

MARCH 2021



A GUIDELINE FOR KRABI SCHOOLS

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POPULATION AND COMMUNITY DEVELOPMENT ASSOCIATION



The Population and Community Development Association (PDA), which was founded by Mr. Mechai Viravaidya in 1974, is a non-governmental organization in Thailand. Their mission statement is “to advocate for and improve the quality of life development in coordination with the government and transfer knowledge and experience to the people for sustainable development(1)”.

PDA HAS THE FIRM DETERMINATION TO BE A TOP NON-GOVERNMENTAL ORGANIZATION FOR QUALITY OF LIFE, DEVELOPMENT IN COORDINATION WITH GOVERNMENT AND PRIVATE SECTOR, AND TRANSFER KNOWLEDGE AND EXPERIENCE TO THE PEOPLE FOR SUSTAINABLE DEVELOPMENT. (2)

INTRODUCTION

REDUCE, REUSE, RECYCLE



**WORLDWIDE,
8,000,000+ TONS OF
PLASTIC END UP IN
OCEANS EACH YEAR (3)**



**THAILAND IS THE SIXTH
HIGHEST CONTRIBUTOR
TO OCEAN POLLUTION
WORLDWIDE (3)**



**3,440 TONS OF
PLASTIC WASTE IS
GENERATED A DAY
IN THAILAND (3)**

WHAT IS PLASTIC POLLUTION?

Plastic pollution is the accumulation of plastic objects and particles in the Earth's environment that adversely affects wildlife, wildlife habitats, and humans (3).

WHY FOCUS ON PLASTIC POLLUTION?

Worldwide, approximately 8 million tons of plastic end up in the oceans each year, and this number only continues to increase as plastic consumption increases. Plastic also makes up approximately 80% of all waste found in our oceans (4). In Thailand specifically, a study in 2016 found that an estimated 2.83 million tons of waste were disposed of improperly in coastal provinces alone, 12% of which was estimated to be plastic (5)



Scoopwhoop. (2016). 8 Million Tonnes of Plastics Leak into the Ocean Every Year. Oceansplasticleanup. http://www.oceansplasticleanup.com/8_Million_12_Tons_Plastic_Marine_Pollution_Per_Year.htm

THE NEGATIVE EFFECTS OF PLASTIC POLLUTION

Thailand's oceans contain a vast amount of sea life, and many people come from around the world to experience Thailand's unique underwater attractions. However, marine life is negatively affected by plastic indigestion and entanglement in drift nets, fishing lines, and packaging debris(6). Through consumption, the plastic may cause fish and other marine life to be poisoned by toxins and cause them to starve as their stomachs fill with plastic debris, suffocate, suffer lacerations that can get infected, be immobilized and unable to swim or cause internal injuries, resulting in death (4).

Plastic accumulation on the ocean floor results in inhibited gas exchange among coral, resulting in hypoxia, or oxygen deficiency, and coral bleaching (7). The Thailand Department of Marine and Coastal Resources (DMCR) is responsible for protecting marine life including coral and does so in regions of Krabi Province, such as Hong Islands, Phi Phi Islands, and Pu Islands. During April and June 2016 it

was discovered that 30% to 70% of the coral in these reefs had been bleached as a result of pollutants that caused a change in sea temperature and salinity. An estimated 60 square miles, or 150 square kilometers of southern Thailand's coral reefs are suffering from coral bleaching, about half of all of southern Thailand's coral reefs (7).

Plastic pollution has been shown to negatively impact human health. Plastic objects, including plastic bottles or plastic bags, break down into pieces over the course of years as the plastic collides with rocks and other debris (8). Plastic pieces of less than 5 mm, are called microplastics (8). Fish consume microplastics and toxins, specifically Persistent Organic Pollutants (POPs), which are resistant to environmental degradation and released into their bodies (4).

WHAT IS PLASTIC?

Plastic is a synthetic organic polymer that can take up to 500 years to decompose (9). This means that any plastic disposed of improperly; in waterways, empty streets, open fields, etc., can remain there for centuries to come. As plastics are lightweight, durable, and cheap to manufacture, they have become a convenient option for producers and consumers alike. The overall versatility of plastics has led to a large increase in usage and has led to difficult disposal as most plastics are not biodegradable.





