Parongpong RAW Lab

Impact Report 2024

PARONGPONG®
RECYCLE AND WASTE LAB

NINJA ACCELERATOR PROGRAM 2024

Presented by

JICA
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Implemented by

ANGIN

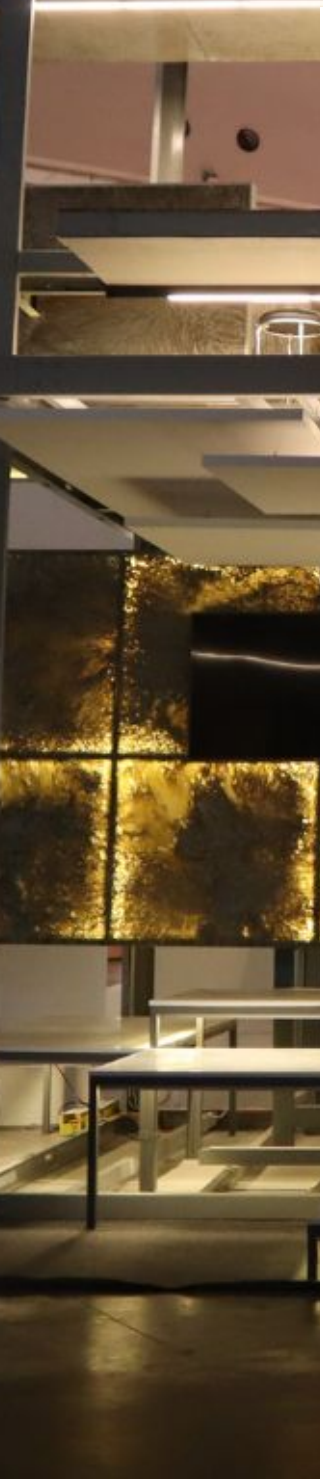

Table of Contents

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Message From JICA

JICA (Japan International Cooperation Agency) is an implementing agency of the Japanese government's Official Development Assistance, and we have a long history of partnership with Indonesia dating back to the 1960s. Until today, a variety of projects have been implemented to help achieve socio-economic development of Indonesia in collaboration with various Indonesian and Japanese organizations, including the central and local governments, NGOs, academic institutions, and private companies.

Project NINJA (Next Innovation with Japan) is also one of JICA's important programs. As you all know, startups are making a huge impact on solving social issues through their innovation. JICA considers startups as our important partners, and in order to support them NINJA started first in Africa. Following its success in Africa, it has expanded its scope to other parts of the globe. NINJA Indonesia began in 2021 and is now in its 4th year.

In 2024, we focused on eco-friendly and carbon neutral areas, such as "Green Transformation", "Natural Environment and Conservation" and "Sustainable Water Resources, supply and management". This is because JICA believes it is critical to protect Indonesia's wonderful natural environment, and make effective use of it, with necessary "mitigation" and "adaptation" measures against climate change. Finally, three promising startups, Automa Supply Chain, Kepul, and Parongpong RAW Lab, were selected as our special partners from a highly competitive pool of 264 applicants.

This impact report was created as part of the JICA project NINJA in Indonesia in 2024 and shows how those selected startups will make an impact on society.

We hope that the report will deepen reader's understanding of them and encourage more partners to create and expand social impact together.

Rendy Aditya Wachid
Founder,
CEO of Parongpong RAW Lab

Founder's Message

Parongpong RAW Lab began as a personal project between me and my wife—a response to the urgent need to rethink how we treat the planet and to reclaim our responsibility to future generations. Even before beginning my entrepreneurial endeavor, I have always felt that our commonly practiced systems often ignore the long-term impacts of today's "take, make, waste" production model.

One of our greatest achievements has been shifting how people perceive waste. Eight years ago, when we started Parongpong RAW Lab in Indonesia, low-value or residual waste was viewed as something useless, with no place in a circular economy. Today, we've proven that there's no such thing as waste—only untreated material waiting to be transformed.

In 2019, our journey evolved when we adopted Tokyo Tech's hydrothermal technology, adapting it into what we now call Prototech®. With this, we've converted everything from cigarette butts to ghost nets into usable materials. What started as an experiment has grown into a movement, creating a "blue ocean" market for residual-based materials in industries once unable to adopt them.

A particularly proud milestone has been transforming cigarette butts into materials like furniture—a turning point in waste material processing aimed at reducing the impact of ocean pollution. Now, we're processing ghost nets, wet wipes, masks, and even textile waste, primarily polyester. Each step reinforces our commitment to showing that Indonesia holds powerful, innovative solutions.

On a professional level, our collaborations with national and international companies demonstrate that residue-based materials have an industrial future. But the greatest achievement will be teaching my children the "why" behind this journey. This is about purpose, resilience, and honoring our responsibility to the Earth.

Problem

What is low-value waste?

Low-value waste refers to waste materials that are often considered economically less viable to recycle or reuse due to their perceived **low worth, complex composition, or lack of established recycling infrastructure**. These materials are typically left unmanaged, ending up in landfills, waterways, or the ocean, contributing significantly to environmental degradation.

According to data from the National Waste Management Information System of the Ministry of Environment and Forestry, as of July 24, 2024, input from 290 cities and regions in Indonesia indicated that the **total amount of national waste had reached 31.9 million tons**. The country's **low recycling rate of less than 15%** (Boston Consulting Group, 2024) further exacerbates this issue – most of this waste ends up in unmanaged landfills, eventually making its way to the sea, where it becomes marine debris.

01 **Cigarette Butts**

02 **Ghost Nets**

03 **Disposable Masks**

04 **Wet Wipes**

05 **Diapers & Sanitary Products**

06 **Contaminated materials;** dirty clothes, papers, plastics, etc

The problem not only brings environmental consequence, but also economic, social, and health issues:

Pollution and ecosystem damage; including marine degradation

Landfill overflow

Community livelihood disruption

Health risks from contamination

Missed economic opportunities

Problem

In our effort to mitigate the negative impact of low-value waste, ***Parongpong RAW Lab is researching and developing circular material technology.*** Through our endeavor, we are tackling these relevant problems, with particular focus on ghost net waste and its impact on coastal communities:

01 Limited **technology** to process **low-value** waste

02 **Low market value** of low-value waste, which discourages investment

03 Logistical waste collection challenges due to **lack of cooperation with local communities**

Why circular material matters

Circular material refers to materials designed, sourced, or processed in a way that allows them to remain within a closed-loop system, ***minimizing waste and maximizing their reuse, recycling, and regeneration***. The goal is to eliminate the "end-of-life" concept, ensuring that materials are continually repurposed.

