Creating Livelihood by Upcycling Low-Value Plastics

A Living Lab Project on Eco-Bag Creation

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Presenters

Introduction

- Low-value plastics are flimsy plastics that are commonly single-use shopping bags, confectionary wrappers, condiment sachets, and thin packaging layers (Ho, 2020).

- Will break down into smaller pieces of plastics called ‘microplastics’.

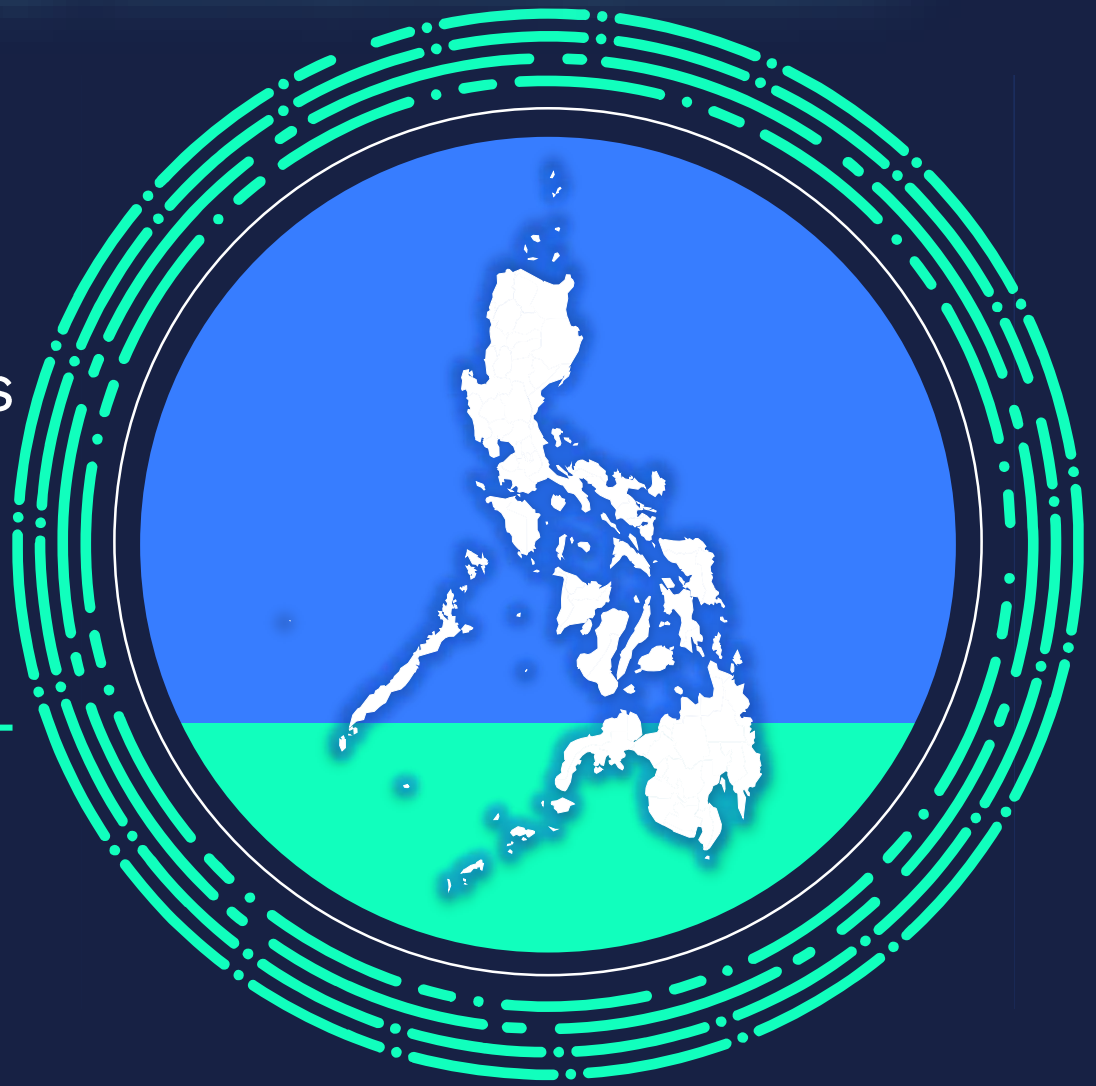
- The Philippines is considered as a “sachet economy” (World Bank, 2021).

Background Information

National Data

61 Billion
Metric Tons of Wastes Produced Daily in the Philippines

14.64 Billion
Metric Tons are Plastics



Daily Production

163 Million
Plastic Sachet Packets

48 Million
Shopping Bags

45 Million
Thin-Film Bags

Based from the data provided by DENR Secretary Maria Antonia Yulo-Loyzaga via PhilStar