BURNING PLASTIC HARMFUL EFFECTS

The burning of plastic waste in power plants increases the risk of cancer and heart disease, aggravates respiratory ailments such as asthma and emphysema and causes rashes, nausea, or headaches, and damages the nervous system. Burning plastic also releases black carbon (soot), which contributes to climate change and air pollution.

IMPORTANCE OF RAISING AWARENESS AND EDUCATION

Proper waste management includes the activities and actions required to manage waste from its inception, in this case, your school, to its final disposal whether being a recycling or power plant. Schools contribute to the production of waste in the Krabi community. By educating students and implementing proper waste management practices, the local community will

There are many benefits that accompany reducing the overall production of plastic waste in your school. Recycling provides both an educational opportunity for students and their families along with preventing plastic waste from polluting the local environment.

ASSOCIATED POLLUTION OF BURNING PLASTIC

Polymer	Pollutants Released	Health Hazard(s)
Polyethylene	Carbon Monoxide	- Removal of oxygen from body
Polyvinyl chloride	Vinyl chloride Hydrochloric Acid Phosgene Dioxins Furans	- Harmful to the liver - Carcinogen - Irritates the skin - Irritates the respiratory system
Polystyrene	Styrene Benzene	- Harmful to the liver - Harmful to nervous system - Carcinogen
Fluoropolymer	Carbonyl fluoride Perfluoro-isobutylene Hydrogen fluoride	- Irritates the skin - Irritates the respiratory system
Fluoropolymer	Aldehyde Ammonia Cyanide Isocyanate Nitrogen dioxide	- Harmful to the heart - Harmful to the brain - Irritates the skin - Irritates the respiratory system
Phenolic	Formaldehyde Aldehyde Ammonia Cyanide Nitrogen dioxide	- Harmful to the heart - Harmful to the brain - Harmful to the respiratory system

USEFUL DEFINITIONS

TERM	DEFINITION
COMPOSTING	THE AEROBIC DECOMPOSITION OF ORGANIC MATERIALS BY MICROORGANISMS.
OCEAN POLLUTION	THE INTRODUCTION OF SUBSTANCES INTO THE MARINE ENVIRONMENT RESULTING IN HARMFUL EFFECTS TO THE ECOSYSTEM
PLASTIC POLLUTION	THE INTRODUCTION & ACCUMULATION OF SYNTHETIC PLASTIC PRODUCTS IN THE ENVIRONMENT
WASTE MANAGEMENT	THE MANAGEMENT AND DISPOSAL OF WASTE
WASTE BANKS	INTERMEDIARY COLLECTOR OF WASTE THAT CONNECTS THE COMMUNITY AND WASTE MANAGEMENT ENTITIES
ZERO WASTE	THE CONSERVATION OF RESOURCES BY MEANS OF RESPONSIBLE CONSUMPTION & REUSING WITHOUT THREATENING THE ENVIRONMENT

HOW TO USE THIS GUIDE



This guide provides recommendations that your school can implement in order to raise awareness for plastic pollution and teach proper waste management methods to students. The guide has been designed so that each level builds off of the one before.

- At the start of each level read the checklist provided to assess what components your school needs to implement.
- If your school cannot check off a component, refer to the designated section or appendix for instruction and resources on how to complete it.



LEVEL 1

Raising Awareness for
the Plastic Pollution
Crisis in Krabi, Thailand

LEVEL 1

RAISING AWARENESS FOR THE PLASTIC POLLUTION CRISIS IN KRABI, THAILAND



The preliminary step in beginning the process of reducing plastic waste in schools is to educate students about the adverse environmental effects of plastic pollution and raise awareness about recycling. Without proper education, students will not know the reasoning for separating the waste in their schools. The purpose of this level is to educate students about the importance of separating waste and recycling plastic by informing them of the effects of pollution and the small changes they can make to prevent pollution.

Checklist:

- Does your school have an education program in place that covers; the state of plastic pollution in Krabi, the effects of plastic pollution on the environment, and/or how to separate waste?
 - If no, reference **Section 1.1**.
- Do you have posters, infographics, or flyers displayed around your school relating to plastic pollution and the importance of recycling?
 - If no, reference **Section 1.2**.
- Are flyers or informational material sent home to families of students about recycling projects that students are participating in school?
 - If no, reference **Section 1.3**.