01 Building environmental sustainability

Sourced from renewable, recycled, or low-impact resources, circular materials reduce waste and pollution, conserve natural resources, and lower greenhouse gas emissions.

02 Unlocking value from waste

Waste, traditionally seen as a problem, holds untapped economic potential that circular materials unlock, creating new revenue streams and reducing dependence on virgin resources.

03 Empowering communities

Circular material initiatives promote environmental stewardship and empower communities by providing income opportunities – ultimately fostering economic resilience.

The problem of ghost net waste

VOLUME

500,000–1,000,000 tons

of ghost nets enter the ocean every year

Source: WWF, 2020

MARINE DEGRADATION

An estimated 4,500 recovered ghost nets had killed upwards of **2.5 million marine invertebrates, 800,000 fish, and 20,000 marine birds** over the time the nets were derelict in the water

Source: Hardesty et al., 2015

ECONOMIC LOSSES

IDR 468 million/year (approximately USD 28,500) in losses incurred by damage from ghost nets among **daily fishers**

IDR 888 million/year (approximately USD 54,000) in losses experienced by the **fishing industry** from ghost gear

Source: Adlina, A et al., 2023

About Parongpong RAW Lab

Parongpong RAW Lab is an award-winning research and development laboratory and production facility focused on sustainability, circular economy, and material innovation. We develop and deploy technology that transforms low-value waste into high-value materials and products, working towards a sustainable future.

Since our inception in 2017, we have expanded our processing and production capacity for various types of low value waste – beginning from diaper and wet tissue to cigarette butts to disposable masks, and finally to our current focus on ghost nets. With our patent-pending Prototech® technology, we are continuing our research, scaling our production, and expanding our network of partnerships to further elevate our impact.

We are committed to changing the way people perceive and handle waste. The prevailing throwaway culture, where products are designed for short-term use and quickly discarded, has led to pollution, resource depletion, and environmental degradation. Instead, we focus on circularity, material innovation, and sustainable design, ensuring that materials retain value beyond single use and can be continuously reused, redesigned, and reintegrated into the economy.

By extending material lifecycles, we aim to build a world where waste is not an endpoint but a resource for regeneration. Our Prototiles™ innovation, made from low-value waste, demonstrates how circular materials can meet the needs of the present without compromising the future – manifesting the definition of sustainability itself.

Ultimately, the philosophy isn't just about environmental responsibility; it's about reshaping industries, empowering communities, and driving a systemic shift toward a circular economy. This vision extends beyond products – it's about transforming mindsets, behaviors, and systems for a future where progress and sustainability go hand in hand.

Our Mission

- Develop innovative solutions to address the problem of waste and reduce negative environmental impact
- Build a circular economy through impactful partnerships and community engagement

Our Vision

A sustainable future where waste becomes a resource that drives innovation, economic growth, and environmental preservation

Core Values

People

Prosperity

Planet

Solution

By deploying our innovative ***Prototech® technology*** – a hydrothermal technology that efficiently processes low-value waste into sterile, reusable materials without harmful emissions or pre-treatment – Parongpong RAW Lab ***transforms low-value waste into high-value materials*** for industries, producing circular materials and fostering a circular economy. Our current efforts highlight ghost net processing, with Ja~la! Prototiles™ as our winning product.

OUR PRODUCTION PROCESS

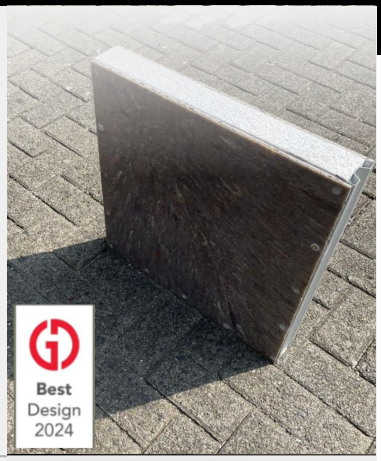
From low-value waste to end product

Our Products

Our Prototech™ technology puts low-value waste through a thermochemical conversion process. The process results in RAWchar – a sterile, homogeneous material that can be mixed with other materials. Our **in-house production mixes RAWchar with polymer (plastic)**, creating our plastic-based Prototile products.

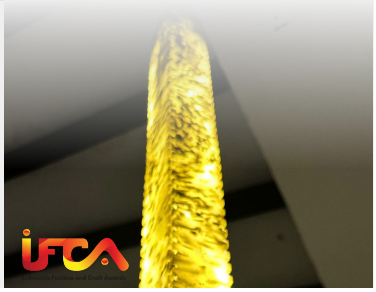
Ja~la! Sandwich Panel

As one of our winning products, Ja~la! Prototiles™ is the base material for our sandwich panel – a mix of ghost net-based RAWchar® and polymer. The panels are designed to meet common modular fabrication needs, minimizing waste and reducing raw material usage. Compared to conventional concrete-based panels, they generate less carbon during production and construction. Additionally, the panels are 20% more affordable (saving IDR 200,000 or USD 12 per unit) and offer larger dimensions than market competitors, providing both cost and efficiency advantages.



Rae~saka!

An elegant hanging lamp inspired by "pillars of light", made from Ja~la! Prototiles™ – fishing net waste collected by local fishermen. With dimensions of 5 x 5 x 80 cm, it is the perfect combination of functional design and sustainability.



Solution

Our Products

Other textures and products

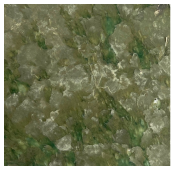
Different bases of RAWchar® create different textures in ready-to-use materials. Other than Ja~la!, we also produce other textures from other types of low-value waste. From these materials, we produce various end-products such as stool, table, tissue box, etc.

Ja~la!–
ghost net

Ko~hi! –
coffee waste

Ba~ra! –
cigarette butts

Su~ha!
Disposable Mask



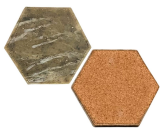
Mu~mu! Construction
Packaging Waste

Toys –
Unused toys

Ashpresso Series

Coffee Table

Ja~la!
Clock



Ja~la!
Coaster

Ja~la!
Object

Ja~la!
Stationery Box

Stool Flat-pack

Table

Tissue Box

Our Collaborative Products

We collaborate with affiliates for more innovative end-products. In collaboration with Conture. Concrete Lab, **our RAWchar® is mixed with concrete** to create products for both indoor and outdoor application – The Sunset Park Bench at Desa Potato Head, Bali is one of our highlights. With Paperpods, **our RAWchar® becomes recyclable paper** that can be planted and grown into various plants.