Background Information

National Data

2.3 Million Tons

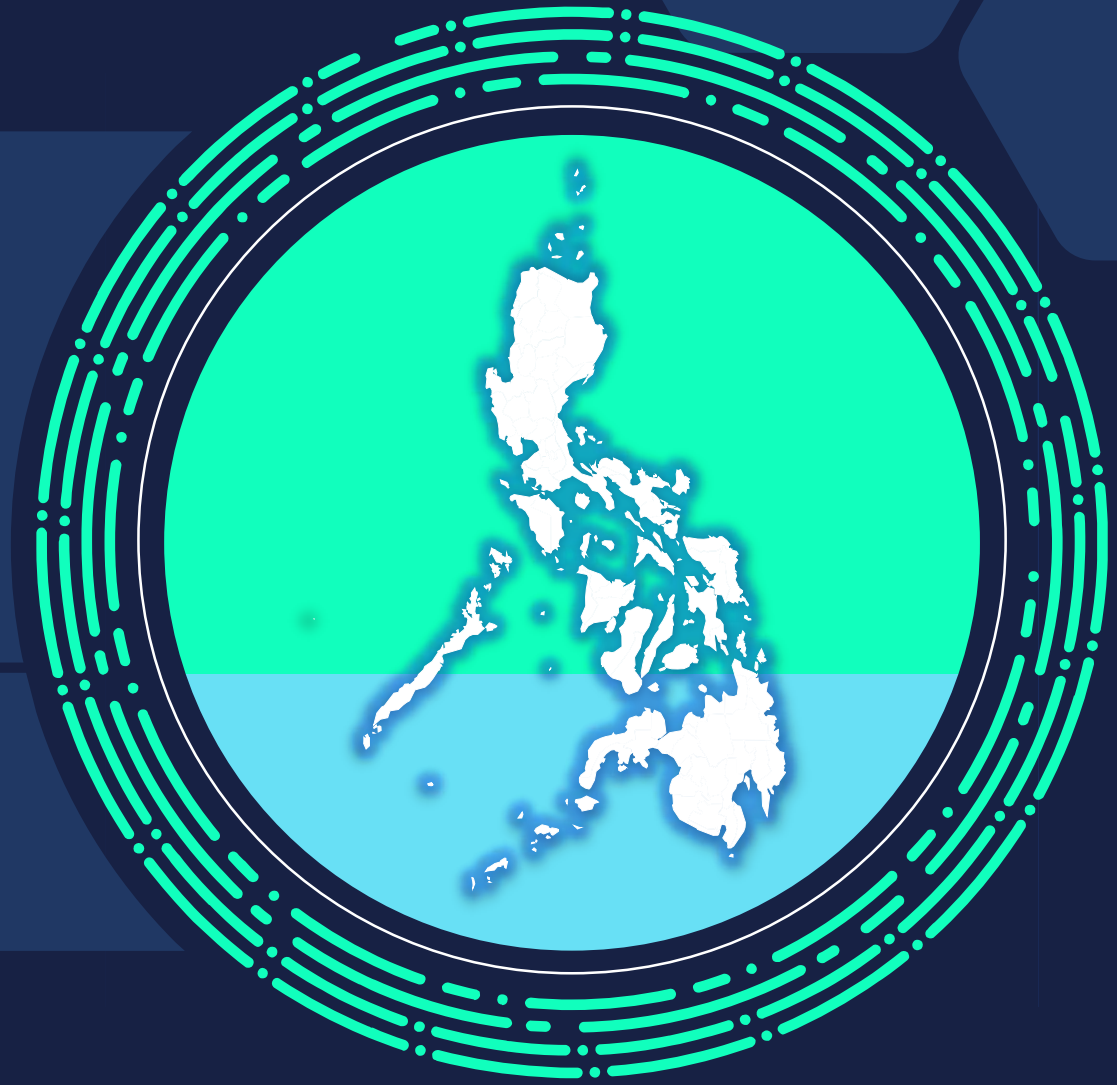
Plastic Wastes are generated in a year

72 Percent

Discarded and becomes Waste in the environment

28 Percent

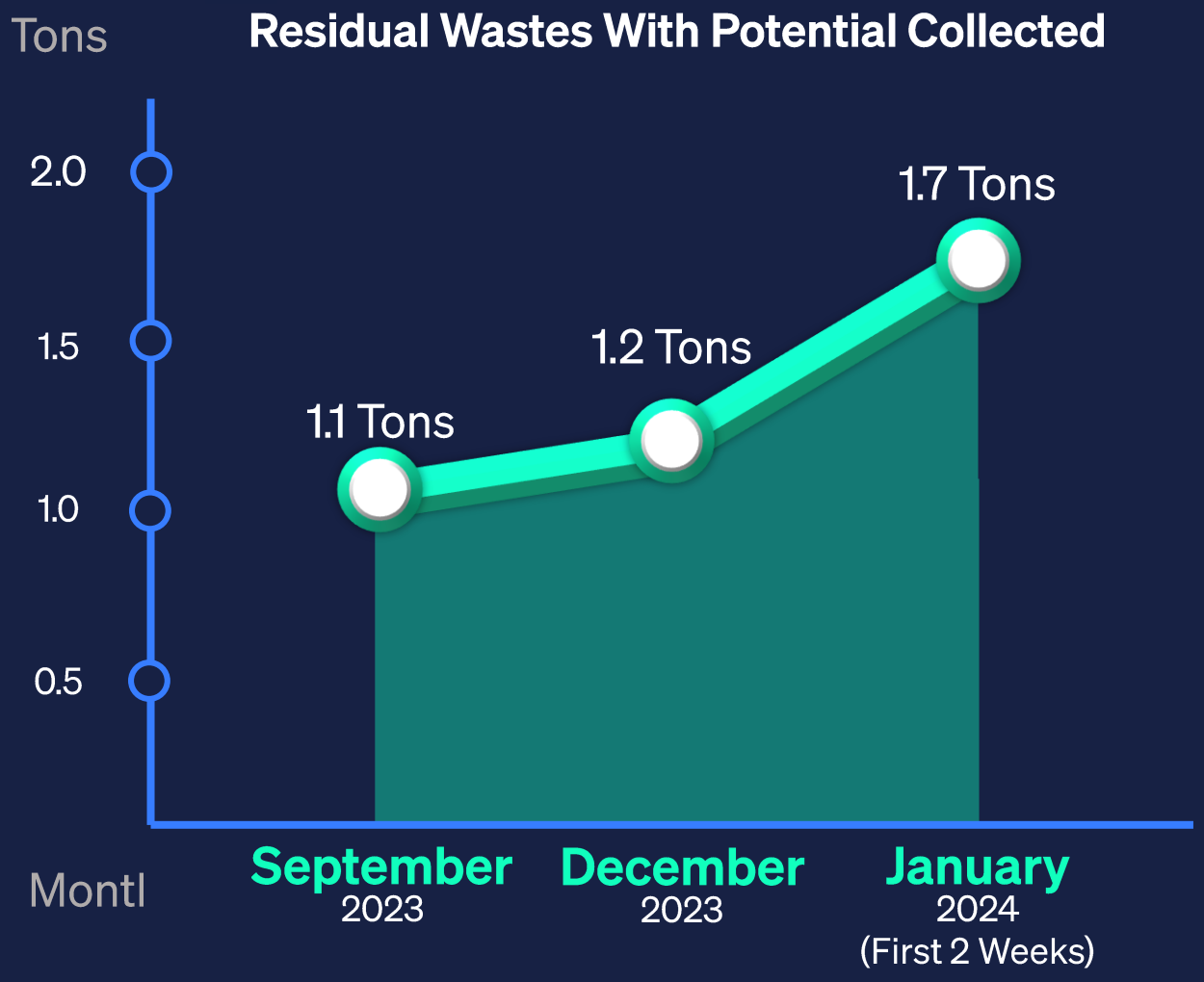
Plastics that are being Recycled



Based from the 2023 World Bank Data via DOST

Background Information

Local Data (Dinalupihan)



Based from the data provided by
Ms. Janice Imperial, Environmental Officer of Dinalupihan MENRO

Background Information

Local Data (Dinalupihan)

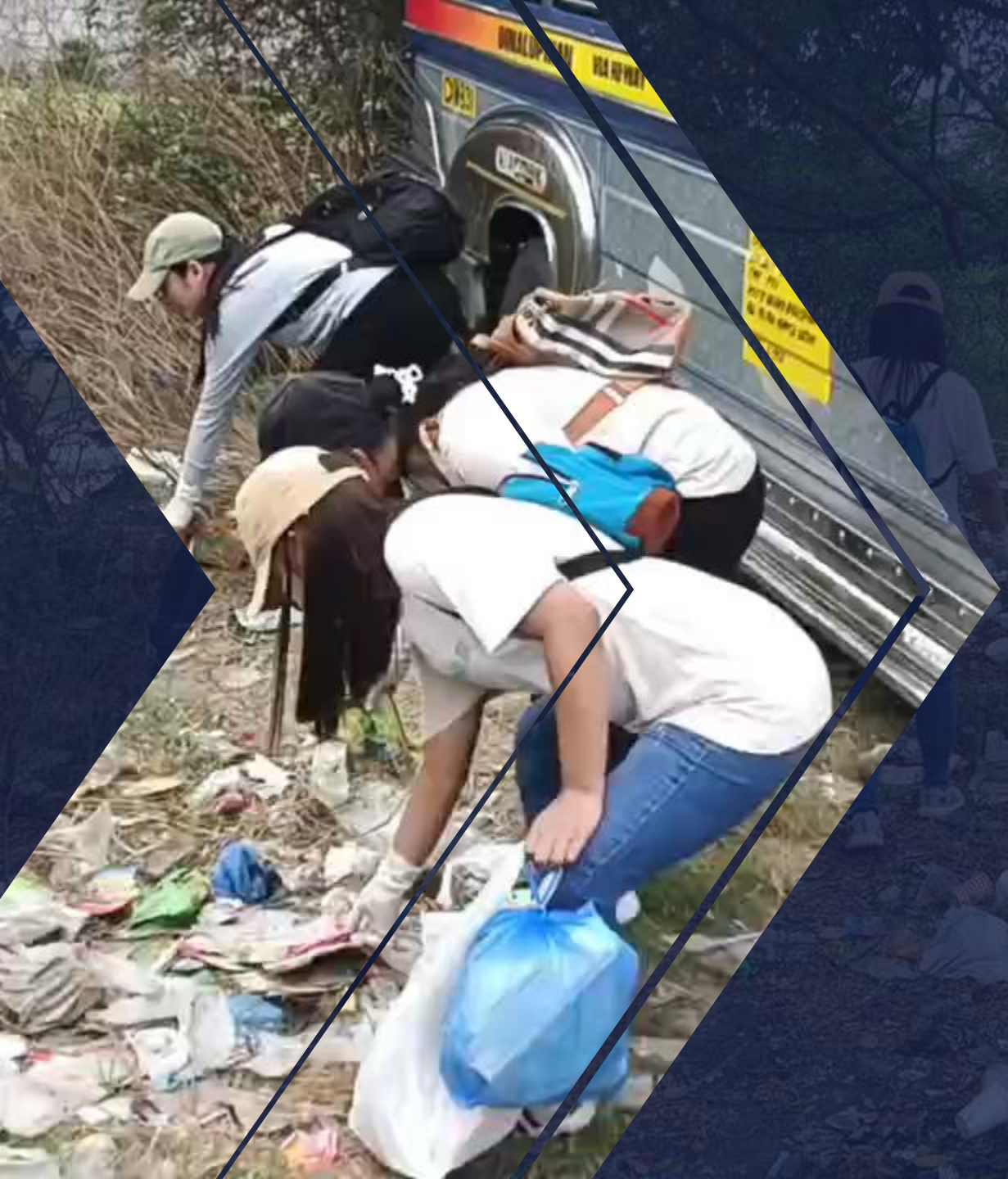
Monthly Cost in Waste Disposal

DINALUPIHAN

Php **30** million

Spent in transporting wastes to landfill in Clark, Pampanga

Based from the data provided by
Ms. Janice Imperial, Environmental Officer of Dinalupihan MENRO