Section 1.1 Implement an Education Program

An educational program in your school can bring awareness to the plastic pollution problem in Krabi, and allow students to understand that the small changes they make have a big impact in reducing plastic pollution in their communities. These educational programs could be in a variety of forms that best fit your school's schedule. Some options to spread information include but are not limited to:

- Introducing waste management or plastic pollution curriculum to students
- Introducing an environmental morning announcement segment
- Hosting a school-wide environmental awareness assembly
- Introducing an after school environmental club

In this program, students can learn about plastic pollution and its negative environmental effects, with the goal of ensuring that students do not litter and participate in proper waste management practices. Some key details that should be explained to students include:

- How leaving waste on the ground can contribute to ocean pollution
- How putting waste into bins reduce potential pollution
- The effects of plastic pollution

For additional resources and examples of educational programs refer to **Appendix A**.

Section 1.2 Display Posters Around Your School

Hanging posters up around your school, especially near waste bins and in outside spaces will remind students to not litter. Information found on these posters can summarize key details in the educational program that your school decides to participate in. See **Appendix B** for poster ideas. Students could also get involved by making their own posters to be put up in the schools as well.

Section 1.3: Inform Families

To ensure that families learn proper waste separation strategies and the importance of reducing plastic pollution in Krabi, your school can send home flyers and pamphlets about what students are doing to manage their waste. This could encourage families to participate in proper waste management methods.



LEVEL 2

Separating Waste

LEVEL 2

SEPARATING WASTE



An important step in the process of reducing plastic pollution is to educate students on how to separate their waste. Separating the waste produced by your school ensures that materials such as plastic, or compost, are being disposed of in an environmentally friendly manner. It is important that your school has a waste collection system in place where separated materials are collected by the municipality and brought to their assigned disposal locations (i.e. recyclable waste is brought to a recycling plant). If all of your school's plastic waste is collected and brought to a power plant, then this will defeat the purpose of separating waste as they are all being burned for energy and producing harmful emissions.

Checklist:

- Do your students and faculty separate their waste into different bins?
Do you educate students on how to separate their waste?
 - If no to either question, reference **Section 2.1**.
- Do you have posters or infographics displayed throughout your school about separating waste, the kinds of waste, and the benefits of separating waste?
 - If no, reference **Appendix C** and display them for students to see
- Is the plastic waste from your school being brought to the appropriate facilities to be processed (i.e. recycling facilities and power plants)?
 - If no, refer to **Section 2.2**.

Section 2.1: Educate Students to Separate Waste into Different Colored Bins

Separating waste into specified bins can ensure that different materials are disposed of properly. Now that Level One is complete and students are working to get waste into bins, it is important that the sorted waste is being disposed of at proper facilities. The following steps need to be taken in order to complete this:

1. Obtain three waste bins designated for plastics, compost, and general waste, or more depending on how many waste locations are in the school.
2. Hang informational posters above waste bins as a reminder for students on what materials go into what bin. See **Appendix C** for a potential poster. Notify and inform students on how to use the three-bin waste management system. This can be done similarly to examples given in **Section 1.1**.

Section 2.2: Ensure Recycled Waste is Collected and Transported to Appropriate Facilities

Now that your school is separating the waste into designated waste bins, it is important that the sorted waste is being collected and transported to their appropriate facilities.

1. Plastic:

After schools separated plastic waste, there are ways to raise money for the school by selling the waste. First, sell the recyclable waste to recycling centers listed in Appendix D. If you are unable to transport waste to facilities, there are people, called Saleng, which travel and collect recyclable waste. The profit from selling recyclable waste to Saleng may be less than selling it directly to a recycling facility. If you are unable to sell your waste, the garbage trucks from the Subdistrict Administrative Organizations will collect plastic waste and send it to the waste power plant which can burn any type of waste for generating electricity. See Appendix D for locations of recycling centers in Krabi.

2. Compost:

Your school and students can put compostable waste into the green bin. The garbage trucks from the Subdistrict Administrative Organizations send them to the Krabi Town Municipality landfill. After some time, the compostable waste is sent to the waste power plant for generating electricity.

