



FROM FIELD TO FOLD: SUSTAINABLE INNOVATION FROM RICE STRAWS

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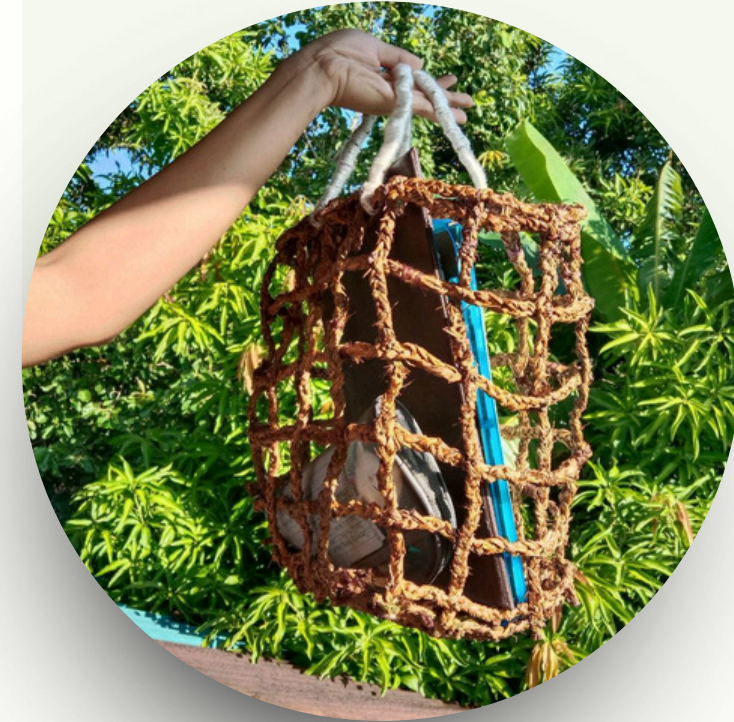
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INTRODUCTION TO LIVING LAB

Every year, vast quantities of rice straws are burned after harvest, contributing significantly to air pollution and environmental degradation. Our project aims to tackle this issue by transforming rice straws into eco-friendly bags (bayong) instead of burning them.






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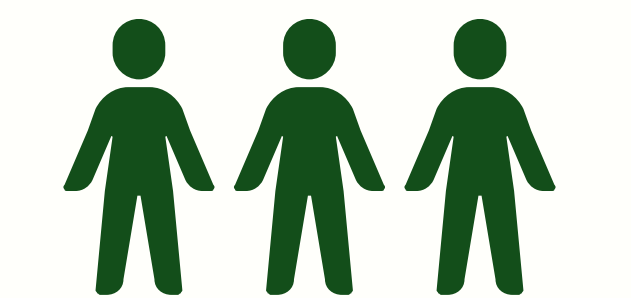


Summary of Farmer Interviews:

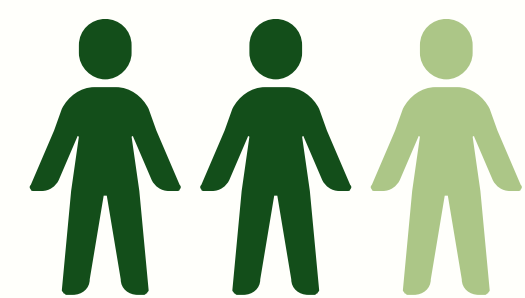
Profile of Farmers

Farmer	Age	Years in farming	Land size
 Farmer 1	65	40 years	0.5 hectare
 Farmer 2	67	54 years	8 hectares
 Farmer 3	56	30 years	1 hectare

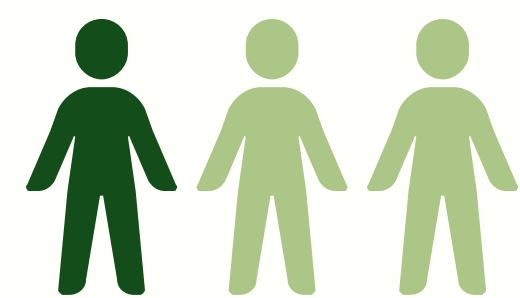
Key Findings:



Decomposition in the Field



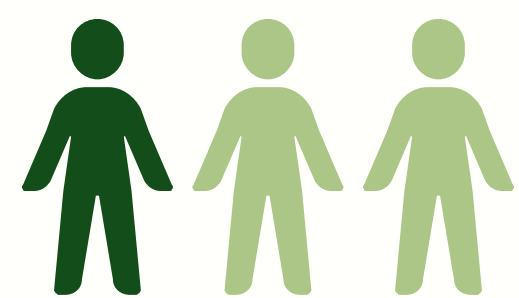
Used for Livestock (Carabaos, Ducks)