Problem Statement

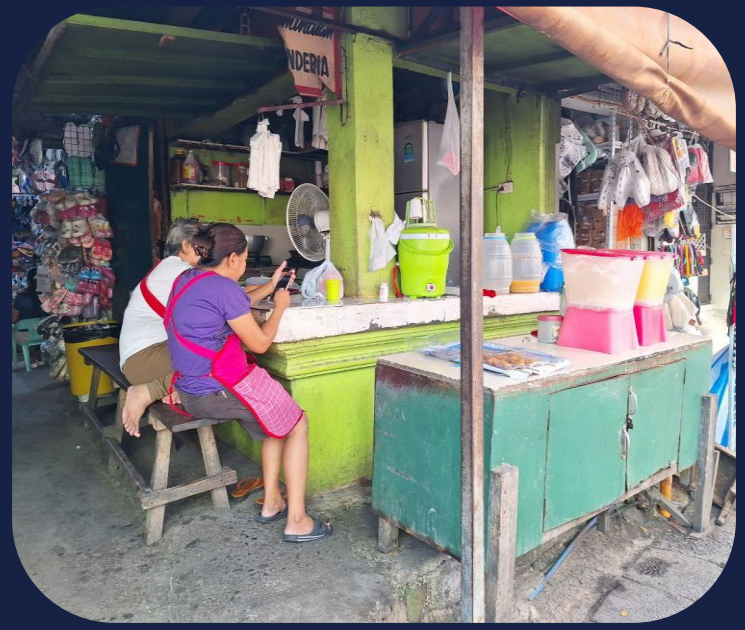
Prevalence of Low- Value Plastics in the community

Objectives

- Reduce the target audiences' prevalent use of single-use plastics when purchasing goods in the market
- Convert low-value plastics into a marketable product, which is an eco-bag

Expected Outcomes

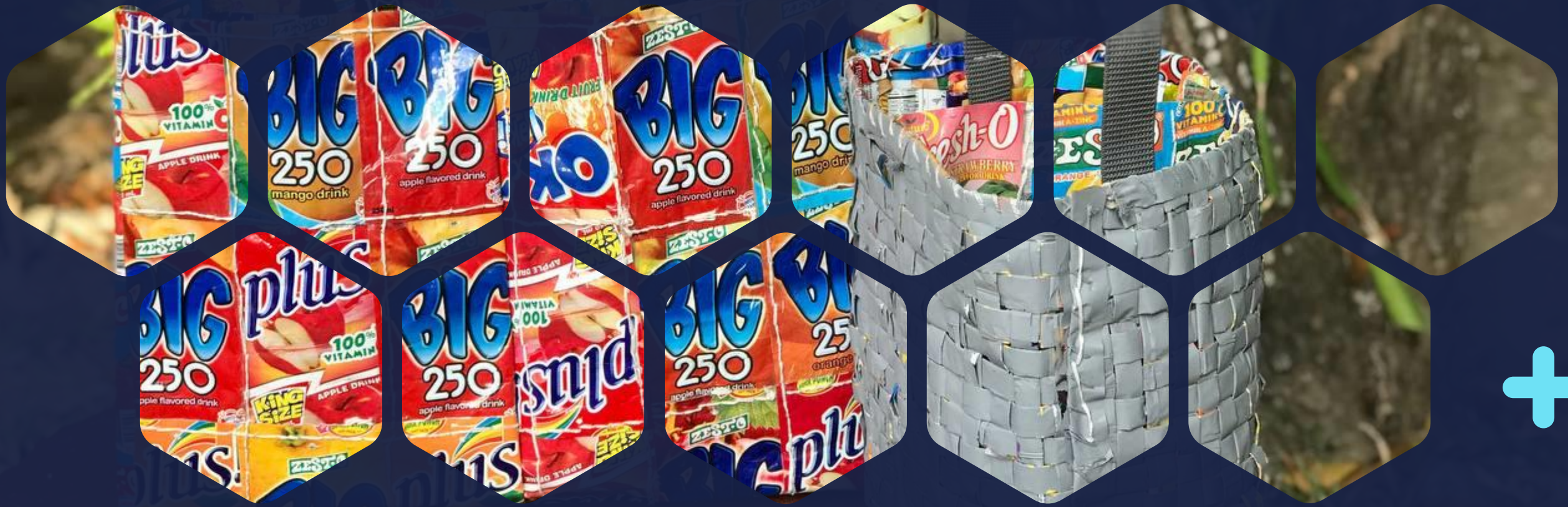
- Create eco-bags with divider for sortation
- Reduce the usage of single-use plastics of vendors
- Reduce the amount of low-value plastics in the community
- Adaptation of Eco-bag to daily use



Target Audience

- Canteen vendors
- Local Communities / Households

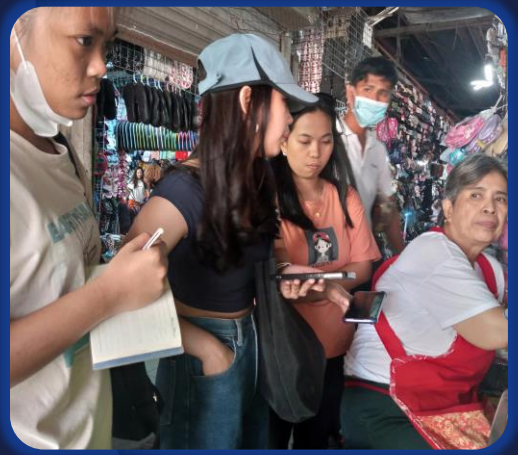
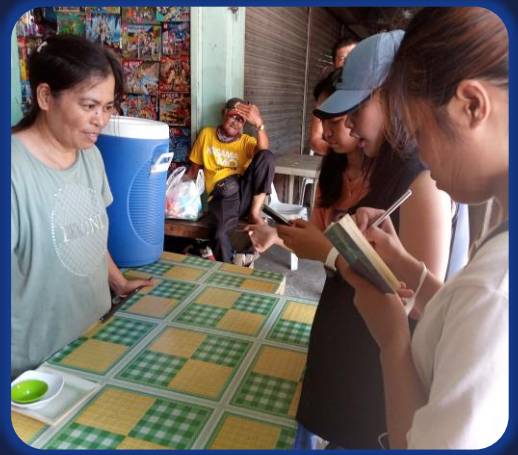
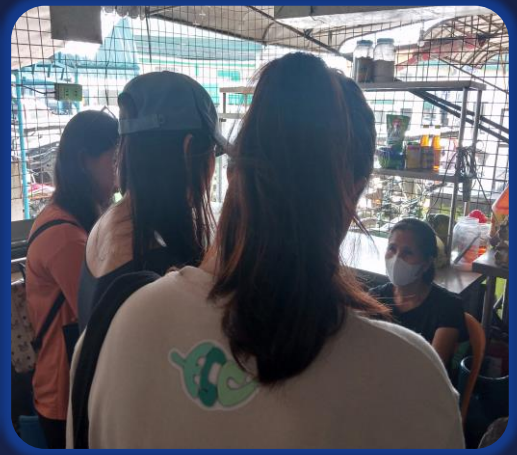
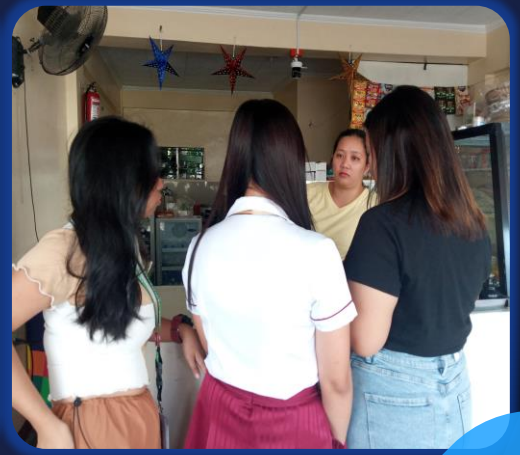
The Eco-Bag


100% VITAMIN C
APPLE DRINK
BIG
250
mango drink
apple flavored drink
plus
KING SIZE

Week 9

Initial Assessment of Participants

- 6 canteen vendors agreed to participate
- Conducted preliminary interviews with the participants
- Identifying the type of low-value plastics to be used

Process Overview

01

Process Overview

01

Survey Question 1: Do you use eco-bags?

50%
Uses Eco-Bags in Shopping

50%
Not Using Eco-Bags in Shopping

Number of Respondents: 6

Process Overview

01

Survey Question 2: How much plastic do you take home after shopping?

67%
Have taken home at least 10 plastic bags after shopping

33%
Have taken home at least 20 plastic bags after shopping

Number of Respondents: 6. Rough estimation responses were given by the participants

Process Overview

01

Survey Question 3: What are you going to do with the already used plastic bags?