3. General Waste:

The garbage truck from the Subdistrict Administrative Organizations will collect the bins and send them to the Krabi Town Municipality landfill. After some time, general waste is sent to the waste power plant for generating electricity.



LEVEL 3

Reducing Waste Generated by Students

LEVEL 3

REDUCING WASTE GENERATED BY STUDENTS



Raising awareness about plastic pollution and recycling are two important steps to maintaining proper waste management practices. Reducing the plastic waste generated by your school can also be achieved by using plastic packaging alternatives. These alternatives will discourage using single-use plastics.

Checklist:

- Does your school offer alternatives to single-use plastic packaging or encourage students to bring their lunch in reusable or biodegradable containers?
 - If no, refer to [Section 3.1](#)
- Does your school discourage the use of single-use products?
 - If no, refer to [Section 3.1](#)

Section 3.1: Find Alternatives to Single-Use Plastic Products

Offering alternatives to single-use plastics in schools will reduce the amount of plastic waste produced daily by schools. Such options include banana leaf boxes and paper containers. A similar option is to discourage the use of single-use plastics. School-wide, staff should promote the use of reusable containers, snack bags, utensils, and bottles. See examples of alternatives to single-use plastic items in **Appendix E**.



LEVEL 4

Encouraging Community Involvement

LEVEL 4

ENCOURAGING COMMUNITY INVOLVEMENT



Once your school has been able to successfully establish an educational program, waste separation system, and have implemented strategies to reduce waste generated in your school, you can begin to focus efforts to reduce plastic pollution in the local community. Once the students have gained knowledge on the importance of recycling and proper waste separation methods, they can implement such practices in their homes which will encourage their families to also apply proper waste management practices. Community involvement is key in working towards decreasing the amount of plastic pollution in Krabi.

Checklist:

- Do you have a waste bank in your school?
 - If no, refer to **Section 4.1**
- Do the students in your school participate in local waste cleanups?
 - If no, refer to **Section 4.2**
- Does your school have any collaboration with environmental organizations?
 - If no, refer to **Section 4.3**

Section 4.1: Establish a Waste Bank in Your School

An effective strategy in reducing the likelihood of families not separating their plastic waste to establish a waste bank at the school for students to bring in their family's plastic waste from home to school in return for school supplies or other incentivized items that can benefit the students. For further information on how waste banks can benefit your school and community refer to **Appendix F**.

Section 4.2: Participate in Local Waste Cleanups

Your school can easily establish a day, or even an hour once or twice a year to clean up waste in local areas. This could include on the campus, the street your school is located in, in local parks, or on local beaches. Ensure that local law officers are aware of clean-up projects to ensure traffic is managed, and it is safe for students.

Section 4.3 Collaborate with Environmental Advocacy Organizations

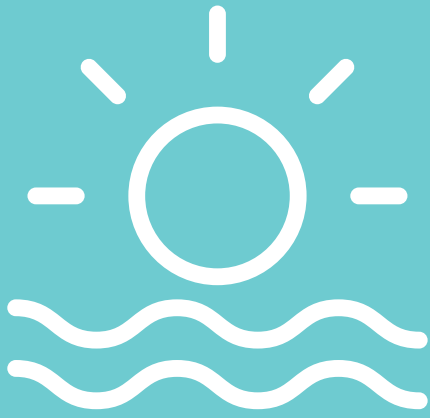
Collaboration with your school and environmental advocacy organizations that are registered with the Department of Marine and Coastal resources, can allow students to gain a greater perspective on the plastic pollution problem in their community through educational talks, assemblies at the school, and field trips. Such field trips could include going to a recycling plant or doing a beach clean-up event with any of the organizations listed in **Appendix G**.