Used as Fertilizer



Burning for Land Preparation



No Burning





IDENTIFIED LOCAL PROBLEM



Methane (CH_4): 4.51g/kg
Nitrous Oxide (N_2O): 0.069g/kg
Carbon Monoxide (CO): 68g/kg



0.5kg straw bag= **2.26g**
0.5kg straw bag= **0.0345g**
0.5kg straw bag= **34g**



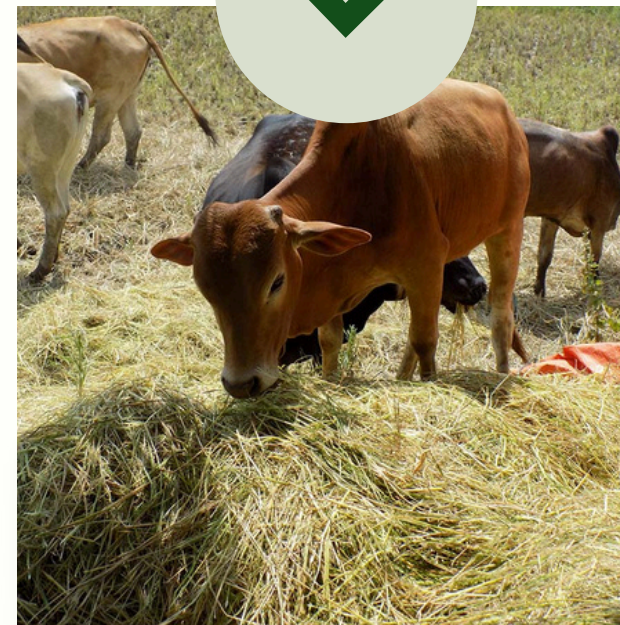
Purok #2, Luacan, Dinalupihan, Bataan

GLOBAL CONTEXT AND RELEVANCE



According to Serd(2025) The Philippines alone produced 19.96 million metric tons of rice from 4.81 million hectares of harvested land.

- Methane and Carbon Dioxide
- 7,300 kg of CO₂ / hectare
- 30 million Mt of methane (CH₄) annually
- 8 % of global CH₄
- 2 % of global GHG emissions



*Source: Röder et al. (2024). The greenhouse gas performance and climate change mitigation potential from rice straw biogas as a pathway to the UN sustainable development goals. Biomass and Bioenergy, 182, 107072. <https://doi.org/10.1016/j.biombioe.2024.107072>

Serd, C. J. J. G.-. (2025, March 4). Rice – Industry Strategic Science and Technology Plans (ISPs) platform. <https://ispweb.pcaarrd.dost.gov.ph/isp-commodities/rice/>

RELEVANCE TO UNITED NATIONS' SDG



STAKEHOLDERS AND COLLABORATORS



➤ **Farmers of Purok #2, Luakan, Dinalupihan, Bataan**



➤ **Students**



➤ **Professors**



LIVING LAB METHODOLOGY



Collection of
Rice straw



Crafting of
Rice straw bag
(bayong)



Interviews



Evaluation



ACTIONS AND INTERVENTIONS



Gathering of Rice Straws

Making

Evaluation



OUTCOMES AND IMPACT ●●●●●



Outcome

Impact



Product Evaluation



The following are the individuals who gave their impressions about the product.

