Key Learnings Report

Team Greencircle

CIRCULAR CITIES ASIA

The Team

Greencircle

University of the Philippines Diliman

All it takes is one step at a time to light up a community and its public spaces

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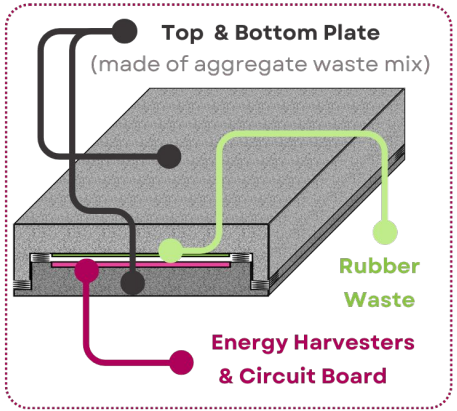
Circular Innovation Overview

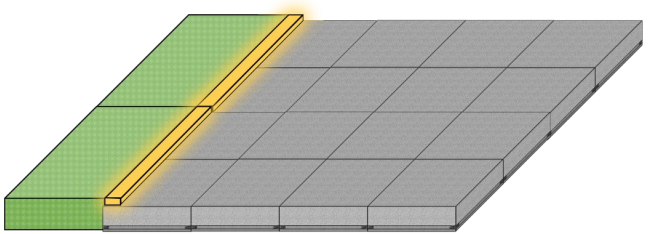
Problem Statement

How might we improve public spaces in the campus by resolving the problem of increased pedestrian accidents and criminal activities due to inadequate proper street lighting during nighttime?

KINETILE

Lighting up dimmed pathways in **UP Diliman** through footsteps





TILE DIMENSIONS CONSIDERATIONS

Length: 12 inches Width: 12 inches
Minimum walkway width: 4 ft

Current Progress

1 Assembly of Piezo Tile and Circuit Board
2 Assembly of Circuit Board and LED
3 Top and Bottom Plates
4 Assembly of Piezo Tile and Circuit Board

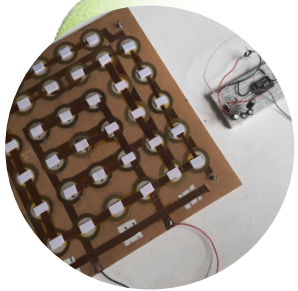
Project Goals

Short-Term Goals	Develop Circuit	• Develop one (1) 12x12in circuit board that generates five (5) volts
	Develop Tiling	• Develop one (1) 12x12in rubber layer component • Develop two (2) 12x12in concrete layer components
	Assembly of Components	• Batch procure 100% of tile components identified • Assemble 100% of circuit and tiling components
	Laboratory Testing of MVP	• Obtain permit to work in Construction Materials and Structures Laboratory (CoMSLab) • Achieve minimum 4-watt stored battery energy from one (1) kinetile unit • Light up a 4-watt bulb for at least 5 minutes

Long-Term Goals	Partnerships Integration	• Build partnership with the university administration • Build partnerships with at least 1 organization or company
	Official Launch and Advertisement	• Launch the product in the market for public use

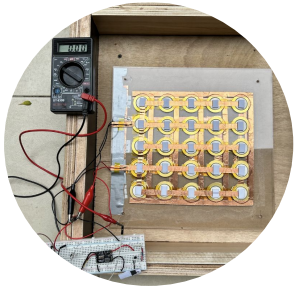
Impact and Results

Assembly of Piezo Tile and Circuit Board



Focused on assembling the piezo tile and circuit board which marks the foundation for energy conversion and storage mechanisms.

Assembly of Circuit Board and LED

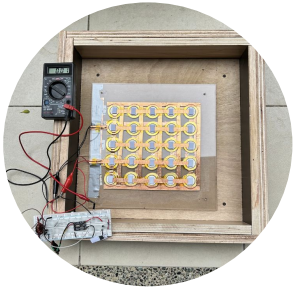


Trials with varying capacitance showed improved energy storage and output. Case 3 (stacked parallel) proved most efficient, generating higher voltage with fewer steps.

Top and Bottom Plates

Featured the creation of top and bottom plates made out of wood materials which are essential to improve durability to withstand external forces and conditions.