LEVEL 5

Supplemental Sustainable Practices

SUPPLEMENTAL SUSTAINABLE PRACTICES



Once your school has established a program to educate students and raise awareness about plastic pollution and have instated a system to sort the three types of waste, there are additional things that your school can participate in to further reduce plastic use. The following are supplemental sustainable practices that have been found to successfully reduce the amount of plastic generated in schools:

Additional practices include, but are not limited to:

- School Field Trips
 - If you are interested, refer to [Section 5.1](#)
- Create a Sustainable Farm at Your School
 - If you are interested, refer to [Section 5.2](#)
- Methods to Repurpose Plastic
 - If you are interested, refer to [Section 5.3](#)

Section 5.1: School Field Trips

Taking field trips to environmental conservation areas (**Appendix H**), beaches (**Appendix I**), or national parks (**Appendix J**), can be taken to educate students on the effects of pollution and how stopping plastic pollution can preserve nature.

Section 5.2: Create a Sustainable Farm at Your School

Creating a farm at your school could potentially supply your students with organic snacks and lunches that do not require plastic packaging. The farm could include a garden that grows fruits and vegetables as well as raises chickens to give eggs to students. If your school decides to collect waste for composting, the waste can be used for helping in the garden. Refer to **Appendix K** to learn more about Baan Gor Tong's Farm program at their school and how it aids in achieving zero waste generated.

Section 5.3: Methods to Repurpose Plastic

There are various methods to repurpose plastic products to prolong that plastic product's lifetime. Such methods can be found in **Appendix L**.

REFERENCES

1. Devex. (n.d.). Population and Community Development Association (PDA). <https://www.devex.com/organizations/population-and-community-development-association-pda-48337>
2. Vision/Mission. (2020, May 03). Retrieved March 15, 2021, from <https://pda.or.th/en/pda-vision/>
3. Moore, Charles. (2020). *Plastic pollution* <https://www.britannica.com/science/plastic-pollution>.
4. Marine Plastics. (2018, December 05). Retrieved February 03, 2021, from <https://www.iucn.org/resources/issues-briefs/marine-plastics#:~:text=At%20least%208%20million%20tons,causes%20severe%20injuries%20and%20deaths>.
5. The Ocean Conference | Thailand makes an effort to protect marine environment from marine debris and land-based pollution. (2020). Retrieved February 03, 2021, from <https://oceanconference.un.org/commitments/?id=18208>
6. Derraik. (2002). The pollution of the marine environment by plastic debris: a review. *Marine*
7. Skulpichetrat, J. (2011, January 21). Thailand closes dive sites to HALT damage to reefs. Retrieved February 24, 2021, from Thailand " Phuket. <https://www.reuters.com/article/us-thailand-reefs/thailand-closes-dive-sites-to-halt-damage-to-reefs-idUSTRE70J1R120110121>
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9. The Lifecycle of Plastics. (2018, June 19). Retrieved February 03, 2021, from <https://www.wwf.org.au/news/blogs/the-lifecycle-of-plastics#gs.s0f6lg>.

APPENDICES

APPENDIX A

Links to curriculums:

- “Teach English, Teach About the Environment: A Resource for Teachers of Adult English for Speakers of Other Languages” provides beginning, intermediate and advanced level lesson plans.
 - <https://www.epa.gov/sites/production/files/2015-09/documents/tesol.pdf>
- “Reuse + Recycling = Waste Reduction: A Guide for Schools and Groups” provides information on waste reduction programs and steps to start a waste reduction program.
 - <https://www.nwf.org/~media/PDFs/Eco-schools/school.ashx>
- “Tools to Reduce, Reuse, Recycle & Buy Recycled Waste in Schools” provides information on how your school can generate zero waste.
 - <https://nepis.epa.gov/Exe/ZyPDF.cgi/600009UZ.PDF?Dockey=600009UZ.PDF>
- “Plastic Pollution Curriculum and Activity Guide” provides education programs for different age ranges.
 - <https://seagrant.psu.edu/sites/default/files/Lessons%20for%20NIE%202%20and%203%205GyresALLACTIVITIESPlasticPollutionCurriculum.pdf>

An example infographic to use in the curriculum:



APPENDIX B

Potential posters that can be used to spread awareness within the school:



Links to Posters:

<https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:3063011c-0d3e-4295-8876-99d598fd343b>

APPENDIX C

Potential posters that can be used to spread awareness within the school:

Why Sorting Waste is Very Important?

Sorting is part of the waste recycling process. Recycling depends on sorting. By sorting household waste, this guarantees the transformation of waste into a new product. An ecological gesture to preserve the planet. Sorting makes it practical to reduce the exploitation of natural resources.