Key Milestones

2017

Founding of
Parongpong RAW Lab

2019

- Research and development of Prototech® technology to process low-value waste
- Begin material processing of cigarette butt waste

Cigarette butt waste processing with Prototech®

2021

Paredice Climate Alliance at Bone Bolango: Parongpong RAW Lab, together with Rawhaus, Evoware, Diver's Clean Action and Carbon Ethics forms Paredice climate alliance with a pilot project at Bone Bolango Regency, Gorontalo Province – building the first zero-waste high-performance microhouse as a waste center for coastal communities

Paredice Climate Alliance

2022

- Opening of the first Parongpong RAW Lab workshop
- **KESAN (Kresek Kesadaran) disposable mask collection program with Evoware**: Covering Bali, Jakarta, Bandung, and Yogyakarta area with 493 kg of masks collected and processed into high-value materials

Disposable Mask Processing with Kresek Kesadaran (KESAN)

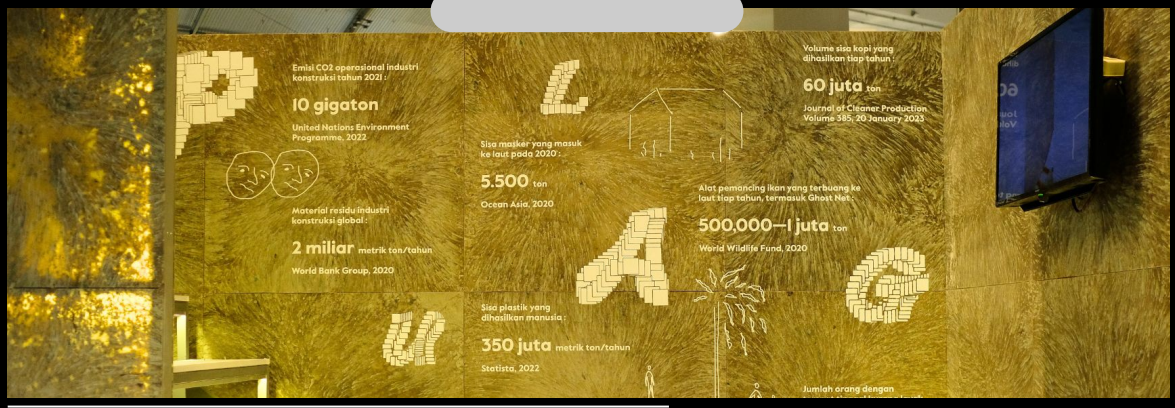
2023

Sunset Park Bench at Desa Potato Head Bali: In collaboration with Conture. Concrete Lab, Parongpong RAW Lab uses 600 kg of material processed through Prototech® technology to create a unique piece of eco-friendly furniture. Received the G-Marks 2023 award from Good Design Japan.

Sunset Park Bench at Potato Head Bali

Recap 2024

2024 has been a year of growth for us at Parongpong RAW Lab. We were able to launch new products, grow our business and production, as well as expand our education initiatives.



01

Launch of our winning Prototiles™

In February 2024, we debuted our Prototiles™ line at the Indonesia Architecture Exhibition & Conference 2024 (ARCH:ID 2024). It was featured as part of the '*Pulang ke Masa Depan*' Pavilion with WIKA Gedung's modular system and Saint-Gobain Indonesia's special adhesives and high-quality Ecophon acoustic tile.

The Prototiles™ manufactured for the pavilion was processed from 1 ton of low-value waste – including 500 kg of Saint-Gobain packaging waste and 500 kg of coffee waste, single-use mask waste, and ghost nets.

02

Awards and recognitions

We submitted Ja~la! Prototiles™ to the Good Design Awards 2024 in Chiba, Japan. Before competing in Japan, Ja~la! Prototiles™ was screened in the national selection process – **Good Design Indonesia** by the Indonesia Design Development Center, Ministry of Trade.

Ja~la! Prototiles™ also became an awardee of the **ASEAN Business Innovation Challenge** – we were selected along with other blue economy solutions across ASEAN countries and Timor-Leste. With its unique and versatile approach to the plastic debris problem, our product attracted the attention of UNDP as well as prospective investors through the program.

Recently, we won the business challenge at the **Japan–Indonesia Fast Track Pitch Event** – enabling our project at a pulp factory in Palembang as the winning reward.

Recap 2024

PET bottle collection at campus roadshow

BOPONG 2.0 talkshow

03

Education initiatives

With a renowned beverage company, we conducted a **campus roadshow** in Bandung, Jakarta, Yogyakarta, Makassar offering talk shows, plastic upcycling workshops, sustainable products showcase, and PET bottle collection. The Plastic Reborn 4.0 program collected 18 kg or 1,071 PET bottles 2,35 kg of bottle caps, and 0,97 kg of flexible plastic bottle labels.

This year, we also completed a **digital studio project at a high school in Ambon** –partnering with WIKA Gedung and Rawhaus, our affiliate that specializes in microhouses. It's the first project of its kind – using circular materials such as Ja~la! Prototiles™ for wall panels and our colorful Arunika Prototiles™ for furniture.

We continued our **BOPONG community-based education and collection campaign** for cigarette butt waste with a multinational tobacco company. We collected 169,621 grams of cigarette butt waste from Bandung, Bekasi, Jakarta, Yogyakarta, and Surabaya, which was then processed and made into 9 Lil Besa Pots by our affiliate Conture. Concrete Lab.

Our Proud Progress

Since our founding in 2017, we have made significant strides in business and production capacity growth, while growing our network to elevate impact.

COVERAGE

6 provinces

We have expanded our service coverage from mainly West Java and Jakarta provinces to areas such as Bali and Makassar – and recently to Ambon and Palembang

CLIENTS

27 B2B clients

Including architectural design firms, private companies, state-owned enterprises, and academic institutions

COVERAGE

125%

Growth in 2024 compared to the year 2023

CLIENTS

24 m^2

Of Ja~la! Prototiles™ per day in 2024

In 2024, we were able to scale our production by purchasing a new hot press machine. With the new addition, we doubled our production speed and quantity from 12 m^2/day in 2023.

