



VRU
SUSTAINABLE
REPORT 2020 -
2021

Valaya Alongkorn Rajabhat University
under the Royal Patronage





CHAPTER 1

Setting and Infrastructure

Valaya Alongkorn Rajabhat University under the Royal patronage, there are 3 campuses located in Pathum Thani province (150.92 acer), the Bangkok campus (1.58 acer) and the Sra Keaw campus (243.4 acer), with learning and teaching management. The main campuses located in Pathum Thani province, current location 1 M.20, Phahonyothin Rd (km 48), Khlong Nueng Subdistrict, Khlong Luang District, Pathum Thani Province 13180.



Campus Setting



Main campus of Valaya Alongkorn Rajabhat University under the Royal patronage, the location of the university is on Phaholyothin Road (km48). The campus area is due to the urbanization. The university is located in the central region, 26 kilometers from Don Mueang Airport. Nava Nakorn Industrial Estate is surrounded by universities in the west and south. Communities and agricultural areas to the north. The east side of the university is a densely populated village.



Total campus area: 610,751.571 m² in main campus. The teaching and learning area is located at the front of the university with an area of 560,800 m², the interior area will be sports stadiums, student dormitories and personnel residences with an area of 49,951 m². Therefore, the total campus buildings area has a total of 179,325 m².



Total area on campus covered in forest vegetation



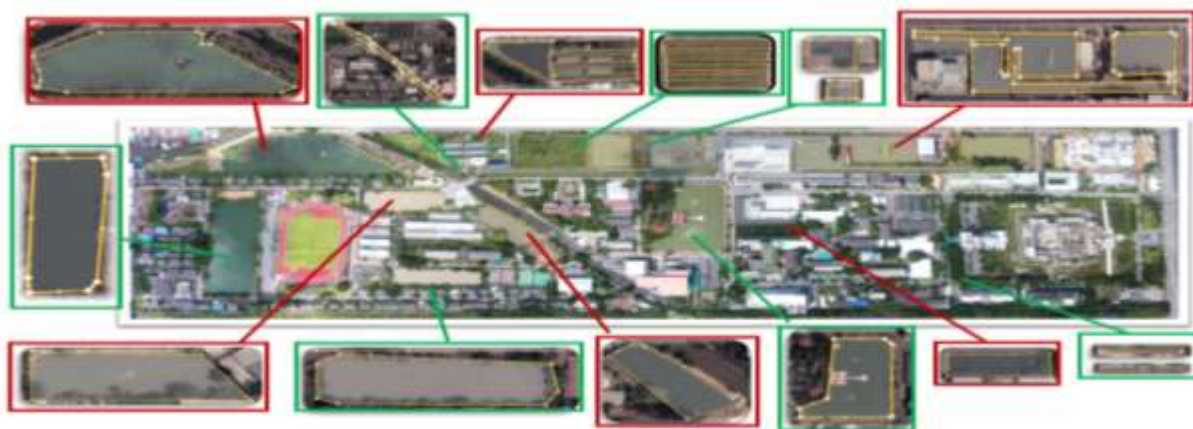
In 2021, planting to increase the area of large trees by approximately 48,069 m². Total green area campus covered in forest vegetation 79,931 + 48,069 m², consisting of 1,625 trees. The covered in planted vegetation area of the university can be divided into four areas: 1) the green area spread around 79,931 m², consisting of 39,965 m² of shrub and ground cover and 1,625 trees 2) Plant genetics conservation area 51,128 m² 3) lotus pond area (natural forest) 23,712 m² and 4) lawn area 15,564 m² total green area 210,300 m² (37.5%) of the area all.