GREEN BIN

GREEN – for wet waste, which comes from the kitchen/cooking/food.



BLUE BIN

BLUE-General waste, uncontaminated waste and cannot be recycled



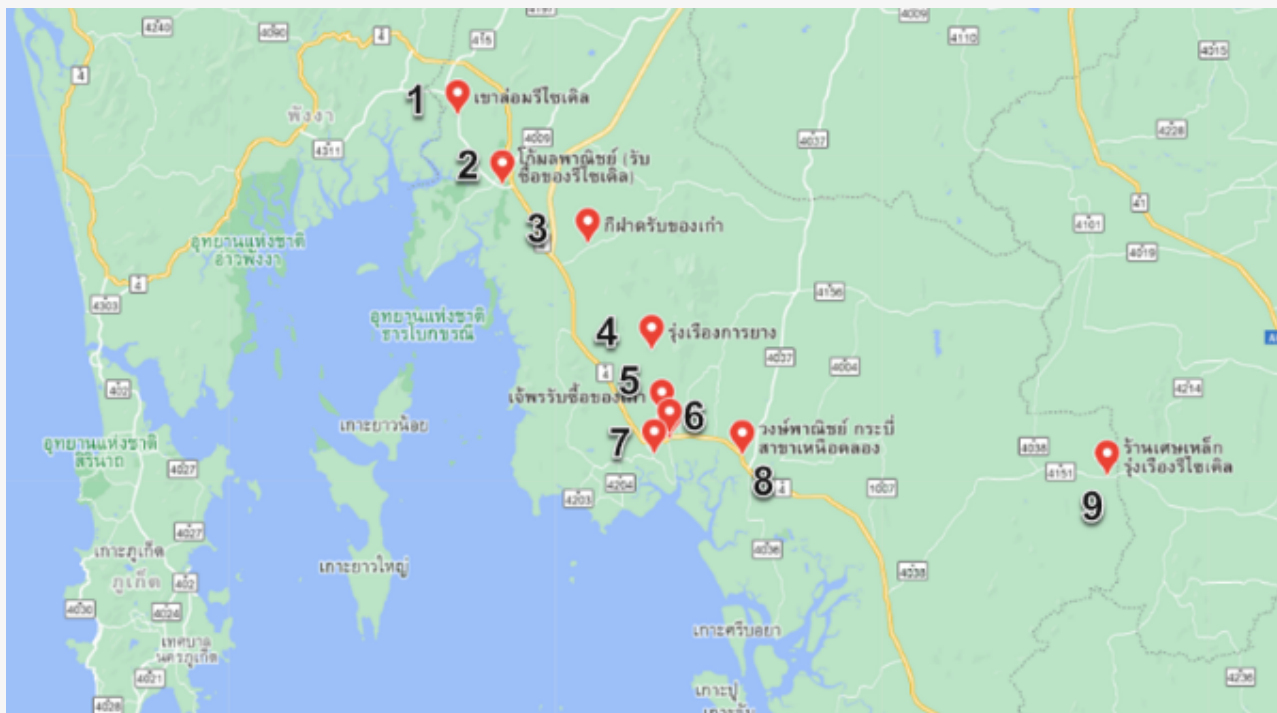
YELLOW BIN

YELLOW-Dry recyclable waste such as newspapers, cardboard, packing plastics, bottles, cans, etc.

Information source <https://trashcanreviews.com/why-sorting-waste-is-very-important/>

APPENDIX D

Recycling facilities in Krabi:



1. Khao Lom Recycling Center
2. Go Mong Panich Recycling Center
3. Kefad Recycling Center
4. Roong Rueang Kan Yang Recycling Center
5. Cheporn Rub Sue Kong Gao Recycling Center
6. Ko Pom Recycling Center
7. Wongpanit Muang Krabi Recycling Center
8. Wongpanit Krabi Recycling Center, Nuea Khlong Branch
9. Sed Lek Roong Rueang Recycling Center

APPENDIX E

Alternatives to single-use plastic:

Platinum silicone: Made primarily of sand, food-grade platinum silicone is flexible and durable. It's also heat tolerant, so you can boil, bake, and cook in these products without the danger of denaturing.