COVERAGE

14

Product variations offered

CLIENTS

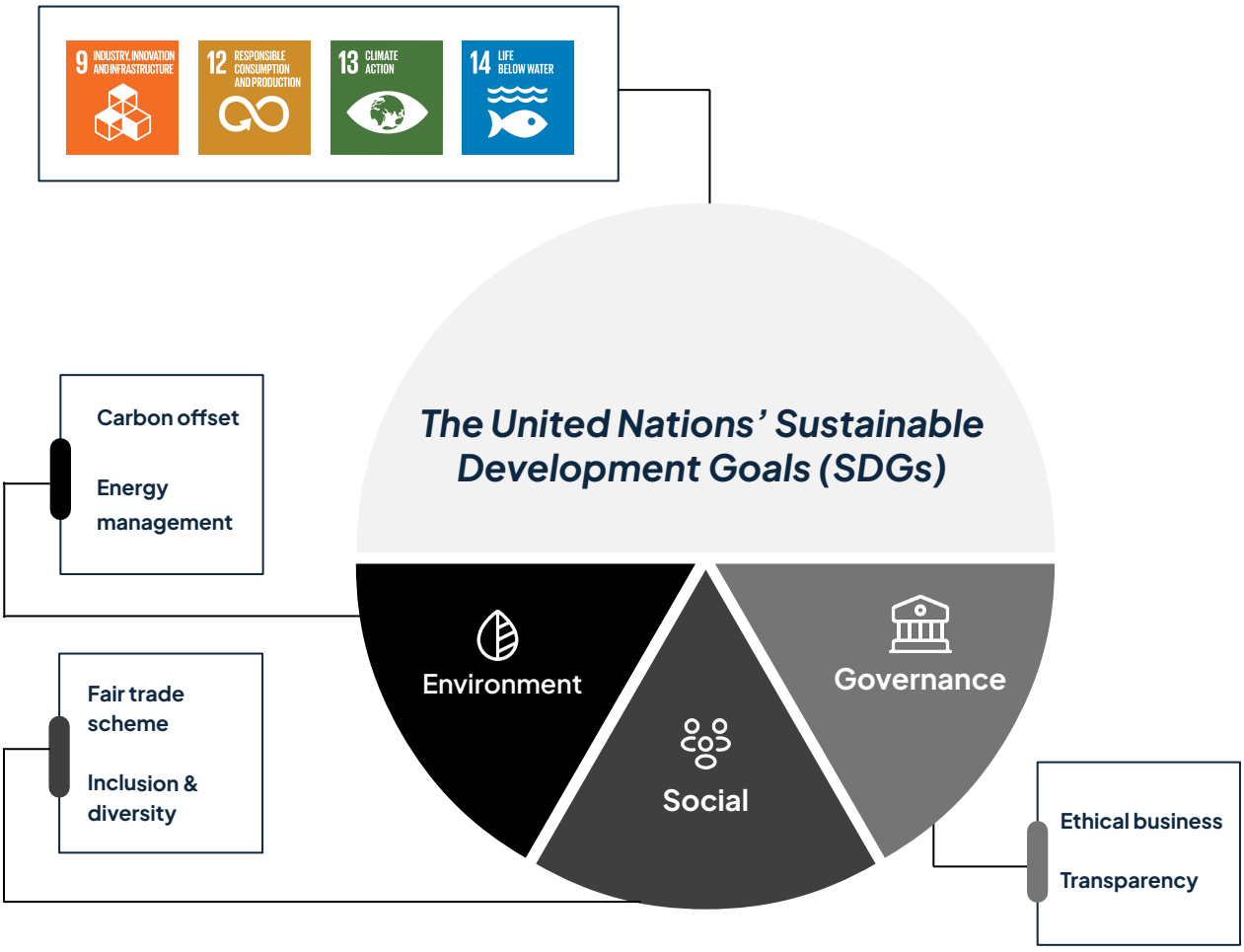
36 tons

Of products from low-value waste

IMPACT & ESG

The following section discloses our impact progress and sustainability efforts to improve business practices related to environmental, social, and governance (ESG) topics. Our efforts are aimed at driving positive change not only for our company, but also for the environment, the community, and all stakeholders involved.

Impact Summary



Despite growing awareness and initiatives toward sustainability, **current recycling efforts primarily focus on high-value waste**, such as PET bottles, aluminum cans, and paper. This is due to their better market value and the availability of established recycling technologies. These materials are easier to collect, process, and repurpose into new products, making them economically viable for recycling industries. On the other hand, low-value waste – including ghost nets, cigarette butts, disposable masks – remains largely overlooked because it requires more complex processes and development of new technology. This lack of infrastructure for industrial-scale solutions causes low market incentives – perpetuating widespread pollution and ecosystem damage.

Parongpong RAW Lab addresses this gap by focusing on low-value waste – transforming them into valuable and ready-to-use materials through our Prototech® technology. In parallel with our continuous research and development, we also recognize the importance of community engagement and strategic collaborations. To elevate our impact, we empower local communities with income opportunities through waste collection and recycling initiatives, as well as collaborate with industries and the government to redefine waste management systems. Ultimately, we strive **to promote a circular economy and build environmental stewardship.**

In this endeavor, we align our efforts with Sustainable Development Goals (SDGs) as our commitment to impactful and meaningful work. Furthermore, we also believe in ESG best practice on our own premises for a holistic impact approach.