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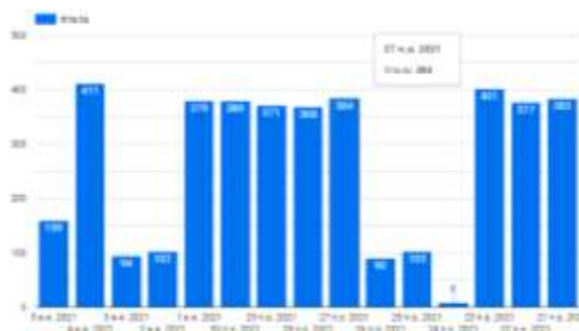
Total area on campus for water absorption besides the forest and planted vegetation



A larger water absorption area VRU 2021

Total area on campus for water absorption the forest and planted vegetation approximate 65.3%. The percentage of surfaces (i.e., soil, grass, concrete block, synthetic field, etc.) on campus for water absorption as 44.2% to the total area of the campus sites. A larger water source area approximates 179,325 m².

Total population in campus during COVID-19 pandemic



The main campus at Pathum Thani province is located in a suburban area with surrounded by industrial areas and rural areas. Valaya Alongkorn Rajabhat University under the Royal Patronage is in the area between Pathum Thani Province and Phra Nakhon Si Ayutthaya Province, with a total area of 6.10 km². Total campus ground floor area of buildings 4,949 m² and total population of 8,696 persons, which means the population density of 1,873 people per km²

Total campus area 560,800 m²

Total campus ground floor area of buildings 4,949 m²

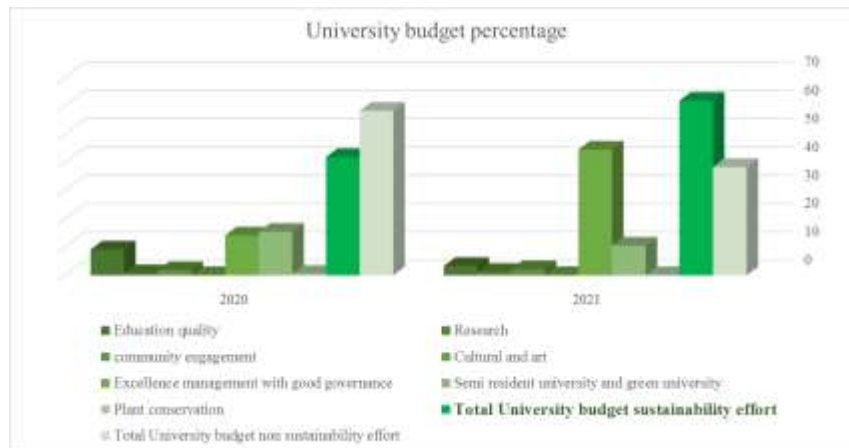
Total campus buildings area 179,325 m²

Total number of population 8,696 persons (Academic and administrative staff 1,046 persons and student 7,650 persons)

Total population in campus during COVID-19 pandemic about 384 persons per day



Percentage of university budget for sustainability efforts



University budget for sustainability effort 32,144,313.18 US Dollars (61.74) comprise of the budget for physical, education, research, community engagement, cultural and art, excellence management with good governance, Semi resident university, Plant conservation

Operation and maintenance activities of building during Covid-19 pandemic

The measures taken by universities during the COVID-19 pandemic include reducing the number of people entering the campus by allowing teachers and staff to work from home, and students studying online. Including the closure of some building areas to reduce the contact area. Processing in case of entering the university including scanning people before entering the building, registration to enter the building, measure body temperature. The safety support provided by the university includes: temperature measurement devices, alcohol for hand cleaning and hand washing in all areas of the university. The university offers assistance to students infected with COVID-19 by providing a subsidy of 10,000 baht per person. The university has provided masks and alcohol to distribute to staff, students, alumni, as well as the communities surrounding the campus. In case, students need to come to the university activities, an antigen test kit for COVID-19 will be provided.

Campus facilities for disabled, special needs and or maternity care



The university campus facilities for has renovated sidewalks and ramps with blocking areas to prevent parking, including renovating disabled toilets in most of the old buildings. For new buildings, facilities will be designed and implemented for disable and maternity care.



