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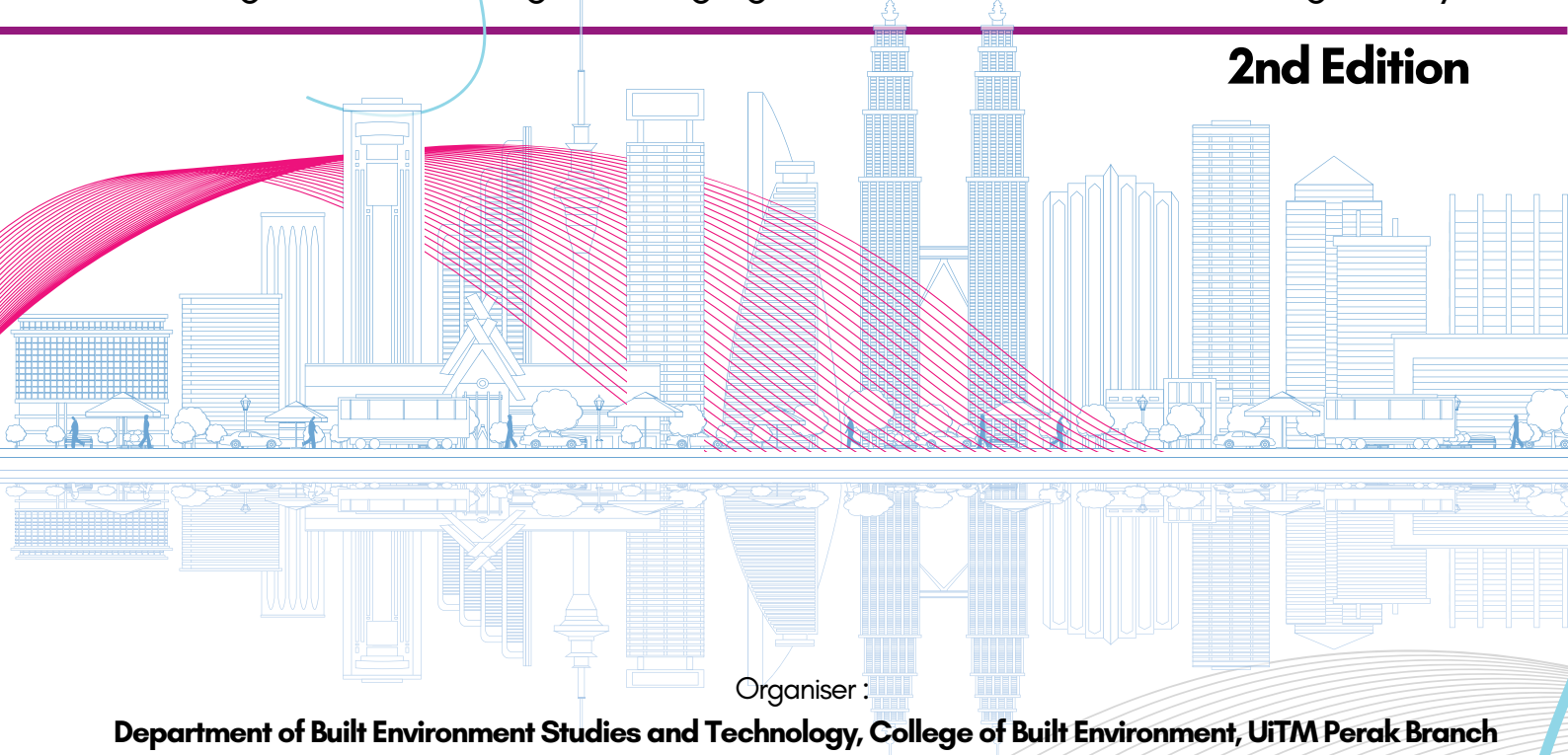
Cawangan Perak

e - Proceedings



Proceeding for International Undergraduates Get Together 2024 (IUGeT 2024)
“Undergraduates’ Digital Engagement Towards Global Ingenuity”

2nd Edition



Organiser :

Department of Built Environment Studies and Technology, College of Built Environment, UiTM Perak Branch

Co-organiser :

INSPIRED 2024. Office of Research, Industrial Linkages, Community & Alumni (PJIMA), UiTM Perak Branch