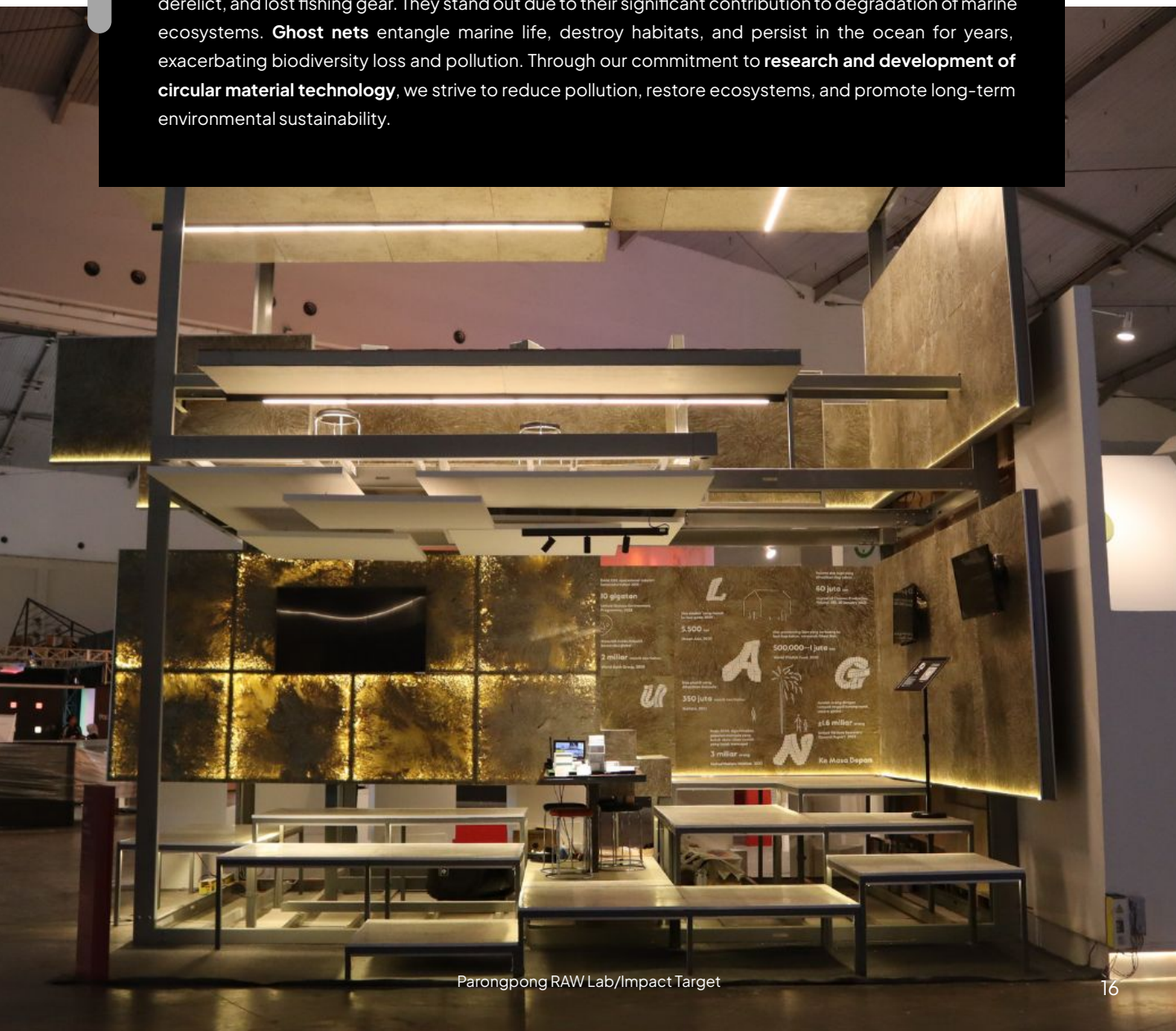
Impact Target

Parongpong RAW Lab aims ***to build a circular economy in Indonesia through low-value waste recycling technology***. We are addressing the processing and low market value challenges of low-value waste, tackling urgent concerns of pollution and ecosystem damage. Ultimately, we envision a sustainable future where waste becomes resource in a circular economy that benefits all.

Primary impact target

The environment

We strive to build meaningful impact for the environment, with an emphasis on waste reduction and waste management efforts. Through our solution, we process low-value waste into circular materials – **reducing the flow of waste into critical natural habitats**. Our current efforts highlight ghost net waste; abandoned, derelict, and lost fishing gear. They stand out due to their significant contribution to degradation of marine ecosystems. **Ghost nets** entangle marine life, destroy habitats, and persist in the ocean for years, exacerbating biodiversity loss and pollution. Through our commitment to **research and development of circular material technology**, we strive to reduce pollution, restore ecosystems, and promote long-term environmental sustainability.



Parongpong RAW Lab/Impact Target

Secondary impact targets

Circular economy stakeholders

To strengthen our sustainability impact, we engage various relevant stakeholders. We see this as an opportunity to integrate efforts towards environmental stewardship and a circular economy.

Coastal communities

Coastal communities are a cornerstone of our impact efforts. These communities often bear the brunt of marine pollution – declining fish stocks, damaged ecosystems, and resulting economic losses. Our initiatives, such as **incentivized ghost net collection**, provide additional income for fishermen and empower them to play a key role in environmental stewardship. By engaging these communities, we create **zones free from ghost net pollution, improve livelihoods, and foster long-term environmental awareness.**

Construction companies (private and state-owned)

Construction companies represent **a significant avenue for scaling the impact of circular materials**. Through partnerships with private and state-owned enterprises – WIKA Gedung, Saint-Gobain Indonesia – we integrate our recycled products, such as Ja~la! Prototiles™, into sustainable construction projects. These collaborations **demonstrate the industrial viability of low-value waste-based materials, reduce the environmental footprint of construction**, and meet growing demands for eco-friendly solutions. Our partnerships have facilitated the use of over 120 tons of recycled materials, contributing to projects like modular structures and public installations that set a precedent for circular construction practices.

Architects and designers

Architects and designers are key stakeholders in driving the adoption of circular materials, incorporating them into innovative, sustainable designs. Our partnerships with renowned architects, such as Andra Matin and Avianti Armand, have showcased the aesthetic and functional potential of products like Ja~la! Prototiles™. At the same time, we provide **opportunity for innovation for architects and designers**. By aligning with their creative vision, we amplify the impact of circular materials, **demonstrating that sustainability can co-exist with cutting-edge design and functionality.**

Our Impact Framework

Parongpong RAW Lab is a research and development laboratory, focusing on circular material production and innovation. We strive to accelerate efforts towards a circular economy in Indonesia – ultimately addressing urgent environmental concerns by shifting the perspective on waste.

We incorporate the United Nations' Sustainable Development Goals (SDGs) into our impact framework – to shape, steer, and communicate our vision of ***building a sustainable future where waste becomes a resource that drives both economic growth and environmental preservation.***

Goals	Targets	Parongpong's Initiatives
	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.	***Research and development of low-value waste recycling technology*** Through our Prototech® technology, we demonstrate our commitment to the research and development of low-value waste recycling. We are addressing the lack of technology and infrastructure for low-value waste processing, aiming to make it more efficient and scalable. ***Clean production process of circular materials*** We transform low-value waste into high-value and ready-to-use materials – such as Ja~la! Prototiles™. Our production utilizes a thermochemical conversion process. The hydrothermal-based technology boasts a clean process, mitigating CO2 emissions associated with conventional burning processes.
	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.	***Strategic partnerships in building a circular economy infrastructure*** We actively engage industries from the private and governmental sectors, as well as architects and designers to expand our network of circular economy initiative. These partnerships highlight our holistic approach to building a circular infrastructure – encouraging industries to adopt circular materials, and empowering architects and designers to innovate sustainably. Ultimately, we are promoting closed-loop production and enabling production of sustainable consumer goods.