License to operate a medical facility "Valaya Alongkorn Clinic"

Health infrastructure facilities for students, academics and administrative staff's wellbeing. Operations consist of a first aid unit, an emergency room where small wounds can be sutured. Operation on health-related facilities under the name "Valaya Alongkorn Clinic". License to operate a medical facility, license no 13 1 11 0001 62, which consists of the following medical personnel:

1. Clinical physician, 1 person
2. Professional nurse, 1 person
3. Public health scholars 3 people

Conservation: plant, animal and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities



Conservation plant: Learning activities on rice planting and harvesting
Conservation animal and wildlife : Fish, Buffalo and bird



Products from the Plant Genetic Conservation Program (food and agriculture secured in either medium or long-term conservation facilities include Chinese cabbage, green lettuce, kale, acacia, zucchini, daffodil, eggplant, eggplant, Chinese cabbage, banana, sweet basil, fennel leaves, Cantonese, bamboo shoots, long beans and chicken eggs.



CHAPTER 2

Energy and Climate Change

Energy efficient appliances usage

In 2020, 219 units of air condition have replaced more than 15 years old air conditioners with high efficiency air conditioners to inverter systems model. In order to increase the efficiency of air conditioners, a cleaning action plan is made at least once a year. Electric power consumption reduce with the energy conservation policy and uses electric appliance with energy saving label (energy saving label No.5). In addition, replacement of fluorescent lamp was conducted, which is a 12,000 LED bulbs. In 2021, the performance of all electrical appliances in the university was measured. and install energy-saving electric machines. And there are good measures for the personnel used of electricity.



Smart building implementation

Smart building Element 1. There is a building that use natural air circulation and use sun light for lighting inside the building 2. There is a building that use solar cell for energy supplied 3. There is water conservation, such as using sanitary ware and water 4. Environmental Protection, such as waste management, odor and smoke disposal system, and waste water treatment plant. 5. There is quality control being utilized in the indoor environment, Such as filter film from sunlight and control air condition at 25 °C





Greenhouse gas emission reduction program

Scope 1 Mobile combustion: University has changed service cars over 15 years old with high carbon emissions to low emission cars, 3 cars. There is a project to replace old cars with the following plans. Year 2021: Change 2 van from Faculty of Science and Technology and, Faculty of Management Science. Year 2022, change 2 van from Faculty of Education and, industrial technology

Scope 2 Purchased electricity: All air conditioners in the university have been washed in order to increase the efficiency in order to reduce the consumption of electricity. Carry out cleaning of 517 air conditioners

Scope 3 Waste: "Recycle Bank" and a campaign to reduce the use of single use plastic, to use cloth bags, rice boxes, personal glasses, which can be reused. Commuting: Tram service within the university to reduce the use of private cars. The university has added green areas, trees are planted, and more than 500 tree saplings are distributed for planting in the university and neighboring communities. Total Carbon Footprint (CO₂ emission in the last 12 months at 2,862.95 metric tons



Innovative program(s) during Covid-19 pandemic

UVC rays and alcohol spray gun is used to maintain air quality standards despite the dynamics of cooling load and the dynamics of biological pollutants in the room. **Smart meeting room and smart classroom**, that is important for learning and meetings because it has to be adapted to an online system. Make the camera system, audio system, computer system to support remote work. **A personal partition** is installed to reduce interpersonal contact in the conference room and in the cafeteria due to the time the mask is removed.



Impactful university program(s) on climate change





CHAPTER3

Waste

Valaya Alongkorn Rajabhat University under the Royal Patronage (VRU) realized the importance of waste treatment which arising from many activities at the university and a lot of occurred waste. The university has promoted all staffs and students to share the responsibility for environmental conversation by initiating the projects and activities related to the waste treatment and recycling.

The university has organized the activities to change the habits of using materials or resources of staffs and students. The purposes of the activities are created environment friendly behavior of staffs and students to reuse waste or leftover the materials by the following 3Rs. Reduce: reduce using materials which cause the wastes. Reuse: bring back the used materials to be used again. Recycle: processing the leftover materials and used again.