Beeswax-coated cloth: Used primarily as a replacement for plastic wrap and plastic bags, the beeswax-coated fabric is easy to use and easy to clean.



Bamboo: This fast-growing renewable resource can replace plastic in items like tableware and drinking straws. It is lightweight, durable, and compostable.



APPENDIX E CONTINUED

Alternatives to single-use plastic:

Stainless steel: Tough and easy to clean, stainless steel options for reusable food and beverage storage have multiplied in recent years. You can replace single-use cups, kitchen storage, lunch boxes, and more with this durable metal.



Banana leaves: As many companies are now moving away from single-use plastics, they're seeking biodegradable packaging for food. Banana leaves are 100% environmentally-friendly and sustainable. They will degrade just like any other plant product once they've been discarded, and they're a by-product that is continuously produced.



APPENDIX F

Resources that give more information on waste banks and how they function in Thailand:

- “Temesi Recycling; Waste Banks” which provides information on the benefits of waste banks.
 - <http://temesirecycling.com/waste-banks/>
- “One Man’s Trash is Another Man’s Treasure; The Success of Thailand’s Waste Bank Initiative” which provides information on Thailand’s Waste Banks
 - <http://www.saisperspectives.com/2020-issue/2020/2/10/one-mans-trash-is-another-mans-treasure-the-success-of-thailands-waste-bank-initiative>

APPENDIX G

Environmental advocacy organizations that your school can collaborate with include:

1. TRASH HERO: TRASH HERO is a global movement, run by volunteers. Its aim is to bring communities together to clean and reduce waste in the environment; create a sustainable future through projects that help reduce plastic pollution; and encourage long-term behavioral change. There are two Trash Hero groups in Krabi, the Trash Hero Ao Nang and Trash Hero Koh Phi Phi.



Trash Hero Ao Nang. (2017).
Trash Hero Ao Nang's Activity.

2. Hat Nopparat Thara Mu Koh Phi Phi National Park. This organization collaborates with local people, schools and other organizations for waste collection projects.



Hat Nopparat Thara-Mu Ko Phi Phi National Park.
(2021). Excursions to Beach Cleaning.

APPENDIX G CONTINUED

3. Marine rangers from the Department of Marine and Coastal Resources



Department of Marine and Coastal Resources. (2021). Marine Litter Collection. <https://www.dmcg.go.th/contact>.

APPENDIX H

Here are some examples of beach clean-up field trips your school can go on:

- You can contact the Department of Marine and Coastal Resources for field trips to environmental conservation areas using this link: <https://www.dmcr.go.th/contact>
- Organize activities for mangrove afforestation using small-sized mangrove saplings in 250 plantations at Soi Charoen Sap Village, Village No. 7, Saithai Sub-district, Muang District, Krabi Province, to instill awareness in environmental protection.



Department of Marine and Coastal Resources. (2021). Excursions to Beach Cleaning. <https://www.dmcr.go.th/contact>.

APPENDIX I

You can take your students on a field trip to the beach to observe waste and waste management behavior



Ao Nang Beach



Garbage Collector at Ao Nang Beach

BSAC students. (2021). Observation at Ao Nang Beach.

APPENDIX J

You can take your students on a field trip to the National Park.



Hat Noppharat Thara-Mu Koh Phi Phi
National Park



Park ranger collecting waste

Hat Noppharat Thara-Mu Ko Phi Phi National Park.
(2021). Marine Litter Collection.

APPENDIX K

Baan Gor Tong's Farm program aids in achieving zero waste generalization. They started by building the farm in school for students to have free food to eat and without buying food from outside to prevent plastic waste in the school. Additionally from Baan Gor Tong's Farm program, they start to make some food to sell by using the ingredients from their own farm which generates the funding for the school.



Baan Gor Tong School. (2021). Bann Gor Tong Zero Waste Project.

APPENDIX L

Examples of methods to repurpose plastic:

- Can reuse plastic waste by packing plastic bottles with plastic rope to use them as bricks for construction projects.



The Homestead. (2017). How To Make Brick From Plastic Bottle. <https://thehomestead.guru/video-how-to-make-bricks-from-plastic-bottles/>.