50%
Throw away used plastic bags

50%
Keep and reuse plastic bags

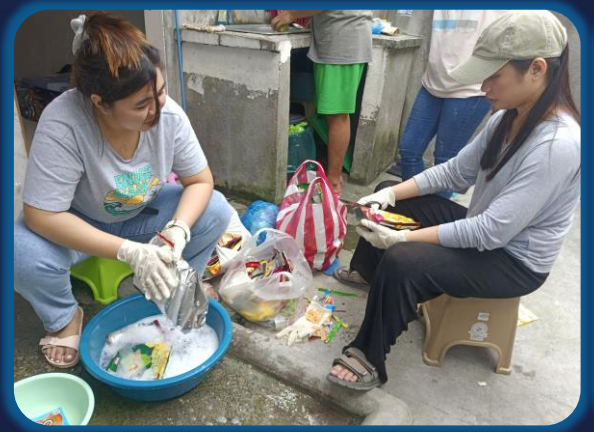
Number of Respondents: 6

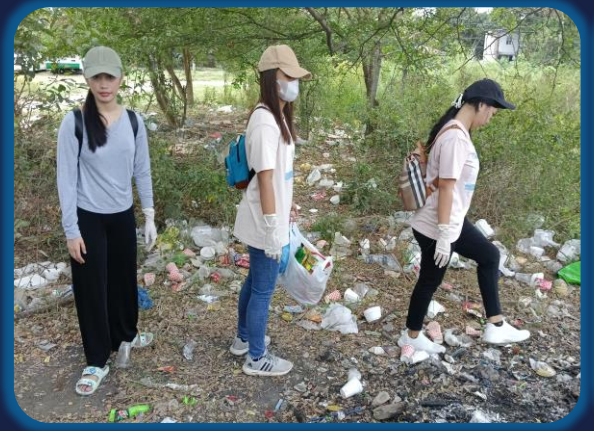
Process Overview

02

Collection and Preparation of Materials

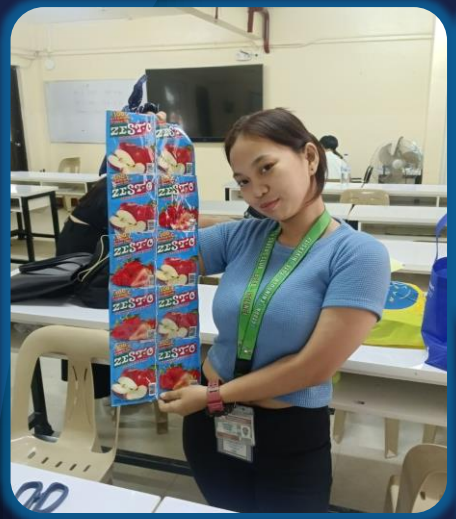
- Collection of low-value plastics in the community.
- Preparation of other materials.

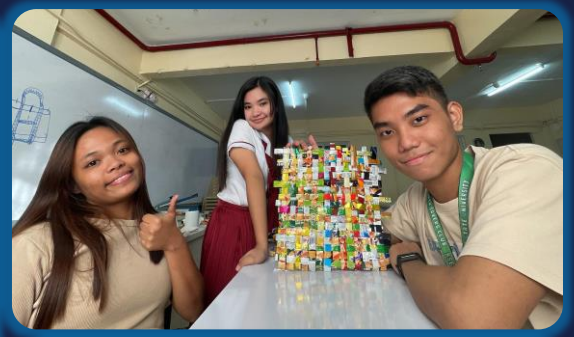


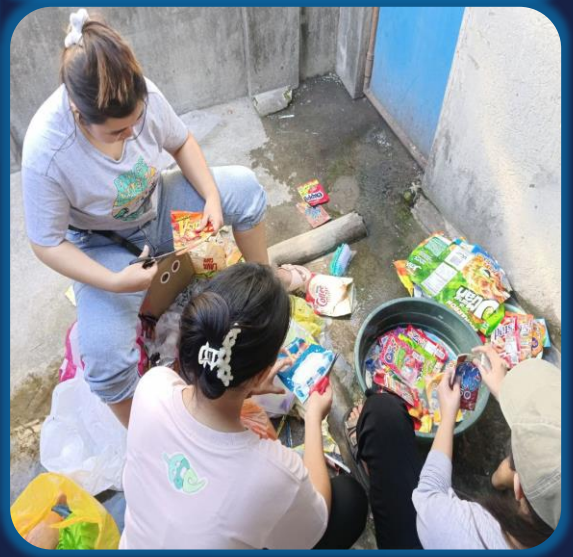


Week 10

Week 11







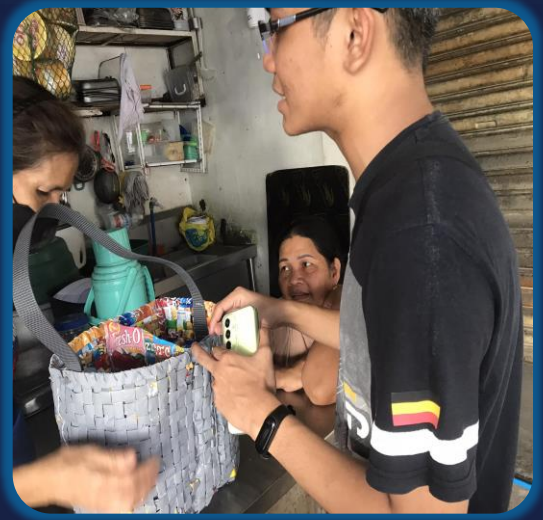
Construction and Processing of Output

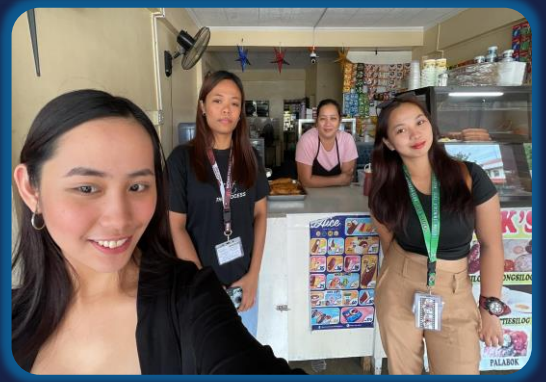
- Sanitation of raw materials
- Forming of mat strips
- Sewing tetra packs
- Weaving of the bag with organizer

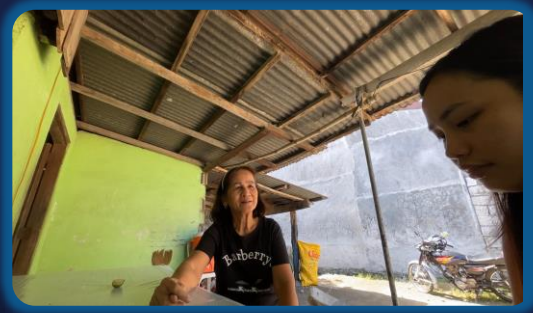
Process Overview

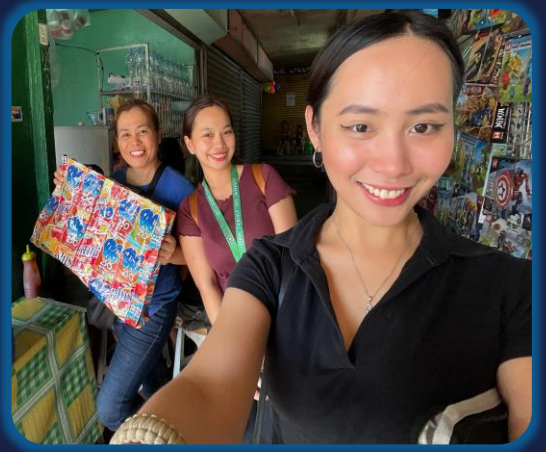
Process Overview

04









Distribution of Bags to Participants for Testing

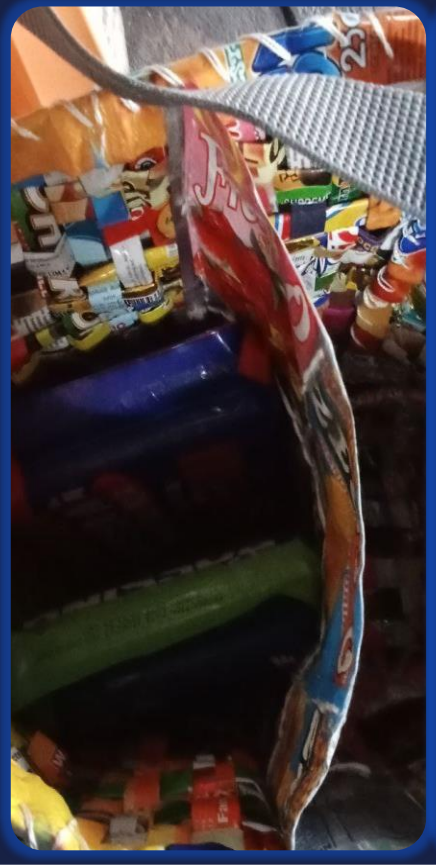
- Eco-bags were distributed to the participants.
- Informing the proper usage of the bag.
- Documentation of using eco-bags while shopping.

