



Project Report

11/2023 - 6/2024

RAISING AWARENESS FOR STUDENTS IN HANOI ABOUT SOLID WASTE,
PLASTIC WASTE SEPARATION AT SOURCE

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TERMS AND DEFINITIONS

1. Zero waste: The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health (Source: Zero waste International Alliance - <https://zwia.org/zero-waste-definition/>).

2. MRF model in a university: A “Material Recovery Facility” (physical structure, equipment, and operation) adapted to each university’s capacity, to convert organic solid waste to compost, and collect recyclable materials from other solid waste.

3. Compost: The natural process of recycling organic matter, such as leaves, stems and food scraps, into a valuable fertilizer that can enrich soil and plants.

4. Single-Use Plastic (SUP) Products: Products (other than non-replaceable attachments) including trays, food containers, bowls, chopsticks, glasses, cups, knives, spoons, forks, straws and other cutlery with plastic, components which are designed and marketed with the intention to be used once before being discharged into the environment.

(Source: Government of Vietnam (2022) Elaboration of Several Articles of the Law on Environmental Protection. Decree No. 8/2022/ND-CP, January 10, 2022 (English Translation: MONRE/WINROCK International/ USAID,).

5. Waste separation: Waste separation is the process of dividing waste into different categories based on characteristics such as composition, properties, origin, and level of hazard

(Source: Article 69, Government of Vietnam Law on Environmental Protection 2020, Articles 2, 79. Promulgated under Law No. 72/2020/QH14, November 17, 2020 of the National Assembly. (English Translation: MONRE/WINROCK International/ USAID).

I. BACKGROUND

The use and disposal of plastics is an international issue, now described as a “Planetary Issue” that has economic, social, environmental and public health impacts. Increasing research, community action and media attention in Viet Nam are being focused on overcoming the associated challenges and involving the society in responsible behaviour.



Figure 1: Students practice waste separation at Phenikaa University canteen within the project frame work

Viet Nam has taken strong institutional actions to reduce plastic waste pollution in managing solid wastes (SW) in general and plastic waste in particular.

Several environmental protection policies and action plans have been developed at national, provincial, city, town and commune levels by government agencies in collaboration with stakeholders e.g. the business sectors, and local communities. The key guiding legislation is the revised ‘Law on Environmental Protection (2020)’ that requires by the end of 2024, for “agencies, organizations, residential communities, households, and individuals within the territory of the Socialist Republic of Vietnam, including the mainland, islands, territorial waters, underground space, and airspace”, to separate domestic waste (DW) in 3 types as Food waste (Organic waste), Recyclable waste and Others¹.

Research studies have shown that waste pollution has greater impacts on children and youth, whose associated health costs may become significant. On the positive side, youth are becoming increasingly concerned about environmental and health issues, and want to become involved in solutions to these developments.



Figure 2: Handmade waste bins are used by students to practice waste separation at Phenikaa University canteen within the project frame work

GreenHub, with a vision to build a youth-friendly future, has initiated the “Zero Waste Schools and More Programme (ZHub)” since 2021, focusing on long-term solutions, and enhancing students’ value to regenerate and preserve nature habitats. The GreenHub Programme focuses on shaping Zero waste school/university models – a concept implemented by schools/universities with practical activities of students, teachers, and staff, seeking to raise awareness and minimize waste impacts on the environment and human health.

1. Law on Environmental Protection 2020, Articles 2, 79. Promulgated under Law No. 72/2020/QH14, November 17, 2020 of the National Assembly. (English Translation: MONRE/WINROCK International/ USAID).