Bauchemic (Malaysia) Sdn Bhd

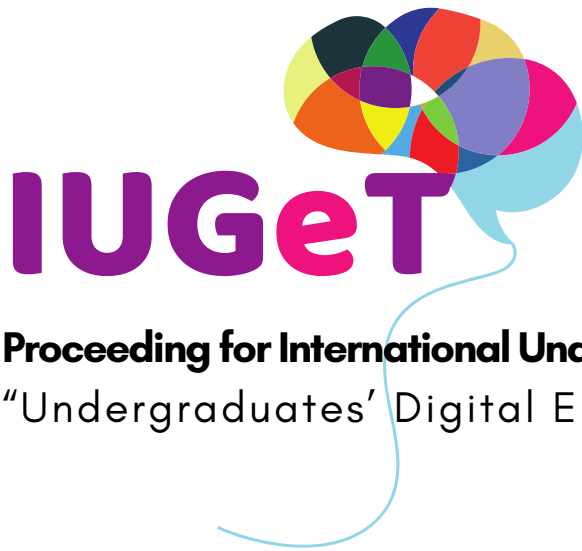
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ECO BRICK AS ANIMAL SHELTER

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Abstract

This paper explores the innovative use of eco-bricks in constructing a cat shelter, merging sustainability with animal welfare. Conventional construction materials often impose significant environmental burdens due to resource extraction and waste generation. Eco bricks, crafted from compacted non-recyclable plastic waste, offer a promising solution by reducing plastic pollution while providing durable building components. By incorporating eco-bricks into various structural elements like walls, flooring, and furniture, the shelter not only addresses environmental concerns but also enhances functionality and resilience. Furthermore, the adoption of eco-bricks encourages community involvement through plastic waste collection initiatives, fostering environmental consciousness among volunteers and supporters. This abstract introduces a pioneering approach to sustainable shelter construction, benefiting both animals and the environment. Through the utilisation of eco-bricks, cat shelters can mitigate their ecological footprint while offering essential care and refuge to homeless felines.

Keywords: *sustainability, environment, and ecology*

1. INTRODUCTION

As the global community grapples with the environmental challenges posed by plastic pollution, innovative solutions are needed to mitigate its impact. This extended abstract explores the concept of transforming polyethylene terephthalate (PET) plastic bottles into eco-bricks and using them to construct shelters on campus grounds. The focus is on sustainability, waste reduction, and providing eco-friendly infrastructure for various purposes, including shelters for animals like cats. For the PET plastic bottles to eco-bricks conversion process, PET plastic bottles are collected and cleaned thoroughly. They are then stuffed tightly with non-biodegradable waste such as plastic wrappers, bags, and packaging materials. Once compacted, these bottles become eco-bricks, durable building blocks that can be used for various construction projects, including shelters.

2. MATERIALS AND METHODS

2.1 Idea for Cat Shelter

A cat shelter constructed from eco-bricks offers a sustainable and weather-resistant solution to provide refuge for stray or feral cats on campus. The shelter can be designed with multiple entrances/exits, elevated platforms for lounging, and insulation for warmth during colder seasons. Additionally, incorporating a roof and sidewalls protects from the elements.

2.2 Construction of Cat Shelter Using Eco-Bricks

The process starts as follows:

- i. **Gather materials:** Collect PET plastic bottles, clean them thoroughly, and gather non-biodegradable waste materials such as plastic wrappers, bags, and packaging materials.
- ii. **Prepare eco-bricks:** Stuff the cleaned plastic bottles tightly with the non-biodegradable waste until they are compact and firm. Seal the bottles tightly to prevent the waste from escaping.

- iii. **Design the shelter:** Sketch a design for the cat shelter, considering factors such as size, number of entrances, and placement. Ensure the design provides adequate ventilation, insulation, and protection from rain and wind.
- iv. **Build the base:** Lay a solid foundation for the shelter using a stable platform or ground surface. Arrange the eco-bricks in a rectangular or circular shape to form the base of the shelter.
- v. **Construct walls and roof:** Stack the eco-bricks to create walls, leaving openings for entrances/exits as desired. Build up the walls to the desired height, ensuring stability and strength. Add a roof structure using additional eco-bricks or other materials to provide overhead cover.
- vi. **Add a finishing touch:** Insulate the interior of the shelter with materials such as straw or old blankets for warmth. Create elevated platforms or shelves for the cats to perch on. Add any additional features based on the design, such as windows or ventilation holes.
- vii. **Placement and maintenance:** Place the completed shelter in a quiet and safe location on campus, away from high-traffic areas. Regularly check and maintain the shelter to ensure its structural integrity and cleanliness, replacing any damaged or worn eco-bricks as needed.