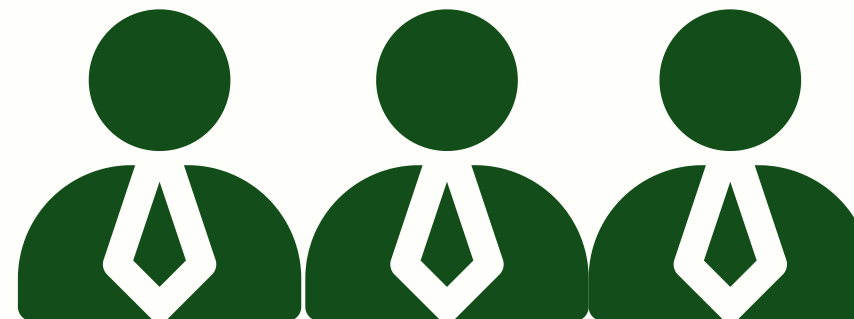
6 College Students



2 Store Owners



3 Professors

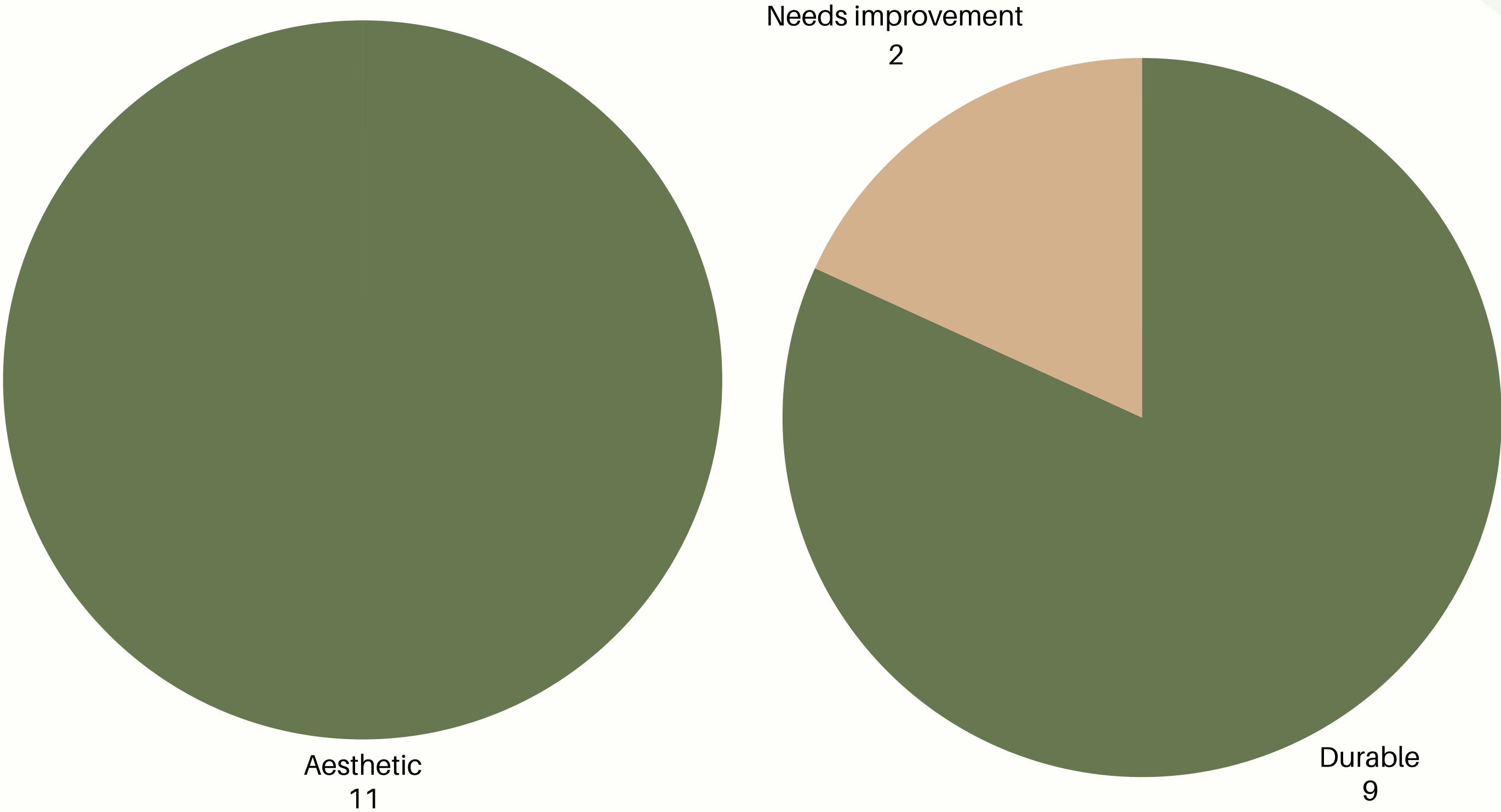


Product Evaluation



Question 1

“Based on your opinion, is the bag (bayong)
durable and aesthetically pleasing?”



Product Evaluation

Question 2

“If ever you are given this product, would you use it?
If yes, in what way?”