Figure 3: In the training organized by GreenHub and Phenikaa University, student groups separate types of given waste in 3 categories: Food waste, Recyclable waste, and Others

SOME ACHIEVEMENTS

in the ZHub programme² (2021 – now) include:

- 28,420 students and 1480 teachers directly participated in the ZHub network
- 9 experts collaborated in designing lectures, training, and project planning on Zero waste concepts
- 11 partner organizations (farms, research institutes, universities) technically supported ZHub activities
- 13 ‘Training of Trainers’ sessions on Zero waste and composting techniques for 167 teachers and 2,650 students
- 5 events organized with more than 17,570 participants in person and online
- 02 model of waste separation is initiated at the Experimental School of Education & Science, and Trung Yen Primary School
- 2 MRF models at 2 schools in Hanoi were installed at the Experimental School of Education Science and Trung Yen Primary School, with a total production capacity of approximately 350kg of organic fertilizer
- 1900 wet tissues are reduced every day at Trung Yen Primary School 137,354 persons reached through ZHub's media channels by 2023

In 2023, an opportunity was presented for GreenHub and the ZHub Programme to deepen ZHub impact when Dow Chemical Vietnam Limited Liability Company (Dow Vietnam) cooperated with GreenHub in the project “**Raising awareness for students in Hanoi about solid waste, plastic waste and waste separation at source**”.

2. Read more about ZHub Programme here: <https://drive.google.com/file/d/1wTqKsSZcuCaossakvCTauZZJRFxKnfiD/view?usp=sharing> (Vietnamese ver.)
<https://drive.google.com/file/d/1V0yla1vAPOLuNAOejUemPMCFIG0djlV8/view?usp=sharing> (English ver.)

The project aimed to exploit the networking strength of Zero waste school in ZHub programme to raise awareness of students at school, comprehensively leverage students understanding and skills related to waste separation at source as a key starting-point for students to become directly aware of present consumption and disposal practices, and at the same time identify potential items for recovery.

Phenikaa University is a University with strengths in technology, encouraging students to apply science and technology to solve social problems. It is also a partner of the ZHub Programme since 2023.

Phenikaa University integrates experiential education through co-curricular activities and encourages all student clubs to organise/participate in events, competitions and other activities, not only studying but also contributing to society.



Figure 4: The "Green Startup" contest organized in April 2024, has received a lot of applications from students interested in environmental issues

Piloting the project **“Raising awareness for students in Hanoi about solid waste, plastic waste and waste separation at source”** models between Phenikaa and GreenHub helped to train students comprehensively, both in professional knowledge and social skills, promoting research and developing contemporary solutions for environmental issues, thereby contributing to the Vietnam Sustainable Development Goals.



Figure 5: Students listen attentively to a training expert on Waste Separation at Phenikaa University canteen

II. THE PROJECT “RAISING AWARENESS FOR STUDENTS IN HANOI ABOUT SOLID WASTE, PLASTIC WASTE AND WASTE SEPARATION AT SOURCE” – SOLUTION AT SOURCE

1. Training on plastic waste and waste separation skills - prepare students for changes

To fully and accurately implement the government's solid waste separation requirements by the end of 2024, students need to be equipped with knowledge about waste and develop waste separation skills.

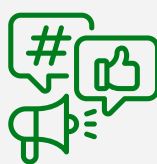
To determine the level of knowledge of Phenikaa University students about waste, GreenHub conducted a survey on April 15, 2023 with 200 students from 4 clubs:



One Health Club



Student Volunteer Club

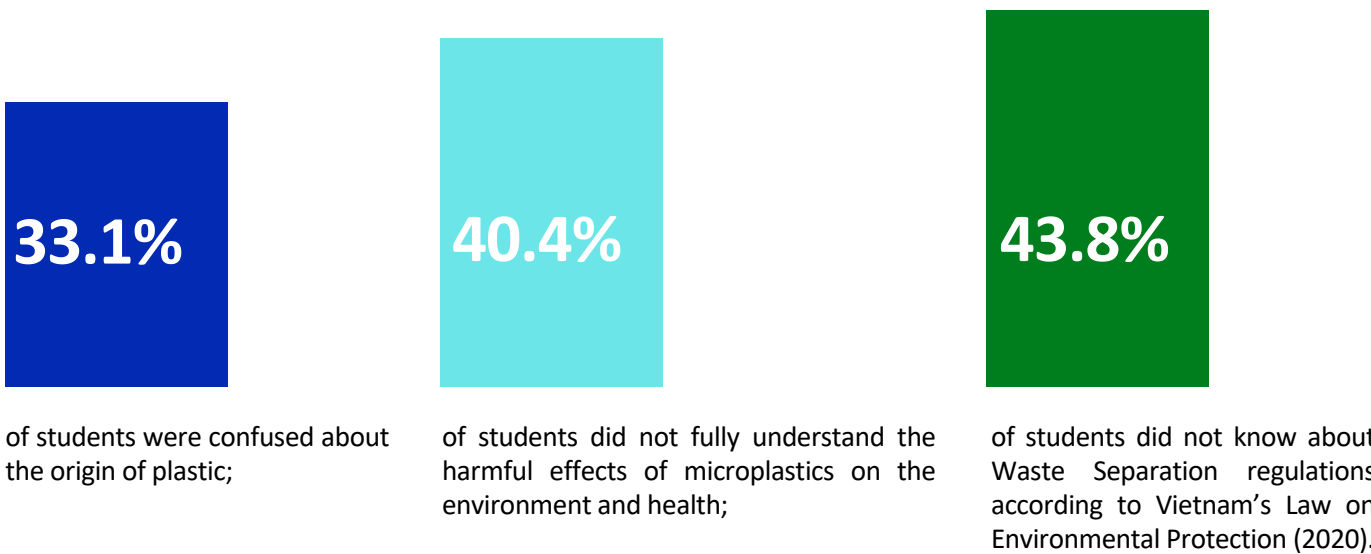


Phenikaa Media Club



Nature Club

The questionnaire contained 10 questions related to waste, especially plastic waste, and its harmful effects on human health. According to the survey results, up to 43.8% (~ 87 students) participating in the survey lacked basis knowledge about waste. These include:



Based on this survey , on April 23, 2024, GreenHub and the University organized a training session on waste and plastic waste separation skills for more than 50 core students from these 4 clubs at Phenikaa University.

The targeted key members from each club were provided basic and vital knowledge about waste, waste separation and training skills, so they can educate the other students in their clubs and families about waste and tutor them to separate waste according to the government regulations.

University student clubs play a crucial position in influencing the perception of university students by providing enhanced communication, mentorship programmes, networking and improved problem-solving. Therefore, the 50 students selected for training will be key members from the Phenikaa University’s clubs, to be student influencers.



Figure 6: Students in one of four groups present their research about plastic waste and waste separation in the training

The training stimulated practical and experiential education methods. Students were divided into four groups and assigned homework to research information about waste separation and plastic waste topics in advance, with GreenHub guidance, and then to present to the other students in the training. This motivates students to actively interact with knowledge and improve teamwork, critical thinking, and information communication skills. The groups discussed the information and contributed ideas to propose waste treatment on Campus.

“ Mai Van Phong - Head of the One Health Club at Phenikaa University shared:
With the plastic waste pollution crisis in Vietnam and the frequency of using plastic cups when buying soft drinks at university, I think we (students) should start reducing plastic waste at university by refusing straws and bringing personal containers when buying drinks, that contained in single-use plastic cup. ”