Prototype Assembly

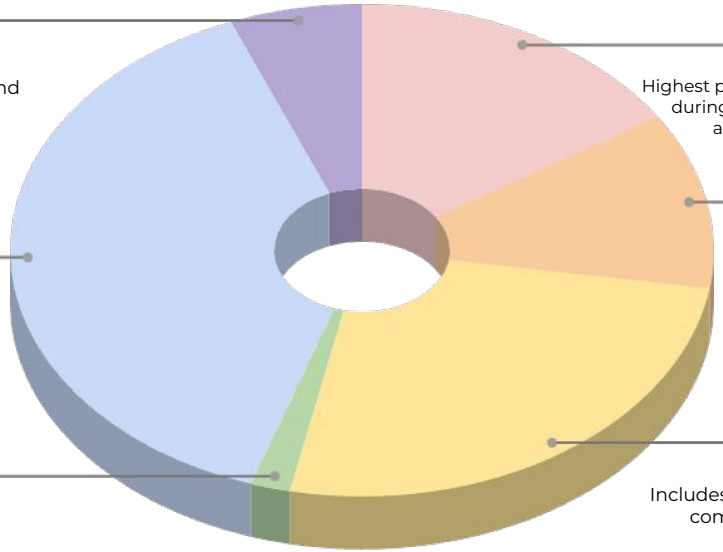


Integration of optimized designs into a functional, test-ready unit.

ncubation Funding

Budget Breakdown

Team Greencircle - Project Kinetile



Other
6.1%

Includes budget for contingencies and unaccounted expenses.

Pre-launch Labor Ex...
38.8%

Highest portion was allocated for researchers' allowance. This also includes budget for external labor fees – labor pay for contributors outside of the team.

Marketing
1.8%

Allocated for branding of the project

Administrative/ General
15.9%

Highest portion was allocated for tokens for mentors during mentoring and consultation sessions. This also includes permit fees for laboratory tests.

Location/Office/Logis...
11.6%

Highest portion was allocated for logistics and deliveries of material components. This also includes transportation fees for consultations and mentoring sessions.

Materials and Supplies
25.8%

Includes all materials to assemble the prototype components. This includes materials for the electric circuit board, and tile plates

Lessons Learnt

Lessons Learnt	Bootcamps	• VALLEYS OF DEATH: We learned about the potential problems that we may face during product development and how we can overcome them. • MARKET: We identified various market segments that will benefit most from our product. • VALIDATION: We learned different validation techniques that we can use to assess our products' marketability. • UVPs: We were able to assess our products' unique selling points, advantages, and disadvanages to other existing products.
	Mentoring	• SMART APPROACH: Sir Jonathan Co emphasized to us the importance of having numbers or data in making decisions during the poduct development. • SELLING OUR PRODUCT: We learned about the different types of customers in the market (innovators, early adopters, early majority, and late majority) and how to gain funding orsales from them. • TRUSTING OUR PRODUCT: We learned how crucial it is to push through in our product development despite having doubts on our product's feasibility against competitors as we will not know its potential until we finish the development and test the prototype.
	Product Development	• ADAPTABILITY: Despite the unexpected challenges we faced during product development such as material unavailability, schedule delays, and unsuccessful results, we were still able to create a prototype. • TIME MANAGEMENT: Despite having diffeent academic schedules, we were still able to successfully balance our workloads with the product development.

Lessons Learnt

Challenges Faced	Some of the materials we needed are not readily available in the Philippines.	RESOURCEFULNESS: We utilized the internet and ordered the unavailable materials abroad through online shops.
	As civil engineering students, we do not have the necessary technical skills to develop the circuit board.	HELP-SEEKING: We sought expert advices from several professors and engineers to refine our product. COLLABORATION: We strengthened our team by adding an external member knowledgeable in circuitry.
	Creating the optimal circuitry for the tile	PROBLEM-SOLVING: We employed a strategized trial and error method to test different cnfigurations in our circuit board to get the most desirable result.

Stories

It was honestly a challenging experience I will choose to take on over and over again! This program has helped me learn hard and soft skills which I can apply to further improve myself, and to be of service for the world.

As someone who has been interested in pursuing entrepreneurship, my experience in the Circular Enterprise Programme made me realize what it takes to start one. The program widened my perspective on circular solution, innovation, and start-ups. It was an experience worth taking especially since we, as a team, was also able to learn and grow a lot from the overall experience.

The Circular Enterprise Programme is a great opportunity for us, students, to challenge ourselves in developing innovative products for the community. The bootcamp, mentorship, and check-in calls provided us enough guidance in navigating the development phase of our product. Through this experience, I was able to learn valuable skills that I can use not only in our product development but also in my academics.

The resources from the bootcamp were very insightful. As someone who does not have any background on circular economy, I was able to learn a lot from this. Furthermore, the face-to-face meetings with our mentor provided us with feedback and encouragements that helped us in making decisions for our circular solution.

Next Steps

- Official Launch & Advertisement
- Partnership Integration
- Test Launch & Assessment
- Prototype Making
- Research & Development

Try different tile configurations (shapes and sizes) for optimal design