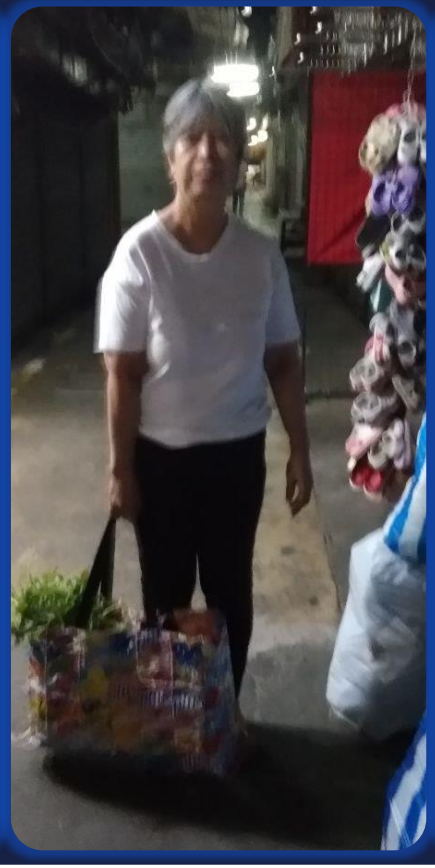
Week 12

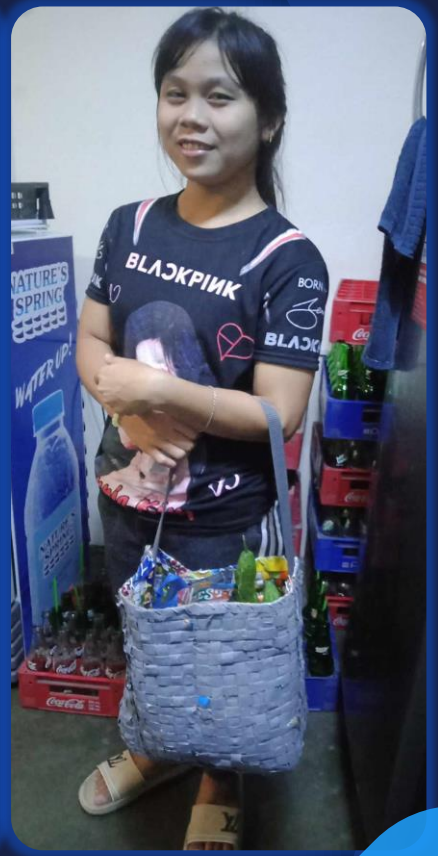
Week 13

Evaluation and Feedback

- Interview about the experiences and marketability of the bag.
- Recommendations for the bags.