Recycling program for university's waste

The university has the intention to promote all staffs, students and including visitors to aware the importance of waste management, recycling and resource consumption. Therefore, the university encouraged all to join the many relevant activities.

1. The "Recycle Bank"

This project is a recycling waste disposal project. All parts in the university collected the recycle waste to sell to the bank and return will be kept in an recycle account book. The recyclable waste will be sold to the dealers for processing into reusable materials. Recycle Bank deposits can be separated to 4 types such as papers, glasses, metals and plastics.

The waste deposit criteria are

- 1) bring the recycle account book when coming to deposit,
- 2) account can't transferable to others except with the consent of the bank,
- 3) balance moneys in account must not be less than 50 baht,
- 4) withdrawing can be made when the money in account are over 100 baht,
- 5) 1 kg minimum weight for each deposit and
- 6) First time opened an account must have a 1 kg minimum weight deposit and can withdraw in the next time.

The photos show an example of recycle account book, the saleable wastes and waste sorting station for recycle bank.





Program to reduce the use of paper and plastic on campus

The university has implemented the policies and methods for reducing paper and plastic usage for the goal that is to create a friendly living environment by inviting to do many relevant activities. The university has cooperated with convenience stores, restaurants and cafés to apply for reducing a single used plastic bags and disposable products. Therefore, the university organize a campaign on using of fabric bags and plastic bags reusing. The university aware about food packaging product issues especially, the foam boxes. Therefore, the university request to the seller at canteen to reduce and discard foam boxes consumption and find other materials that is environment friendly to replace such as using the biodegradable products. All departments in the university use the information technology for replacing the paper work system such e-office system or in the name of e-saraban. This system is used as a channel to transfer knowledge, information and communication between each other. The benefits of this system are prompt operation, budget, manpower saving, reducing workflow and replacement of paper works.



Organic waste treatment

More than 50% of all solid waste is organic waste such as food waste, vegetables, fruits and weeds. The organic waste could be made to a value by fermentation. In addition, it can also help for reducing problems of waste management including the disposal costs for landfilling the waste.

1. Biogas and liquid fertilizer project

This project is the management for organic wastes from canteens, restaurants and cafés for reducing food waste and used the received fertilizer for tree soil maintenance in the university.





Inorganic waste treatment

The university is concerned about Inorganic waste treatment. Therefore, the university has a plan to eliminate inorganic waste to reduce the amount of inorganic waste. Upcycling, This project encouraged using the waste for recycling, developing and creating the new products. It also promotes creative design and innovation from leftover resources. Besides, this process is safe for health and environment.. Degenerated wheels and broken cement or sanitary wares were used for vegetable and ornamental plants garden decoration in special events. The expired computers, printers, copiers and other electrical appliance were sold back to the purchased company.



Toxic waste treatment

The university divides the hazardous waste into two categories such as General waste: light bulb, battery, spray can, spray bottle and electronic appliances. Chemical waste: waste from reaction, expired chemical. General hazardous waste, this waste type was collected and waited for sending to a licensed company qualified for hazardous waste management every 3 months. The laboratory waste was classified according to chemical hazard. In addition, in collection, compatibility of chemical wastes also was considered. Finally, send all to a licensed company qualified for hazardous waste management every 6 months.



Sewage disposal

The university recognizes the importance of wastewater management. To reduce cost of buying tap water of the university, water quality improvement by healing process, then recycled in some activities such as flower watering. It also reduces pollution of the water before draining into the environment.



CHAPTER4

Water

Water conservation program & implementation

The water resource management project under the environmental policy of the university is divided to two activities as followed;

1. Youth investigator project that is training the young generation to investigate the water quality in their school.

2. The water quality monitoring project that is conducted by the undergraduate students (Environmental Science Program).

Furthermore, the environmental plans of the university are including the water saving campaign, the wastewater treatment project, and the reclaimed water e.g., the floating wetland plants, plant watering and others.