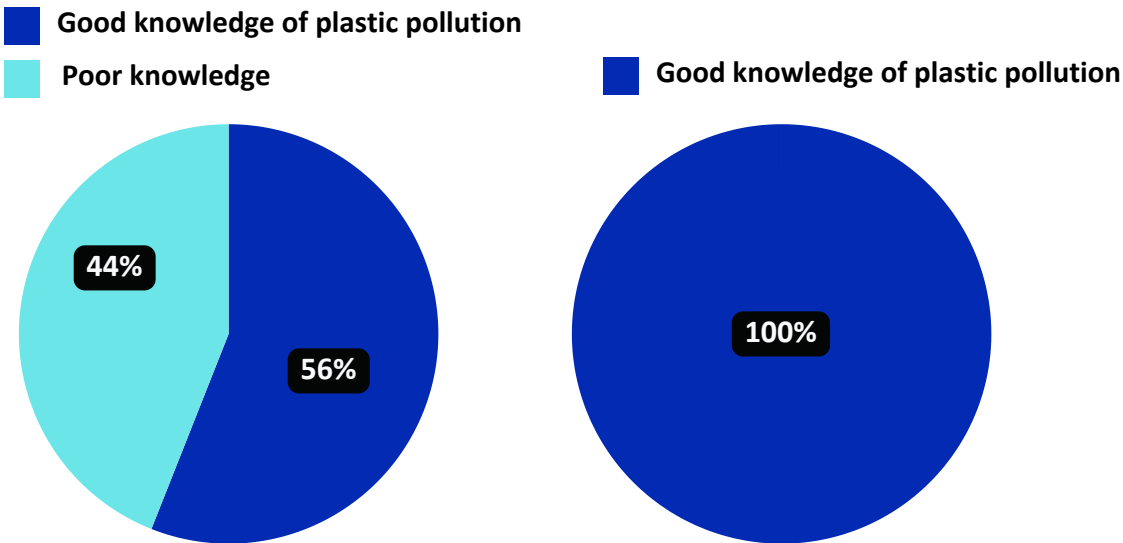


Figure 7: The four groups discussed the diverse information and contributed ideas to propose waste treatment on campus

Supporting his idea, other participants proposed to carry out pilot waste separation model in the dormitory area or university canteen, because these two areas generate an unceasingly amount of domestic waste.




After the training course, a survey was conducted for the same students as before the training. This time, 100% of participating students gain sufficient understanding about solid waste and plastic waste.

In addition, students identified a number of potential recycling and treatment technologies globally that Viet Nam can apply in the future. This demonstrated their seriousness and attention to detail in studying and preparing for the training session.



Survey results about studens’ knowledge on waste before (left) and after (right) the training

Training skills³ for the same students were also focused on in the training session. Each participating student will therefore become a trainer for his or her club members and other students at Phenikaa University. The set of skills students practiced in the training were:

-  Scanning and composing skills (searching and evaluating information before the training)
-  Presentation skill (presenting their research)
-  Communication skills (discussing and influencing participants)

Using the acquired skills, Phenikaa University students organized a training session on the same topic for more than 40 students in the Environment Club at Thach That High in Ha Noi capital.

This led to annual cooperation, Thach That High School’s Environmental Club will cooperate with Phenikaa University in Phenikaa’s waste audit activities, as a result, Thach That High School’s students will understand the characteristics of domestic solid waste, methods of separating and collecting waste after disposal, and reasons for the actions.

3. Training skills are identified as the ability to successfully increase someone's knowledge or develop to a desired level a particular skill for doing a particular job, by giving instructions, information, or by practice.

Thach That High School's Environmental Club members were elected to participate in the training by Phenikaa University students. This training helped students at Thach That High School gain a more profound understanding of the harmful impact of waste on health and the environment, and the benefits of the waste separation government regulations.



Figure 8: A Phenikaa University student educates Thach That High School's students on waste issues

Furthermore, this second level of training helps Phenikaa students practice their soft skills as trainers, increasing their ability as influencers and improve personal opportunities for jobs after graduation.



Figure 9: A Phenikaa University student educates Thach That High School's students on waste issues



Figure 10: The Vice Principal of Thach That High School responded positively to the valuable information Phenikaa University students presented at the training

After two training sessions, the Environmental Club at Thach That High School and the Club's members at Phenikaa University developed an Action Plan to reduce the amount of waste generated on both campuses.

2. Visual Teaching Aid Toolkit – an advanced education material method

Education for Sustainable Development (ESD) is a lifelong learning process that empowers learners of all ages to acquire the knowledge, skills, and attitudes needed to realize understand, explain, and solve global challenges such as climate change, biodiversity loss, and waste of natural resources.