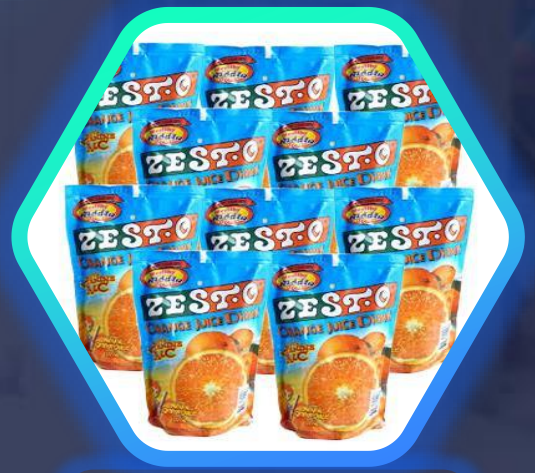




Process Overview

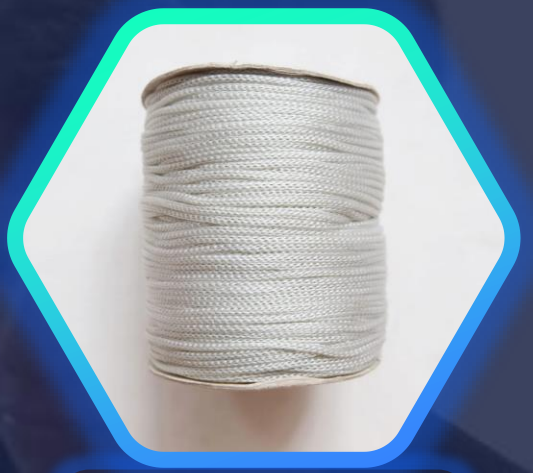
Materials

PLASTIC PACKS

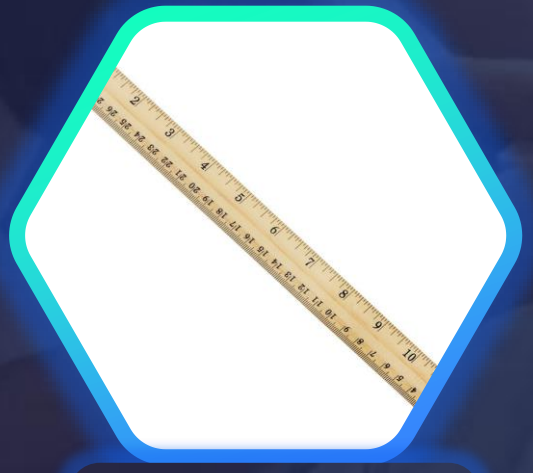


TETRA PACKS

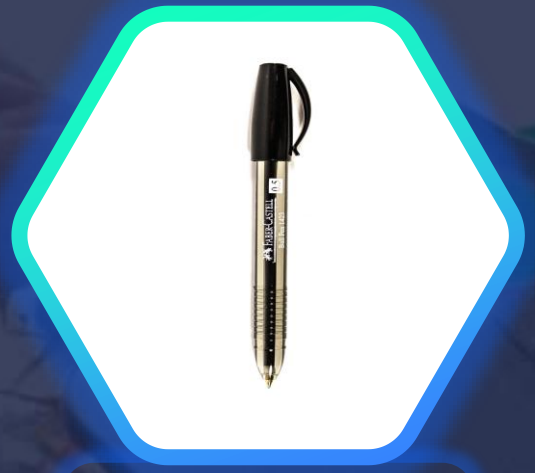
NEEDLE



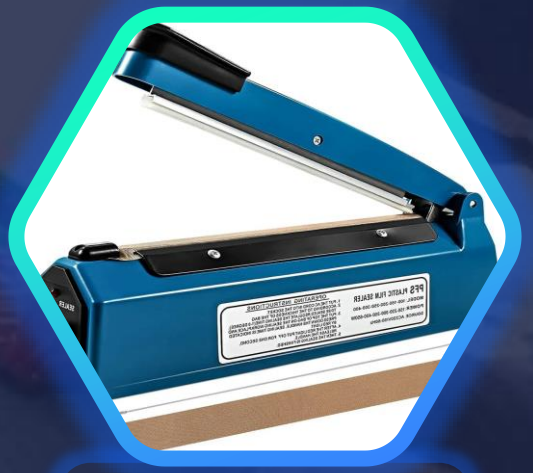
NYLON THREAD



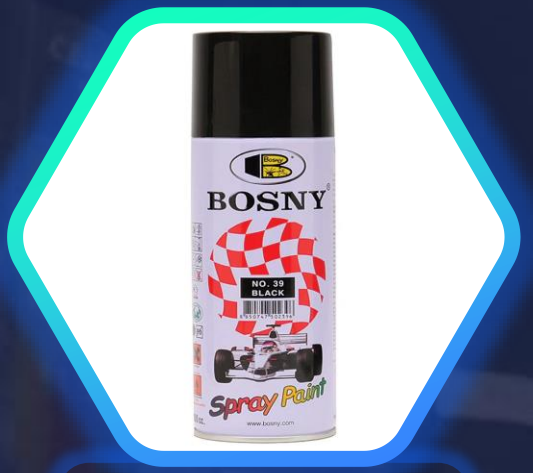
RULER



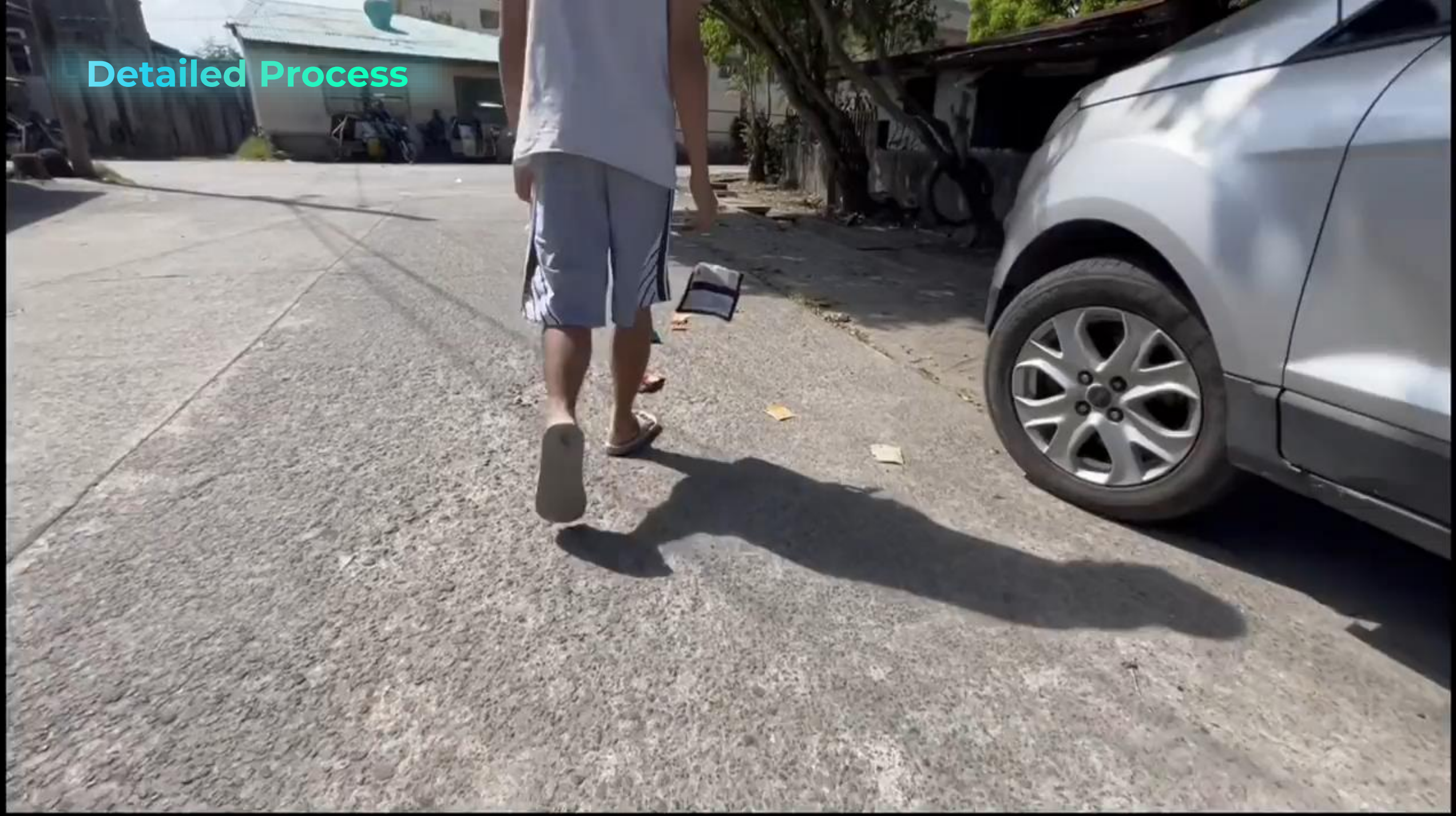
PEN



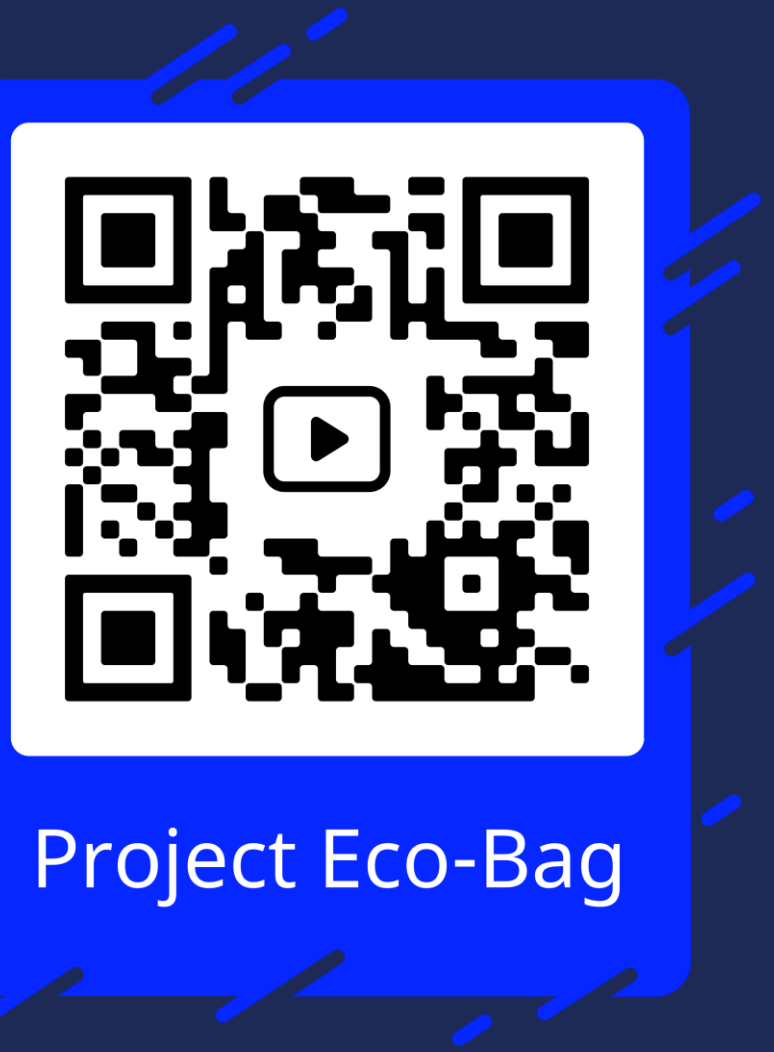
SEALER



SPRAY PAINT
(OPTIONAL)

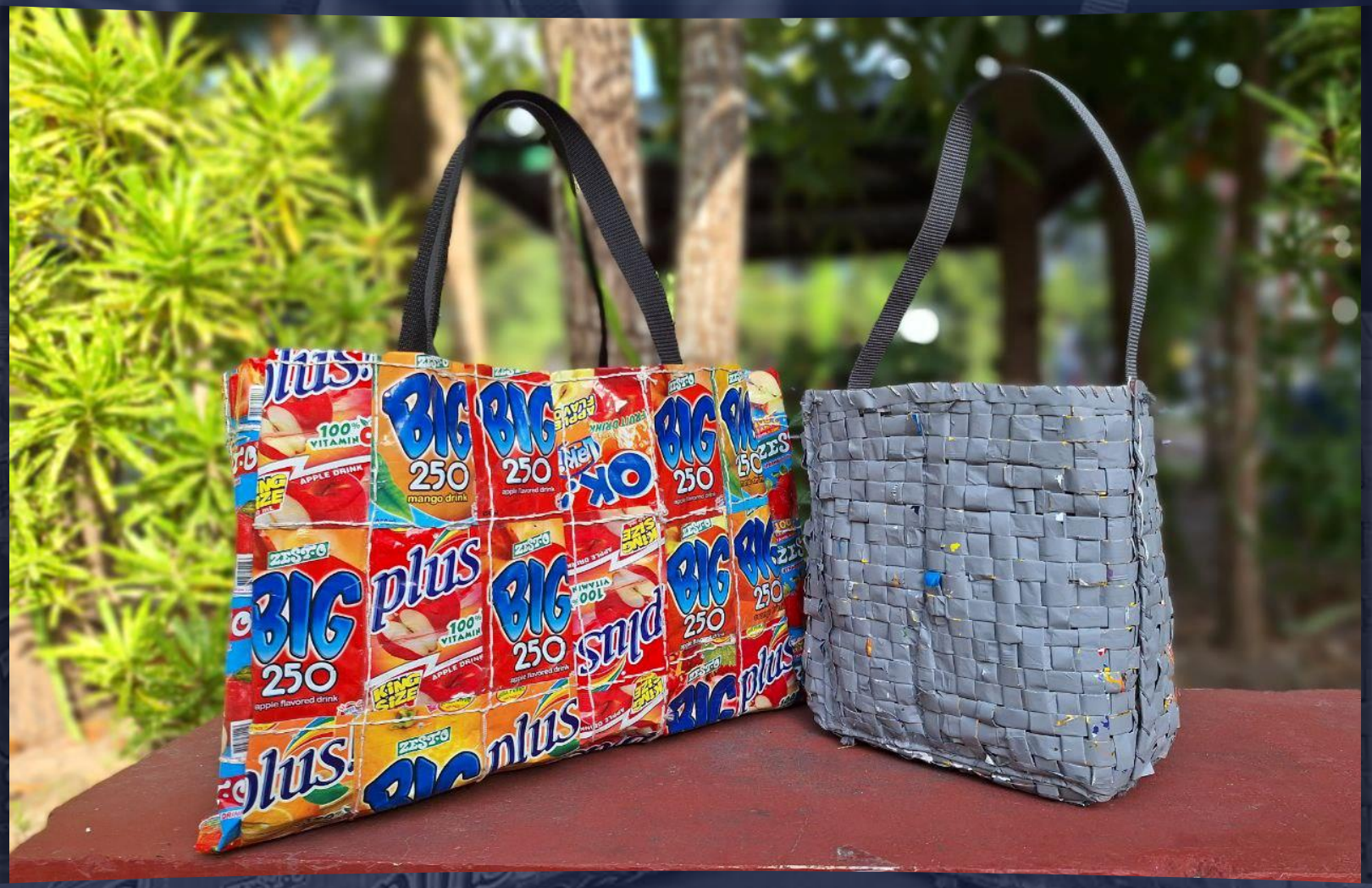

Detailed Process

Watch it again here!