The university has a policy, activities, and projects to reduce water using for saving water and conserving water. The activities and projects carried out are as follows:

1 Water pipe system leak inspection system

2 Monitoring and analysis of water quality in surface water sources

3 Water saving campaign

Water resource management activities / rainwater / water tanks / wells There are 16 natural water sources within the university as follows

1. An open gutter beside the building 100 years north.

2. An open gutter beside the 100-year-old building in the south

3. The Three Friends Pool

4. Ruan Thai Pool

5. North Chiang Rak Canal

6. Chiang Rak central canal

7. Khlong Chiang Rak South

8. Mukda Pool

9. Phet pool

10. The pool behind the tennis court

11. Sports ground pool

12. Klong Bua

13. Police pool

14. Naga Pool

15. Pool Rama 10

16. Ban Kwai Pool



Water recycling program implementation

The wastewater treatment systems of Valaya Alongkorn University have two systems that are oxidation pond and activated sludge. Afterwards, the influent is drained to 16 stabilization ponds around the university. The water resource management project is including the water recycling plan and reclaimed water. The water after treated from the wastewater treatment systems (approximately 3,500 L/week) is implied to plant watering and floor cleaning and etc. Furthermore, not only recycling water usages. 120,000 L of reclaimed water is utilized to fish cultivation ponds as well.

Water efficient appliances usage

Toilet water saving equipment



- 1 . Office of Academic Resources to improve bathrooms Sensor use Reduces water approximately 20%
2. Toilets Faculty of Humanities and Social Sciences There are water saving devices as follows
 - 1)sets of sensor urinal systems
 - 2) sets of center system sinks
 - 3) Using an automatic hand washing system Automatic Single Faucet Karat Model BAPI-50
 - 4) Sanitary ware Toilet, sit flat, Cotto model Sharon
 - 5) American Standard Urinal, Model Aqualyn TF-476S-WT.

Consumption of treated water

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Hand washing and sanitation facilities during Covid-19 pandemic

According to Covid-19 pandemic, every building of Valaya Alongkorn University is setup the automatic alcohol sanitizing hand spray followed to pandemic plan of the university.



CHAPTER 5 TRANSPORTATION

The total number of vehicles (cars and motorcycles)

The university has activities and projects for count car and motorcycle assess to university.

1. Report of reservation of 38 central cars in 2021, has the same usage 1,101 times.

2. Number of cars entering the average of 631 cars entering the university / day or approximately $631 * 270 = 170,370$ cars / year

During holidays have an average of 50 cars to enter the university / day or about $40 * 90 = 3,600$ cars year

3. Number of motorcycles entering the university (cars / year)

During the school term average of 337 motorcycles / day to university or approximately $337 * 270 = 90,900$ vehicles / year

During holidays have an average of 90 motorcycles / day or about $90 * 90 = 8,100$ cars / year

Shuttle services

The university has provided a shuttle bus service. Projects for arranging transportation within the university for substitute private vehicles. These are free service to avoid using private vehicles of staff, instructors and students.

1. Shuttle/bus campus inside campus 3 shuttle bus, 9 electric car

2. Walking

3. Public transportation station

4. Electric vehicle charging station

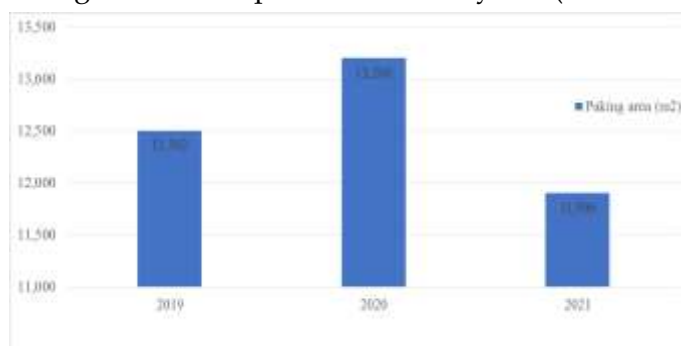
5. The use of public vehicles in the office

Zero Emission Vehicles (ZEV) policy on campus

The university's policy is to reduce greenhouse gas emissions and reduce the use of private cars and reduce the use of cars that generate polluting the combustion engine. The university has provided more electric trains to serve students and staff, with a charting station available. The university also encourages students and staff to use bicycles, with 236 registered bicycles and 20 free borrowed bicycles. There are 7 more electric trains in free service.