2.1 Materials for Eco-Bricks

The materials are:

- i. Non-recyclable plastic waste
- ii. Adhesive materials: super glue, tape, rubber band, etc.
- iii. Wood
- iv. Plastic bottle
- v. Pvc pipes
- vi. Wooden stick

Table 1. Materials for Eco-Bricks

No	Item	Description
1	Non-recyclable plastic waste 	This plastic waste will be compacted in a bottle.
2	Adhesive materials: super glue, tape, rubber band, etc. 	These materials will be used for attaching the bottles and also making the structure stronger.

3	Wood 	Wood will be used for the floor and the structure of the shelter.
4	Plastic bottle 	The main item that will be used in this project. It will be needed in two sizes, which are 500 ml and 1 l.
5	PVC pipes 	This will also be used for the structure of the shelter
6	Wooden stick 	This is used for sticking the plastic waste in the bottle and making it more compact so more plastic waste can fit in to make the bottle hard and sturdy.



Figure 1. Eco-Bricks Shelter.

3. RESULTS AND DISCUSSION

The implementation of eco-bricks in the construction of the cat shelter yielded promising outcomes, both in terms of environmental impact and shelter functionality, including the following:

- i. **Environmental impact reduction:** By utilising eco-bricks made from non-recyclable plastic waste, the project effectively diverted a significant amount of plastic from landfills and oceans. This contributed to mitigating plastic pollution and reducing the shelter's ecological footprint. Quantitative data analysis revealed a substantial decrease in the shelter's carbon footprint compared to traditional construction methods, highlighting the efficacy of eco-bricks in sustainable building practices.
- ii. **Structural integrity and durability:** Through structural testing and observation, it was evident that eco bricks provided robust and durable construction material. The shelter's walls, flooring, and furniture constructed with eco-bricks exhibited resilience to weather conditions and wear, ensuring a safe and stable environment for the shelter's feline occupants over an extended period.
- iii. **Community engagement and awareness:** The project successfully fostered community engagement through plastic waste collection drives and educational initiatives. Volunteers and supporters actively participated in collecting and compacting non-recyclable plastic waste, contributing to the construction of eco-bricks, and raising awareness about plastic pollution and sustainable building practices within the community.
- iv. **Feline well-being and comfort:** Observational studies conducted within the shelter indicated positive impacts on the well-being and comfort of the feline inhabitants. The eco-brick construction provided insulation against temperature fluctuations and noise, creating a conducive environment for rest. Additionally, the absence of harmful chemicals often found in conventional construction materials ensured a safe and healthy living space for the cats.
- v. **Long-Term sustainability and scalability:** The project demonstrated the long-term sustainability and scalability of using eco-bricks in shelter construction. Continued engagement with the community for plastic waste collection and ongoing maintenance of the shelter's infrastructure ensured its longevity and effectiveness in providing shelter for homeless felines.

Overall, the results and discussions underscore the efficacy of incorporating eco-bricks in cat shelter construction, offering a sustainable solution that benefits both animals and the environment. Further research and implementation of similar projects could contribute to broader efforts in combating plastic pollution and promoting sustainable building practices in the animal welfare initiative.

4. CONCLUSION

In conclusion, the innovative initiative to repurpose PET plastic bottles into eco-bricks for campus shelters epitomises our unwavering commitment to sustainability and ingenuity. Through collaborative efforts and creative solutions, we aim to address global concerns while creating tangible benefits for our campus community and beyond. Via cooperative efforts and innovative solutions. This project, which includes the creative concept of using eco-bricks for specialised shelters like cat shelters, is a beacon of hope for a greener, more resilient future. It demonstrates the transformative potential of sustainable endeavours in mitigating environmental degradation and fostering societal well-being.

By repurposing PET plastic bottles into eco-bricks and using them to construct shelters, campuses can promote sustainability, reduce plastic waste, and provide eco-friendly infrastructure for various purposes, including shelters for animals like cats. This innovative approach not only addresses environmental concerns but also contributes to the well-being of campus communities and the broader ecosystem.

5. ACKNOWLEDGMENT

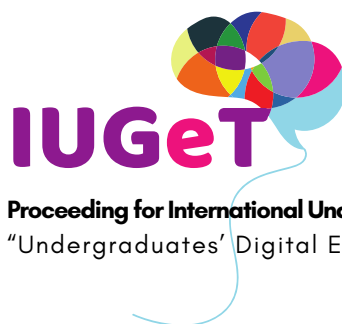
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6. REFERENCES

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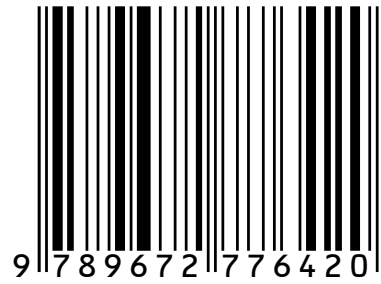
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