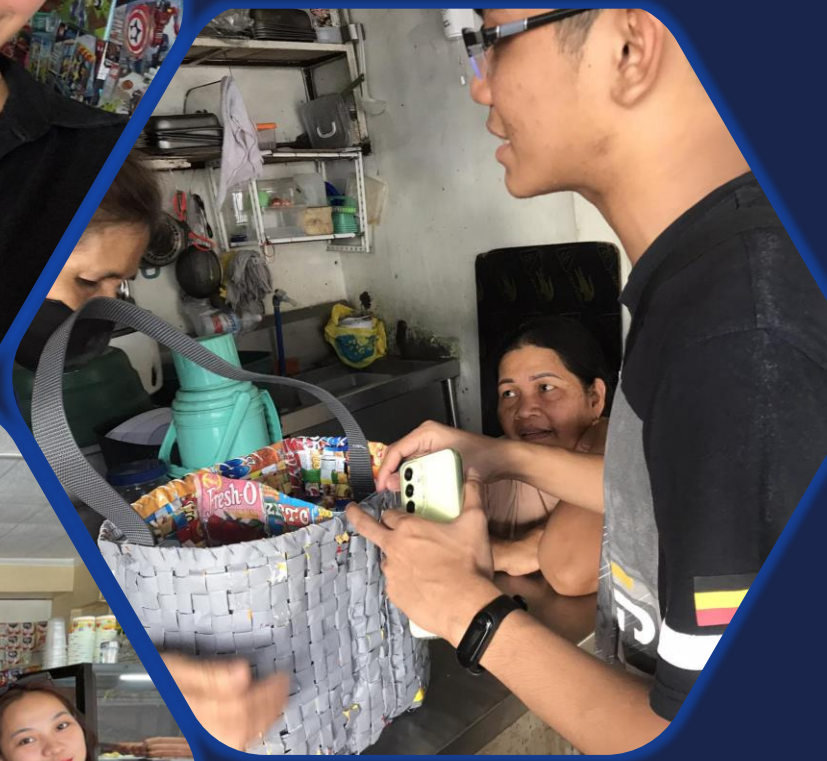


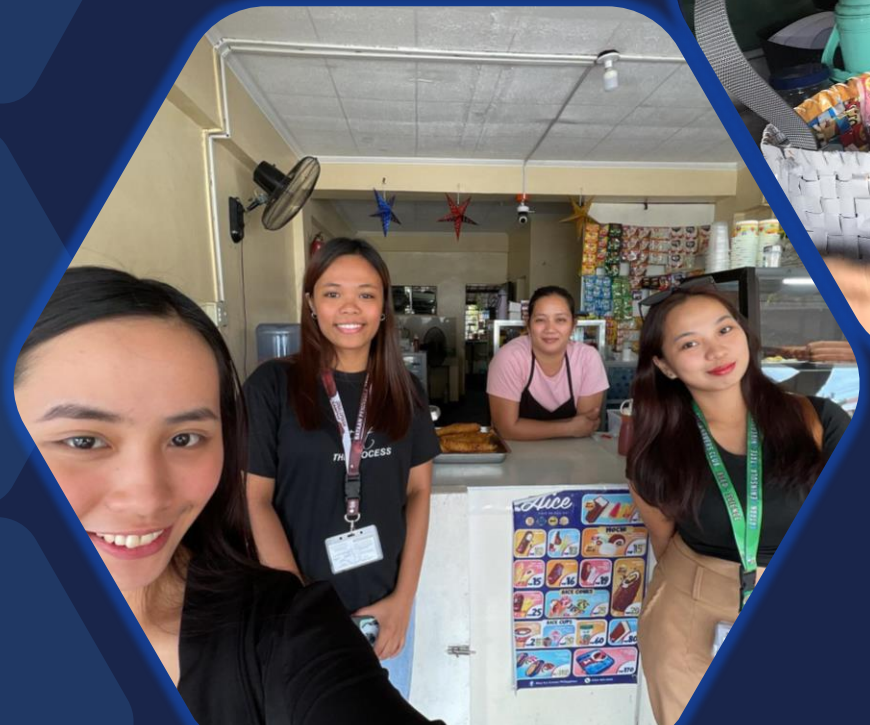
https://qrco.de/ecobag

The Finished Product



Testing Phase





Summary of Responses

What are your experiences while using our Eco-bag?

DANNALYN
“The bag is very convenient, I can put all of my goods inside”

SHIRLEY
“For me, it is small. However, you have to put the goods in the plastics because I buy a lot of small ones”

JACQUELYN
“Easy to carry and lightweight, unlike handling many plastics at the same time”

GINA
“I found it difficult to put something on it because the size is small and I’m not comfortable to handle it”

ZENAIDA
“I didn’t find it difficult to carry many items at the same time”

AIDA
“It is comfortable to use”

Summary of Responses

What are the good features you've noticed? Does that influenced you on using the bag?

DANNALYN
"It's good because the bag is made up of recycled plastics and you can use it anytime you want. It also helps on reducing wastes"

SHIRLEY
"It's not affecting me negatively because it is comfortable to use. You just carry it, then again all of the goods are put in plastic "

JACQUELYN
"It made my shopping of goods to be much easier than before"

GINA
"It's good because you can separate dry and wet products because of the divider"

ZENAIDA
"The bag is elegant and well-built. Another thing is that it has a divider. The goods are organized properly"

AIDA
"It has a divider that separates dry and wet goods"

Summary of Responses

What are the features to be improved? Does that influenced you on using the bag?

DANNALYN
“It would be better if the size is bigger, but it’s fine on its current size though”

SHIRLEY
“I’m a canteen owner and I think that its size can be improved but it’s good for everyday use”

JACQUELYN
“The size should be bigger for us to fit more goods inside”

GINA
“The space of the bag should be larger and I think that for me to carry it with more ease, the strap should be shorter”

ZENAIDA
“I think the current design is good enough”

AIDA
“The size of bag can be improved to have more space inside”

Summary of Responses

Has our product changed the way you look at using sustainable and recycled bags on purchasing food items?

DANNALYN
"Yes, because we help to save our nature. We are not using plastics anymore since it is a major problem in terms of wastes"

SHIRLEY
"I'm not fond of using eco-bags in shopping but I think it is comfortable since it enables me to carry items at the same time"

JACQUELYN
"The tetra packs are very ideal material on making eco-bags"

GINA
"Yes, it changed my view on eco-bags especially on the presence of the divider that effectively sorts the purchased goods"

ZENAIDA
"Definitely, because the wastes are reduced"

AIDA
"Yes, because eco-bags help on the reduction of plastics in the environment"

Summary of Responses

Will you use an eco-bag again next time?
Will this be a permanent fixture in your shopping?

DANNALYN
"Yes, because the bag has a strong structure and it is more usable than plastics"

SHIRLEY
"Yes, I can adapt and use it permanently"

JACQUELYN
"Maybe"

GINA
"Yes, only if the strap can be adjusted and the size can be improved"

ZENAIDA
"Yes, because I experienced comfort in shopping with this bag and I find no difficulties in transporting my goods"

AIDA
"Yes, because it is a good bag made with a sturdy material"

Summary of Responses

If the team will sell this Eco-bag, how much do you think is its price?