Knowledge about waste separation and Zero waste (5R) rules (Refuse, Reduce, Reuse, Recycle, Rot)⁴ is documented in diverse forms such as videos, manuals, sets of waste separation cards, by GreenHub and handed over to Phenikaa University after the project.



The first teaching material in the tool kit was developed is a **waste separation guideline video**. It demonstrates how to practice waste reduction actions such as refusing/reducing unnecessary items, effectively reusing/recycling waste into useful products, and instructions on separate waste according to provisions of the revised Vietnamese Law on Environmental Protection (2020). It was used in monthly activity meetings of all clubs at Phenikaa University.



Figure 11: Monthly activity meetings organised by Phenikaa students' clubs using visual teaching aid Tool Kit

4. Balwan, W.K., Singh, A. and Kour, S., 2022. 5R's of zero waste management to save our green planet: A narrative review. *European Journal of Biotechnology and Bioscience*, 10(1), pp.7-11

The second teaching material in the Tool Kit is the handbook **“Guidance on waste separation and sustainable management in a university”**.⁵ It was developed by GreenHub staff and education experts and lecturers at the university. The handbook summarizes waste knowledge, waste separation regulations according to the revised Vietnamese Law on Environmental Protection (2020), and sample exercises for lecturers to apply in teaching.

Education experts and lecturers played a particularly important role in integrating environmental knowledge into lectures, because university students require appropriate teaching methods to their level of understanding and psychological development.



Figure 12: An Instructor from Phenikaa University uses the handbook as a lecture aid to guide students to separate solid waste at the campus canteen

All of the above materials are suitable for direct use in training, teaching, games, practices, or as reference materials for research. In particular, the handbook **“Guidance on waste separation and sustainable management in a university”** produced positive results after being used in a co-curricula teaching activity of Phenikaa. In fact, an Instructor of Phenikaa University now uses the handbook as part of lecture materials to guide students in her class to separate waste at the university’s campus canteen.



Figure 13: Students actively chat with experts in the Waste Separation training session at Phenikaa University canteen

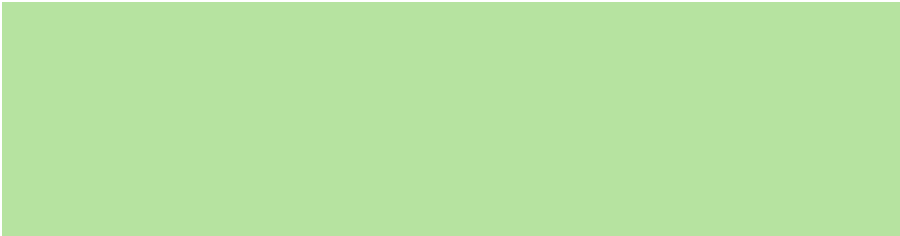
The third teaching material in the tool kit produced with the handbook is a **“Waste Separation Card Set”**, including images and names of types of domestic waste. In one of the exercises in the handbook, the students are required to distinguish these types of “waste” into the correct categories (Food waste, Recyclable waste, and Others). The set of waste separation cards acts as a substitute for real disposed waste, and helps to limit the process of preparing actual waste for lectures, while still ensuring experimentation.



Figure 14: GreenHub staff presented ZHub notebooks to students participating in Waste Separation training at Phenikaa University canteen



Figure 15: “Waste Separation Card Set”, including images and names of types of domestic waste



The **‘Visual teaching aid Tool Kit’** developed by GreenHub is an innovative teaching method and suitable for diverse activities.

5. The waste separation model for the campus canteen is a pilot model set up by GreenHub in this project. See more details about the model in Section 4 of the report.

3. The contest “Green Start Up 2024” - empower student involvement in resolving waste management issues

The "Green Start Up 2024" contest was jointly organized by GreenHub and the Youth Union of Phenikaa University in April 2024. The main goal of the competition was to find creative and sustainable business ideas, contributing to solving challenges related to waste, plastic waste and waste separation at source.

