. This is one way to reduce waste, optimize resource utilization, and reduce environmental pollution problems that can be done by yourself in households or communities with large amounts of shells leftovers. This is a comprehensive disposal of mussel shells, which is another way to reduce waste, eliminate organic waste, reduce the need for landfill space, and reduce environmental pollution. Households or communities with large quantities of shells left behind are used to build a career as a supplement to the laborers who contract shellfish and add value to shells as well.

Campaign to use cloth bags instead of plastic bags. The university promotes the reduction of the use of plastic bags by campaigning for the use of cloth bags, which can help reduce waste, help reduce global warming. Students, and personnel can participate in the process of solving environmental problems or may be able to use leftover materials to create recycled cloth bags, which will emphasize behaviors that will help save the environment even more.

Putting stickers on the campaign to reduce the plastic bags and synthetic container to reduce waste in different places all over the university



Reusable Bag go Green, Agriculture Fair

Kasetsart Fair, Kasetsart University has prepared a Reusable Bag Go Green as a souvenir bag for the Kasetsart Fair. Students, personnel, and the general public who attend the event can

take part in protecting the environment during the Agriculture Fair by reducing the use of single-use plastics and turning to reusable bags for help to reduce global warming.



Cloth bags campaign by contributing to exchange students, project participants, and other activities



Campaign to use cloth bags (cloth bags made from vinyl banners at the Agriculture Fair)

There are continuous activities at Kasetsart University. Focus on campaigns on reducing global warming and reducing the amount of waste by recycling or any activities to promote guidelines for campaigns to reduce the risk of harming the planet and to provide students and personnel with an understanding that goes in the same direction. Everyone can be a part of solving the problem. Just everyone changing some behaviors that they do on a daily basis can help reduce global warming.



The work of students, personnel, and teachers who participated in the energy reduction media contest 2020-2021



DIY Contest activity organized by the Library, Kasetsart University

Green Roof Project



Green Roof Activities

Kasetsart University joined the green roof project, which was created by the collaboration of Tetra Pak (Thailand) Co., Ltd., a leading company in the production and packaging processes for food and beverages, together with the Big C Supercenter Public Company Limited, beverage box recycling center by Fiber Phat Company Limited, and the Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment, committed to implementing campaigns to support the sorting, storage and recycling the most used drink boxes to be successful. This project is a project to support the sorting, waste collection and recycling of used

beverage boxes by collecting beverage boxes to be recycled into roof sheets to donate to the Friend in Need of PA Volunteer Foundation, the Thai Red Cross Society for use and continue to give to communities in need. One sheet of green roof measures 1 x 2.40 meters and uses approximately 2,000 beverage boxes to produce. Milk carton roof features are durable, unbreakable, do not require heavy construction, flexible, not easy to break, and are also fire resistant.

Won Tank



Won Tank

Kasetsart University has joined as part of the “Won” project. The “Magic Hand x Won” project was initiated by the cooperation of the government, private sector, and civil society to manage plastic and waste in a sustainable manner or Thailand Public-Private Partnership for Plastic and Waste Management (PPP Plastics). This project has joined forces with the "Won" project to manage plastic waste in a sustainable way by setting up a place to place "cycle bags" for students, personnel, and the public to dispose of all 12 types of clean plastic bags and packaging that are specified. The project will accept donations of bags and packaging, clean plastic film such as diaper bags, plastic water bottle film, or protective film that come with online products before being recycled into plastic pellets for use in the production of shopping bags, and other plastic products to be recycled into bags from recycled plastic pellets again. In addition, plastic bags and film packaging that are donated will be worth 5 baht per kilogram. The project will be donated to the Rare Marine Animal Rescue Center for further use in the rescue missions for injured marine animals.

G Green Project Green Office



Kasetsart University sends departments within the university to participate in the G Green project of the Green Office 2020, which has 7 departments of the university participating in the Green Office project as follows:

- Gold Level - Faculty of Architecture.
- Silver Level - Kamphaeng Saen Campus Promotion and Training Bureau, Computer Service Office, Building Vehicle and Premises Divisi.
- Bronze Level - Faculty of Engineering, Faculty of Agriculture Secretary Office, Chalodem Phrakiat Campus Office, Sakon Nakhon Province