Goals	Targets	Parongpong's Initiatives
	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	***Community engagement and education*** In addition to the technical aspects of low-value waste recycling, we also prioritize a community-driven approach to climate action. We actively involve local communities, such as offering fair trade incentives to coastal populations in ghost net collection. Not only do we strive to empower them in economic aspects, but also in capacity-building and sense of ownership in sustainable practices. Community education and awareness-raising are key pillars in our work. Through workshops, educational campaigns, and collaboration with local schools, we aim to create a long-term shift in behavior, ensuring that the collection and recycling system is self-sustaining.
	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	***Offsetting ghost nets from the ocean*** Through our current focus on ghost net waste, we are contributing to ecosystem restoration and the preservation of marine biodiversity. Our initiative reduces waste from the ocean, lowering risks of microplastics ingestion by commercial fish and other marine life. Beyond preservation, this allows coastal communities to consume fish safely, mitigating the threat of microplastic contamination. Ultimately, we are striving towards lasting environmental impact on Indonesia's oceans, below water natural habitats, and marine life.

Impact in Numbers

01 PRIMARY METRICS
The environment

LOW-VALUE WASTE

120

Tons of low-value waste converted into materials since founding in 2017

CARBON OFFSET

55

Tons of CO_2 prevented in a year
through preventing waste from landfill

GHOST NET

16

Tons of ghost nets collected and processed in a year

To be turned into Ja~la! Prototiles™

GHOST NET

7

Tons of sheets made from ghost nets in a year

GHOST NET

120

Kg of ghost nets processed per day by the end of 2024

Increase from
60 kg of Ja~la! Prototiles™ / day in 2023

CIGARETTE BUTTS

16,000

Kg of cigarette butts collected and processed in a year

To be turned into Ba~ra! Prototiles™

COFFEE WASTE

171

Kg of coffee waste collected and processed in a year

To be turned into Ko~hi! Prototiles™

DISPOSABLE MASK

432

Kg of diaper/disposable mask collected and processed in a year

To be turned into Su~ha! Prototiles™

Impact in Numbers

02 **SECONDARY METRICS**
Coastal communities

85
Local coastal community members
taking part in coastal collection

2,400
Households economically boosted
through ghost net fair-trade system

3.6 million
Rupiah/year increase in income
among communities we engage

5
Coastal communities engaged in a year

02 **SECONDARY METRICS**
Coastal communities

4.4
Tons of low-value waste-based material supplied to construction

5
Construction company partners in a year

8
Architect and designer partners in a year

Impact Deep Dive

Construction Companies

In our goal towards wider deployment of circular materials and a circular economy, construction companies are key stakeholders. Our work seeks to bring impact for construction company partners while enabling them to take part in sustainable practices and production.

Construction companies are increasingly seeking eco-friendly materials to meet green building certifications, as well as to respond to growing consumer demands for environmentally responsible construction. Parongpong offers innovative circular materials through efficient, no-pretreatment processing – enabling companies to significantly reduce their environmental impact while maintaining cost-effective process and enhancing their brand reputation.

We collaborate with private, multinational, and state-owned construction companies in Indonesia to demonstrate that materials from low-value waste have an industrial future. We gain valuable industry insights from our network to help us better align our waste-to-material solutions to industry needs. By building impact for companies, we are building a circular economy infrastructure – ultimately creating a wider market for circular materials from low-value waste.

Study Case: Saint-Gobain Indonesia

Saint-Gobain is a French multinational company – who also operates in Indonesia as Saint-Gobain Indonesia as well as owns Mortar Utama, Indonesia's most popular mortar brand for construction materials. Their commitment to net zero emission efforts is demonstrated through product optimization and eco-design, which include recycling efforts and recycled materials integration. Through our partnership, **we enable and empower the company as a specialist in construction materials from low-value waste**.

In June 2024, we collaborated on the launch of **DAUR-MU**; a take-back program that collects Mortar Utama packaging from construction projects across Jakarta and Tangerang and converts them to Prototiles™, which then become materials for construction tools.

DAUR-MU program by Parongpong and Saint-Gobain Indonesia

Impact in Numbers: Saint-Gobain Indonesia

924 kg
Low-value waste used in production in 2024

519 kg
Ghost net waste used in production in 2024
Through usage of Ja~la! Prototiles™

DAUR-MU IN NUMBERS

Below data is monitored and verified through Mallsampah's app-based digital traceability.

30 tons
Polypropylene packaging collected

19 tons
Waste saved from landfills

8.22 tons
CO_2 emissions prevented
Through preventing waste from landfills

Apsara Herman

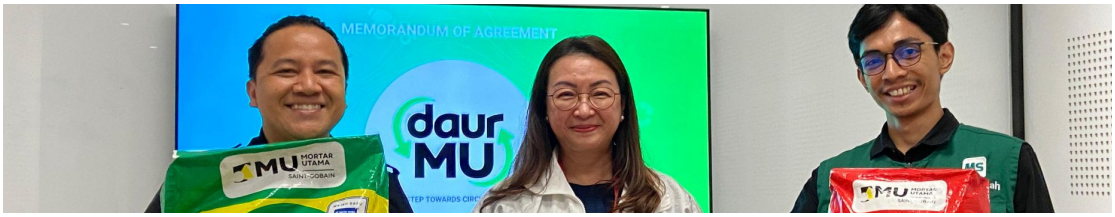
National Marketing Director at Saint-Gobain Indonesia

We have worked together on the “Pulang ke Masa Depan” pavilion at the ARCH:ID 2024 architectural exhibition and the DAUR-MU take back program. Our professional relationship has allowed me to witness firsthand his (Rendy, founder of Parongpong RAW Lab) passion for sustainability and circular economy and their dedication to waste-to-material research for construction.

Parongpong RAW Lab is undeniably a purpose-driven business committed to creating a positive social impact. The company's mission to convert residual, low-value waste into high-value material is both commendable and impactful. The scalability of their model, coupled with Rendy's relentless pursuit of excellence, positions the company for significant growth in both market presence and social impact.

Impact Partners

Parongpong partners with companies both private and state-owned, as well as NGOs that share our goals and concerns. Through these key partnerships, we are able to extend our network and take our impact to new heights.