The contest aimed to raise awareness for Phenikaa students about the importance of sustainable business, associated with environmental protection. Through the creative ideas presented, students showed that they applied the knowledge about "Zero waste" (5R) to development of sustainable businesses.



Figure 16: A participant in “Green Start Up 2024” contest presents her business idea to the Judges



Figure 17: Contest participants present benefits of a recycled-products business



Figure 18: Contest participants excited to share their start-up idea with Judges and other students

After 5 days of receiving applications, the contest attracted nearly 300 innovative ideas. Some outstanding ideas included:

- Designing a website that connects environmentally friendly products and businesses, promoting the consumption of these products instead of non-environmentally friendly products;
- Initiating a business of recycled products from used fabric, panels, and posters;
- Invention of antipyretic cereal using natural ingredients;
- Natural hair treatment products for pets.

The number of potential ideas is a demonstration of University students' interest in sustainable development. The contest theme was specifically designed to suit the age of college students, especially the need for career orientation after graduation.



Figure 19: A Judge comments on contestants' business ideas

4. Waste separation model in the campus canteen - from knowledge to practice

Practice is necessary for students to develop and maintain habits. GreenHub coordinated with the Board of Directors of Phenikaa University to pilot a waste separation model in the university’s canteen area as this site constantly attracts many students and with convenient access to solid waste for improved management.

The canteen is the first pilot area due to the frequency of single-use plastic waste generated from dining activities. Waste separation in this area will have a strong and lasting impact on students, helping to minimize the negative impact of waste on the environment in general and Phenikaa University campus in particular.



Figure 20: Canteen area of Phenikaa University



Figure 21: The instruction board at the waste separation model in the campus canteen area

The pilot model includes waste bins for separation and an instruction board. The separation model divides waste at the canteen into 3 types according the revised Vietnamese Law on Environmental Protection (2020):



Food Waste



Recyclable waste



Others

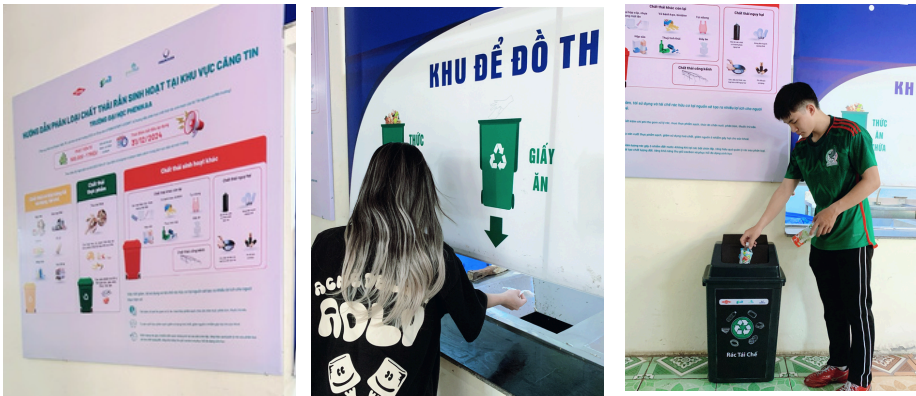


Figure 22: Students separating waste at the waste separation area provided by GreenHub at Phenikaa University Canteen

Currently, as a result of the project recyclable waste from the canteen is thoroughly sorted by students and Phenikaa’s staff, increasing waste recycling efficiency in the recovery of natural resources, reducing transport costs for waste, and increasing income for the University.

III. CHALLENGES IN PROJECT IMPLEMENTATION

1. Scheduling Issues

At first, The project **“Raising awareness for students in Hanoi about solid waste, plastic waste and waste separation at source”** was approved to be implemented from November 2023 to the end of February 2024.

However, Phenikaa University was committed to extensive research, project, and co-curricular activities for students. Thus, it was difficult for Phenikaa University and GreenHub to schedule project activities as originally planned.

In addition, the project implementation period took place when the National Tet Holiday of Vietnam approached (from January to the end of February 2024). Therefore, Phenikaa University was busy with yearly events and administrative formalities.