DANNALYN
“Php 150”

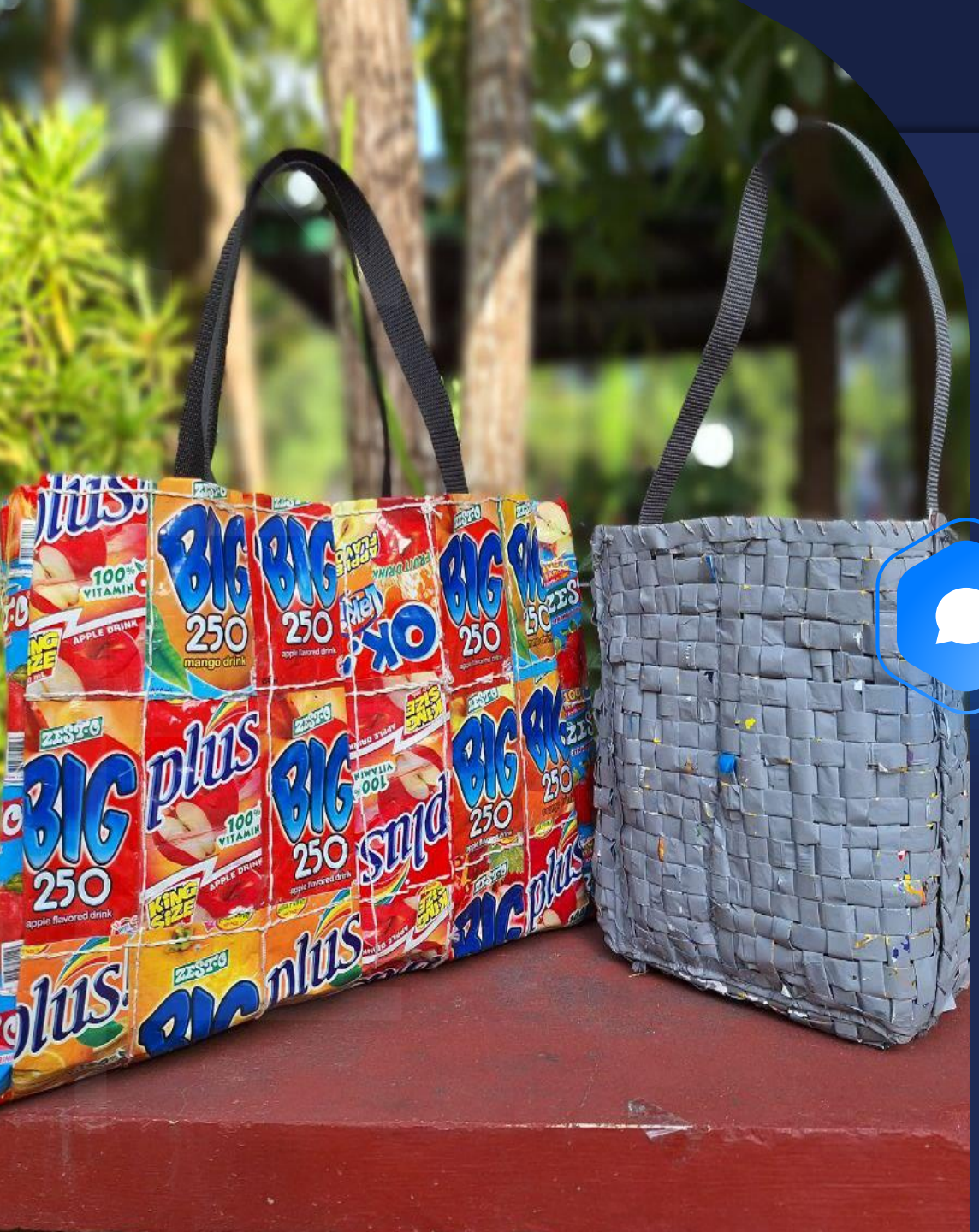
SHIRLEY
“Php 30 – Php 50”

JACQUELYN
“Php 150”

GINA
“Php 200”

ZENAIDA
“Php 100”

AIDA
“Php 200”

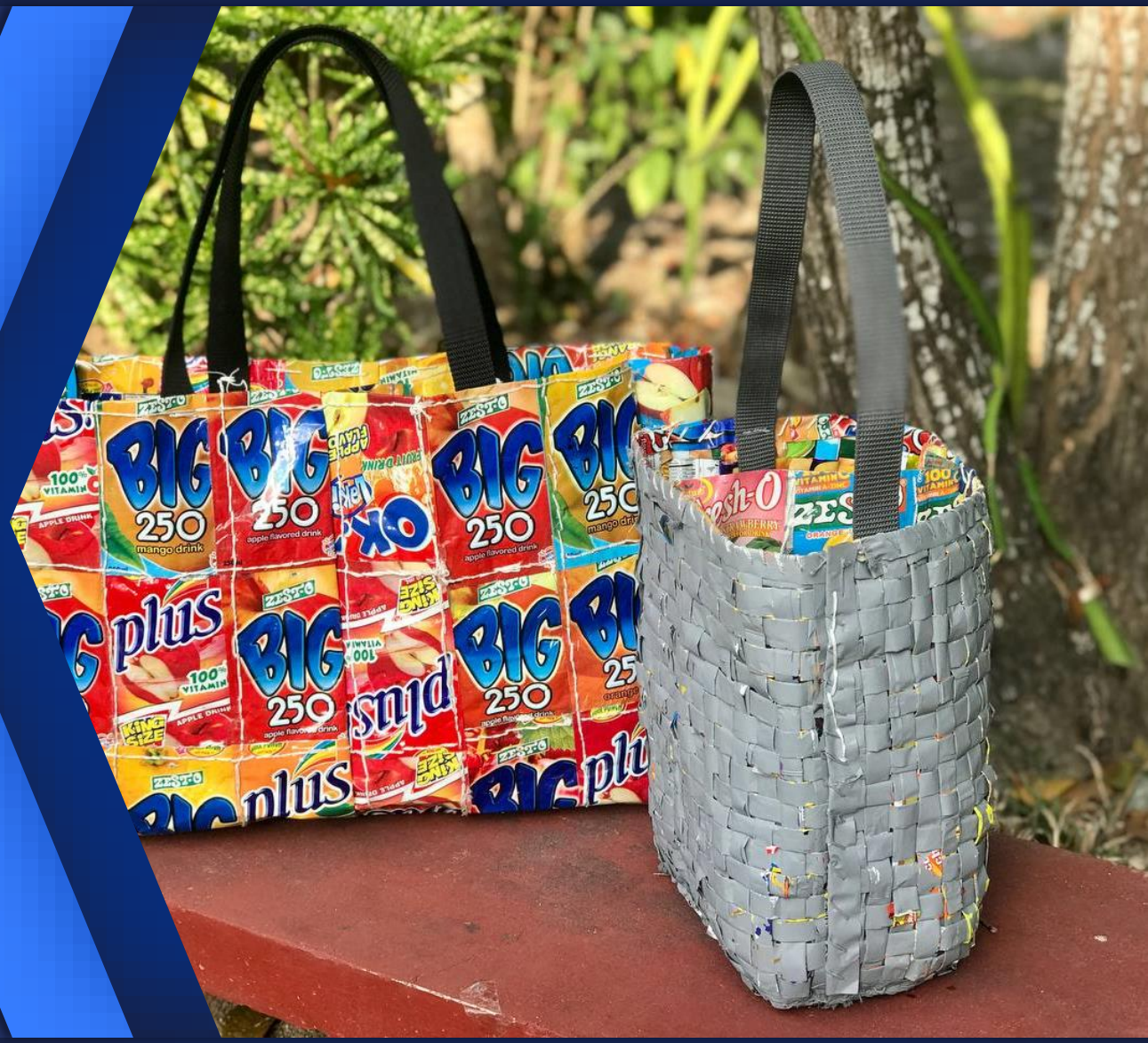


Conclusions

- Plastics can be converted into a marketable product in the form of an eco-bag
- Plastic usage of participants were reduced amid the usage of eco-bags but some products are impossible to transfer directly to the bag, utilizing plastic pouches in the process

Recommendations

- Make the size of the bag to be bigger
- Use nylon monoline in sewing the bag
- Shorten the strap's length
- Consider other kinds of low-value plastics



Thank You!

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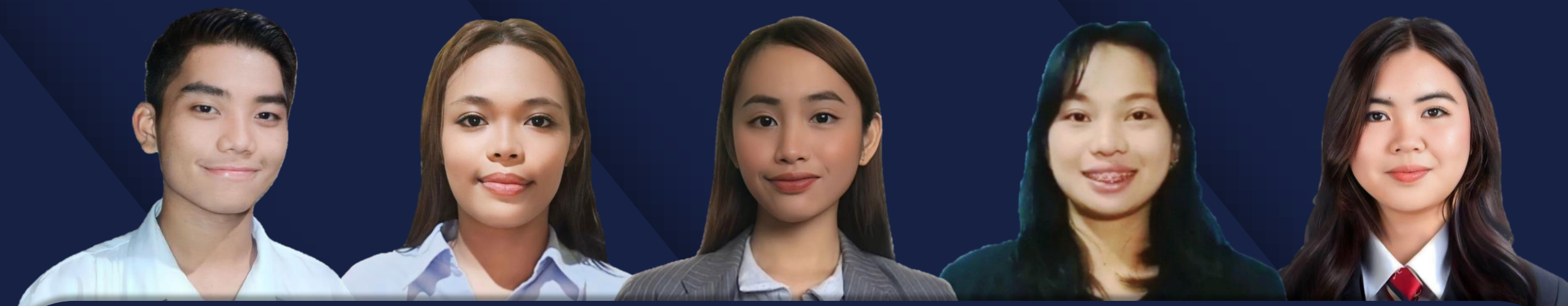
BSED SCIENCE 3
Program and Year

Sir RENDEL BATCHAR
Adviser

Meet the Team



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JAZMINE

SARMIENTO
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