01 Saint-Gobain Indonesia

Our collaboration with Saint-Gobain Indonesia began after winning the NOVA by Saint-Gobain Slingshot 2023 Circular Economy Award, which recognizes innovative solutions in sustainability. As a major construction company and owner of Mortar Utama, Saint-Gobain plays a key role in integrating circular materials into the industry. Our partnership was first showcased at ARCH:ID 2024, where Saint-Gobain provided adhesives and Ecophon acoustic ceilings for the 'Pulang ke Masa Depan' pavilion, demonstrating how circular materials can be incorporated into sustainable modular architecture.

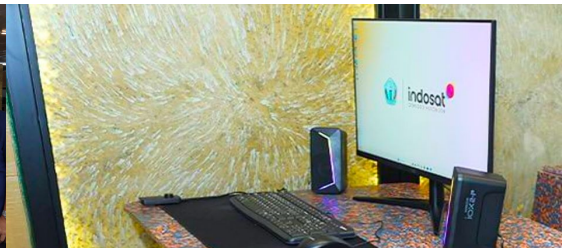
Building on this collaboration, we launched DAUR-MU, a take-back program that recovers used Mortar Utama packaging from construction sites. The recovered packaging is processed into RAWchar®, which is then applied to create various products, including cement trowels and plantable paper sleeve packaging in partnership with our affiliate specializing in recycled paper innovation. By December 2024, DAUR-MU successfully diverted 18 tons of polypropylene waste from landfills.

This partnership enables us to accelerate the industrial adoption of circular materials, reducing waste, and paving the way for sustainable built environment.

02 Divers Clean Action (DCA)

We collaborate with Divers Clean Action (DCA), a youth-led NGO dedicated to tackling marine debris issues. In Cilincing, North Jakarta, we are partnering with DCA to conduct waste mapping and research, strengthen community development, and promote awareness education in local waste banks. By integrating scientific research with grassroots action, this collaboration plays a key role in enhancing waste management systems, fostering local environmental stewardship, and scaling marine debris solutions.

Impact Partners



03 PT Wijaya Karya Bangunan Gedung, Tbk

We collaborate with Divers Clean Action (DCA), a youth-led NGO dedicated to tackling marine debris issues. In Cilincing, North Jakarta, we are partnering with DCA to conduct waste mapping and research, strengthen community development, and promote awareness education in local waste banks. By integrating scientific research with grassroots action, this collaboration plays a key role in enhancing waste management systems, fostering local environmental stewardship, and scaling marine debris solutions.

04 Environmental Justice Foundation (EJF)

Our ghost net processing pilot project was launched in partnership with the Environmental Justice Foundation (EJF), an organization dedicated to ending illegal, unreported, and unregulated (IUU) fishing while promoting policy reform and sustainable fisheries management in Indonesia. Through EJF's Net Free Seas program, we engaged coastal communities in Pangandaran and Pemalang, integrating them into an incentivized ghost net collection system alongside educational initiatives on marine debris awareness and environmental stewardship.

In February 2024, we collected 2.4 tons of ghost nets with the participation of 30 local fishermen. By October 2024, we doubled our impact, collecting 16 tons of ghost nets, engaging 85 locals, and benefiting 2,400 households. By working with EJF, we not only reduce marine pollution but also foster community-driven solutions, strengthening our impact in both environmental restoration and coastal community resilience.

ESG Overview

We recognize that there are critical factors of Environmental, Social, and Governance (ESG) conduct that have impact on both our business and the communities we operate in. In this report, we provide an overview of our ESG performance with a deep dive **on environmental metric.**

Current initiatives

01 Environment

Hydrothermal-based technology. Our manufacturing process consumes less energy, water, and other resources associated with conventional manufacturing processes

02 Social

- Fair trade schemes for coastal communities
- Gender inclusivity in the workplace
- Education and skill development for employees

03 Governance

- Foster a safe, transparent environment where ethical concerns can be promptly addressed
- Actively engage stakeholders, including government agencies, industry experts, and community leaders

Ways we will explore to increase our ESG impact even further

01 Environment

To achieve zero-waste goals by ensuring complete material circularity, utilizing all by-products of the Prototech® process

02 Social

To invest in community-based recycling facilities to localize processing ghost nets and other plastic waste

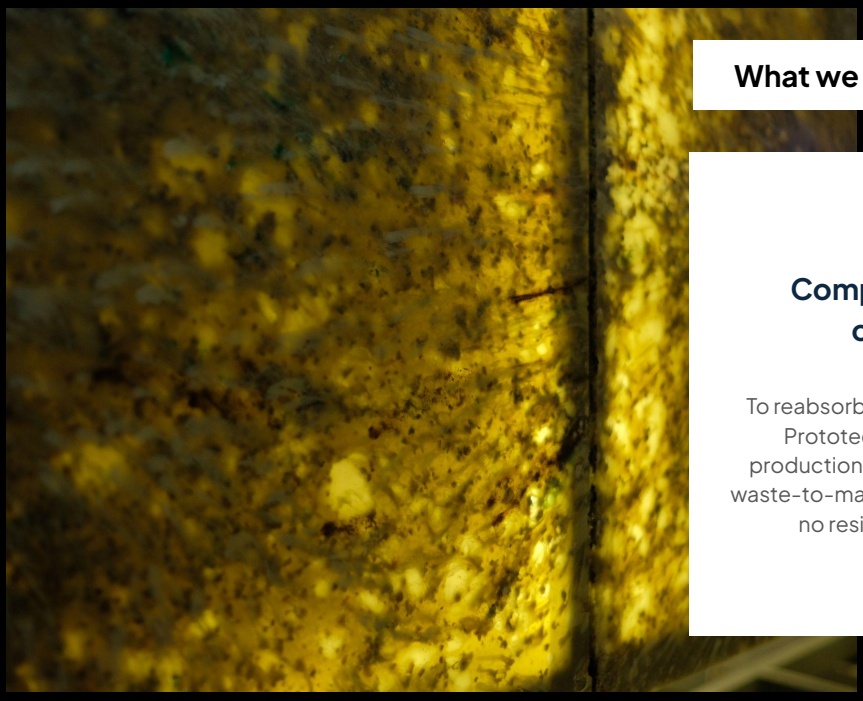
03 Governance

To improve traceability and accountability through stronger data-driven monitoring system – strengthening impact measurement credibility

ESG Overview

ESG Deep Dive
Environment

While enabling environmental impact for various stakeholders, we strive to hold high standards of environmentally-conscious conduct within our own premises.