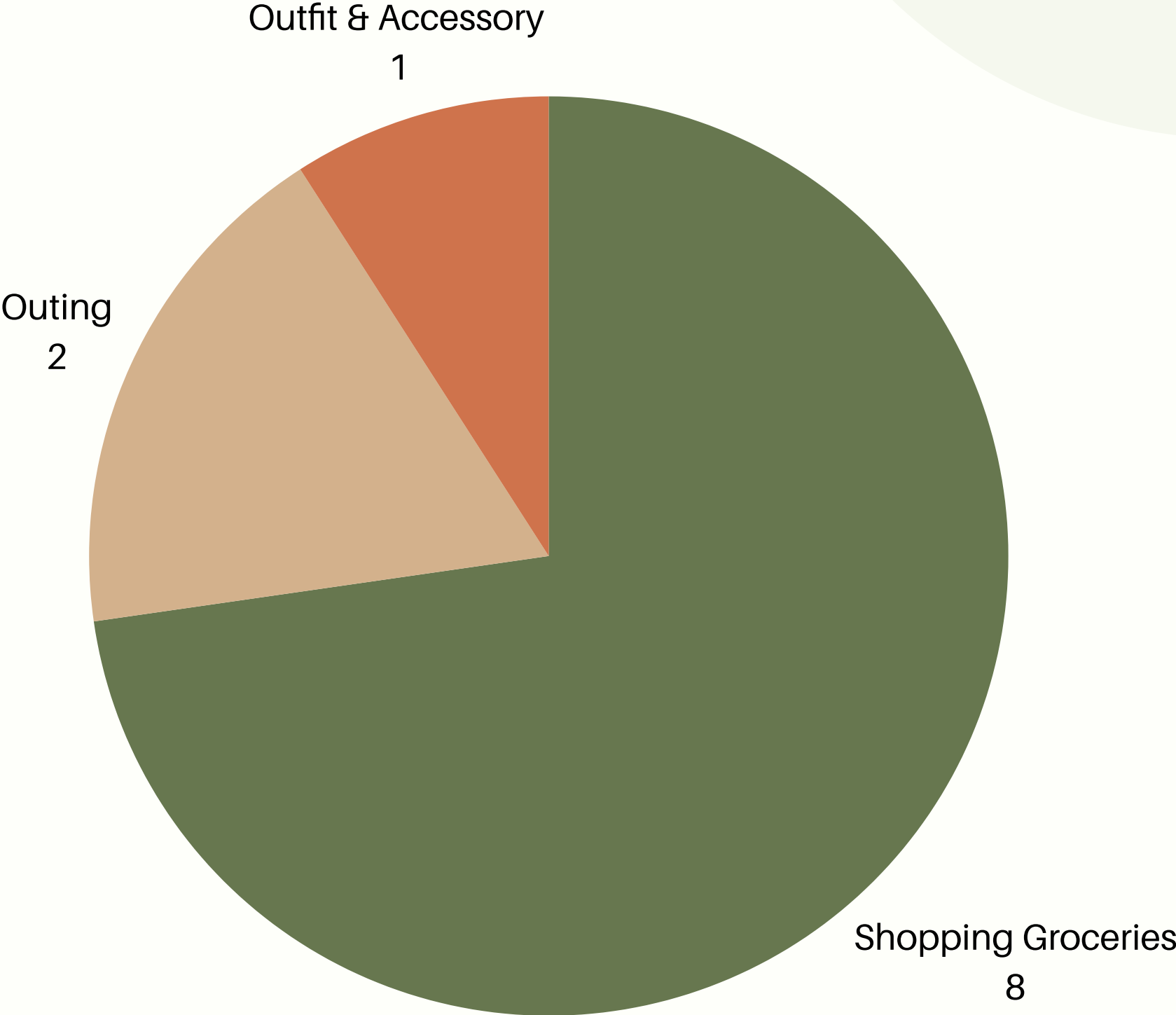
Shopping groceries



Outing



Outfit & accessory





LESSONS LEARNED

As science major students, even practicality should not be neglected. Perseverance in pursuing this project led us to achieve great lengths beyond our expectation.

CHALLENGES

We failed several times aiming to make paper bags out of rice straws, fortunately, handcrafting made a way for us to come up with a product.





FUTURE DIRECTIONS

- 1. Teach Skills and Resources
- 2. Selling the Bags
- 3. Keep Track of Progress



CLOSING AND ACKNOWLEDGEMENTS

-**Professor** who provide guidance and encouragement

-**Classmates** for their moral support

-**Farmers** who provide the raw materials needed in this project (rice straw)

-We acknowledge the **Yonsei University** for giving us an opportunity to showcase our ideas in making this project.

THANK YOU!

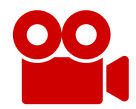


References

Röder et al. (2024). The greenhouse gas performance and climate change mitigation potential from rice straw biogas as a pathway to the UN sustainable development goals. *Biomass and Bioenergy*, 182, 107072. <https://doi.org/10.1016/j.biombioe.2024.107072>

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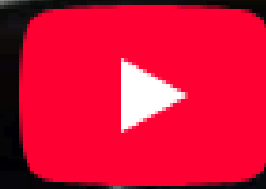
Mothe, S., Polisetty, V. R., Sridhar, P., Surampalli, R. Y., Zhang, T. C., Tyagi, R. D., & Bhunia, P. (2022). Comparison of GHG emissions from open field burning and anaerobic digestion of rice straw. *Environmental Technology*, 1-11. <https://doi.org/10.1080/09593330.2022.2153749>



LIVING LAB FINAL VIDEO



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Living Lab



THANK

YOU!