Ground parking area

Transportation program designed to limit or decrease the parking area on campus for the last 3 years. Transportation program designed for parking spaces will have a restriction policy for parking to include points at the parking building. From the collection of parking spaces, there is a tendency to decrease due to more utilization of space and increasing green space. Program to limit or decrease the parking area on campus for the last 3 years (from 2018 to 2020)





Initiatives to decrease private vehicles on campus

The university has a policy of providing zero-emission vehicles and can transport large numbers of people to reduce the use of personal vehicles. In addition, there is also a way to change travel behavior to be the same way together.

Pedestrian path on campus

1. Pedestrian is developed that can walk along the building.
2. Separator between road for vehicle and pedestrian path.
3. Street lamp for pedestrian in night use solar energy by focusing on safety and orderliness.

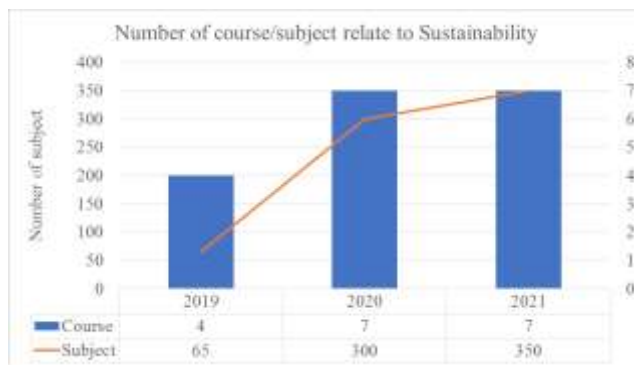




CHAPTER 6 EDUCATION AND RESEARCH

Courses/subjects related to sustainability offered

Total number of course related to Sustainability offered in 2021 of 7 Program from 73 Program and 567 subjects from 3,019 subjects.



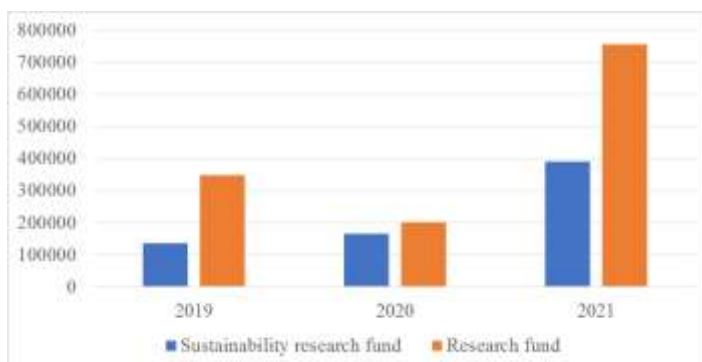
Sustainability research funding

Total research fund in 2019 = 346,416 US Dollars

Total research fund in 2020 = 200,708 US Dollars

Total research fund in 2021 = 754,290 US Dollars

The averaged annum last 3 years of research fund = 433,805 US Dollars



Events Related to Sustainability

Events related to environment and sustainability organized by student organization Valaya Alongkorn Rajabhat University Under the Royal Patronage. The university has organized a total of 67 activities related to the environment and sustainability, which can be categorized into 4 types of projects / activities as follows:

1) Projects to tackle poverty and improve the quality of life of the people according to the strategy for local development in Pathum Thani Pra Nakorn Sri Ayutthaya and Sra Kaew provinces, totaling 52 areas (100 Activities). The promotion of income generation for the public is cooking, raising animals, growing crops, handicrafts. Including a project to solve environmental problems such as wastewater and waste

2) Training to provide knowledge on environmental conservation, especially on solid waste management, both within the university and outside communities, totaling 15 activities.

3) Arrangement of projects / activities for caring for the environment within the university to have environmental quality within the standard, totaling 20 activities