What we want to do better

Complete material circularity

To reabsorb every byproduct of the Prototech®process into our production, ensuring a true circular waste-to-material transformation with no residual landfill waste.

- Our patent-pending Prototech® technology is a hydrothermal-based technology that utilizes a thermochemical conversion process.
- The technology has the capacity to process up to **1,000 tons of waste per year.**
- **No harmful emissions:**
  Unlike incineration, this process does not involve combustion, eliminating the release of harmful dioxins, heavy metals, and carcinogenic emissions typically associated with burning plastics.
- **Minimum water and chemical usage**:
  Many recycling processes require extensive cleaning, sorting, and decontamination, leading to high water and energy consumption. Prototech®bypasses this pretreatment step, allowing contaminated waste like cigarette butts or mixed plastics to be directly processed with no additional chemicals needed in the process.
- **Energy-efficient process**
  The hydrothermal process operates at optimized temperatures and pressure, using less energy than traditional melting, combustion, or mechanical recycling.

Certifications

At Parongpong RAW Lab, we are dedicated to validating the safety, durability, and sustainability of our materials through testing and certification. To align with industry needs, we conducted surveys with construction companies, architects, designers, and project managers. Our findings support the need for certifying Ja~la! Prototiles™ as our winning product, reinforcing its suitability for outdoor and high-performance applications.

VIRO®
PT Polymindo Permata

01 Flame Retardant & UV Stabilized Compound Testing

Conducted in partnership with PT Polymindo Permata (VIRO)
Tested in 2024

A test to evaluate the research and development of compounding our Ja~la! Prototiles™ with Flame Retardant (FR) and UV Stabilized additives. The objective is to assess the compounded material's resistance to heat, UV exposure, and environmental factors, ensuring its durability in construction and design applications.

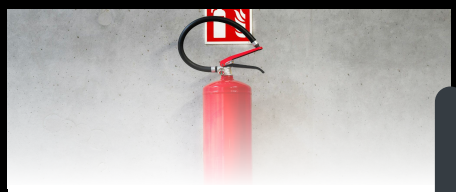
Key Findings of Flame Retardant (FR) & UV Stabilized Compound Testing

Flame Retardancy

- The compound is able to achieve a V2 rating as defined by the UL94 flammability standard – this rating indicates a moderate level of flame resistance with the material self-extinguishing within 30 seconds on a vertically oriented sample.
- The inclusion of Flame Retardant (FR) additives into our Ja~la! Prototiles™ – made from recycled polypropylene (PP) from ghost nets – results in increased brittleness.

UV Resistance

- The compound containing UV stabilizers shows improved UV resistance in prolonged sun exposure.
- A one-time color shift is observed, but the material color stabilizes over time – maintaining durability and showing enhanced resistance to further UV degradation.



Material Strength and Stability from Degradation

Minimal degradation while successfully compounding with flame retardant and UV stabilizers.

Certifications

BRIN
BADAN RISET
DAN INOVASI NASIONAL

02 Toxicity Characteristic Leaching Procedure (TCLP)

Conducted at BRIN Mineral Laboratory, Lampung
Tested in 2024

An analysis to determine the elemental composition of RAWchar® Ja~la! Prototiles™ samples using the ICP-MS method – part of an evaluation for potential application as building materials. The results provide critical insights into the material's composition, validating its safety for construction use.

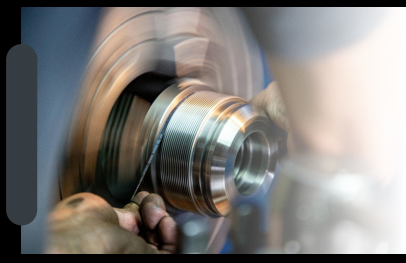
Key Findings of TCLP Testing

Trace Metal Content

Elements such as Zinc, Lead, Cadmium, Barium, Boron, Scandium, Selenium, and Arsenic were found within safe limits based on ISO/ASTM construction guidelines.

Absence of Key Elements

Chromium and Nickel undetected, which may positively impact material safety according to regulatory thresholds.



Consistency

Low %RPD values across samples confirm the precision and reliability of the measurements, providing confidence in the results.

Future testing and certifications

By integrating industry feedback and advanced testing, we are refining Ja~la! Prototiles™ to meet the highest safety and performance standards. These certifications aim to ensure that our materials are durable, non-toxic, and environmentally responsible. Future testing and optimization will be deployed to improve the quality of Ja~la! Prototiles™ and our other products.

What's Next

Net Free Seas program Launching with Environmental Justice Foundation

Project for 4P's Pizza Indonesian Branch

3rd National Stakeholder Forum GIZ Indonesia

BOPONG 2.0
Cigarette Butt Collection Program with Bangun Bangsa

Looking ahead

At Parongpong RAW Lab, we envision a future where waste is no longer discarded but fully repurposed, transforming Indonesia's waste management landscape. In 15–20 years, we hope to see significant improvements in Indonesia's waste management system, particularly for low-value waste. Our long-term goal is to see waste bins become relics of the past – symbols of an era before circular systems made untreated waste obsolete.

Looking ahead, we aim to collaborate with a broader range of stakeholders to create a circular waste management system that benefits both the society and the environment. Partnerships with governments, communities, and industries will be crucial in scaling solutions, making circularity the norm rather than the exception.

At the end of year 2024, we kicked off a pilot project for collecting and recycling ghost nets with the coastal community of Cilincing, North Jakarta. As one of the biggest ports in the area, PT Pelabuhan Indonesia (Pelindo) has recently become Parongpong RAW Lab's key partner in engaging the surrounding communities. We look forward to continue this project into 2025, featuring education and community development programs in collaboration with Divers Clean Action.

In terms of product development, we are committed to producing a wider variety of high-quality, certified, and tested building and furniture products. Our plans for future certifications will ensure compliance with global standards, opening up opportunities to serve diverse markets and applications.

Achieving our production capacity target will also grow our impact significantly. From our current capacity of processing 3 tons of waste per month, we aim to scale up to 70 tons of waste per day – with a production capacity of 100 square meters of material per day. This expansion will include diversifying the types of low-value waste we process, transforming even more waste into renewable, sustainable materials – while collaborating with community-based waste-to-material facilities.

Through these efforts, we aspire to create a future where no more waste is out of place – ultimately contributing to a cleaner environment, a thriving society, and a sustainable legacy for generations to come.

PARONGPONG®
RECYCLE AND WASTE LAB

Parongpong RAW Lab Impact Report 2024

Published in March 2025