2. Changing Community Behavior

Another difficulty in the process of establishing Zero waste practice habits of students is the society-wide habit of not separating waste. Not separating waste has been formed in the minds of students from an early age.

The single-use plastic items such as straws, plastic spoons and forks, etc., are cheap, easy to buy and common. It was challenging to implement a short-period project with the goal to change habits community.

3. Implementation Solutions

Solution for the time limits

Due to time the shortage, GreenHub’s proposal for a project time extension until June 2024, was approved by DOW Chemical Vietnam. After the Tet Holiday, GreenHub and Phenikaa University organised a meeting to develop and engage a plan to perform project activities and achieve results. With consensus, GreenHub and Phenikaa's university human resources prioritised a co-implemented project.

Solution for changing student’s behaviour

To change long-established habits, GreenHub focused on one problem at a time.

Comprehensively, the 2 trainings for students, pilot waste separation model, and visual teaching aid tool kit were designed to raise students’ awareness on the waste separation based on the 2020 Law on Environmental Protection.

Project activities and models were established sequentially to complement each other. For example, after the training session on the topic of plastic waste issues, waste separation, visual teaching materials and waste separation models on Campus’ canteen were designed and built for students to practice.

In addition, practicing waste separation also helps students realize the huge amount of plastic waste generated from students' daily activities on campus. Since, then they minimized single-use plastics with several simple measures such as: replacing plastic bags with reusable cloth bags, bringing personal bottles to limit the use of single-use plastic cups, refusing plastic straws, and minimizing disposable cutlery.

At the end of the project, students understood the negative impact of plastic waste on health and environment, the numerous amount of plastic waste generated daily by college students, and chose to change their behaviour.

IV. CONCLUSION AND FURTHER PROJECT DEVELOPMENT

1. Conclusion

In the short time of the project period, with the sponsorship of Dow Chemical Vietnam Co., Ltd., the knowledge about solid waste and waste separation skills of Phenikaa University students has been significantly improved, contributing to efficiency of waste management on campus, helping to protect the university environment and surrounding community.

Importantly, from an education perspective all teaching materials, visual aids and waste separation models have been handed over to the university to operate and maintain, with support and periodic evaluation by GreenHub to ensure effectiveness and sustainability of the university's model.

2. Further project development

Activities within the framework of the project “Raising awareness for students in Hanoi about solid waste, plastic waste and waste separation at source” will be the baseline for the Phenikaa University to develop collaborative activities in the future, including but not limited to:

- Raising awareness of students and staff about solid waste management problems, downsides of plastic waste and waste separation at source;
- Initiate/pilot the waste separation model at school;
- Reducing the amount of school waste to landfill by incentivising appropriate treatment methods to separate waste.

The core group of students participated in the training organised in the project will play the key factor to promote the Zero waste practice at Phenikaa. As Phenikaa University joined the ZHub network, it has the opportunity to share experiences in practicing Zero waste and learn, improve, sustain the Zero waste school model, reinforce the waste management of the University and reduce its waste to landfill.



Figure 23: The core group of lecturers and students participated in the project will perform trainings to other students on Campus about environmental and waste separation skills

VI. PROJECT MEDIA

1. The “Green Start Up 2024” factsheet



Link: https://drive.google.com/file/d/1fWwnhc2x2d7_qVBQo3qXHfMiKsr7WEll/view

2. Visual teaching aid Tool Kit

Waste separation guideline video



Link: https://drive.google.com/file/d/1VEfySWhEuh_OJV9y4AkNctOdUGIU1gJc/view

The handbook “Guidance on waste separation and sustainable management in a University”



Waste Separation Card Set



Link: <https://drive.google.com/file/d/1TXBfyvqX-ODg5sgUt-gXmLBpdLcmDNfJ/view>

3. Video of project results



Link: https://drive.google.com/file/d/1D7qSTmex9Eo3wKMrwR7FmjfQPFpDfwkA/view?usp=drive_link