Building Community Resilience and Green Jobs through Organic Waste

The Case of Bandung, Indonesia

September 2026

gaia

YPBB

CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

Table of Contents

Executive Summary

Organic waste is the largest source of methane emissions from the waste sector. When food waste and other biodegradable materials are disposed of in landfills, they decompose under anaerobic conditions and release methane (CH_4), a greenhouse gas with a significantly higher short-term global warming potential than carbon dioxide. Bandung City faces this challenge, as the majority of its organic waste is still disposed of at landfill sites, contributing to methane emissions and placing increasing pressure on the city's already limited waste management capacity. Addressing this issue requires a shift from end-of-pipe waste disposal towards organic waste management systems that begin with source separation that actively engage local communities and prevent organic waste from reaching landfills.

To demonstrate this approach, Yaksa Pelestari Bumi Berkelanjutan (YPBB), with support from Global Alliance for Incinerator Alternatives (GAIA) and the Climate and Clean Air Coalition (CCAC), is implementing a pilot project on community-based organic waste management in Neglasari Sub-district, Bandung City. The project combines neighborhood-scale decentralized composting[1] and black soldier fly (BSF) bioconversion with household-level Home BSF systems and urban farming, transforming organic waste into compost, BSF larvae, and frass for productive local use. Greenhouse gas modelling indicates that scaling this approach across Bandung could avoid approximately 2.54 million tonnes CO_2e between 2025 and 2050[2], representing a 77.7% reduction in cumulative emissions compared with the status quo; it also represents a swooping 97% reduction in annual methane emissions, dropping from 111,086 tonnes of CH_4 to 3,105 tonnes of CH_4 by 2050.

As shown in the pilot project, the decentralized organic waste management model is financially feasible when the government invests in the enabling conditions that markets do not adequately provide, particularly land, source-separated organic waste collection, education, and waste treatment. It creates public value by reducing landfill disposal costs, recovering valuable organic resources, supporting local food production, creating green jobs, and reducing methane emissions. As this model requires relatively small sites, modest capital investment, and simple technologies, it presents a low barrier-to-entry that allows cities to expand treatment capacity incrementally, reducing financial risk while building institutional and operational capacity over time.

The Neglasari model can be replicated through a phased, evidence-based approach that expands new sites only after demonstrating operational readiness and verified performance. Key priorities include institutionalizing long-term government support for decentralized organic waste management; leveraging the model for rapid, low-risk replication; strengthening financial sustainability through strategic public investment, improved source separation, and resource recovery; and integrating informal waste workers into formal green jobs for a just transition. Together, these measures offer Bandung a practical pathway to reduce methane emissions, strengthen local livelihoods, and build a more resilient and community-powered waste management system.

[1] In this project, the pilot includes the use of decentralized composting technologies such as perforated brick composting, composting pit, pipe composting, biopore, and home composting. Each has a distinctive characteristic of organic waste treatment capacity below 10 kg/day and requires approximately 1 m2 of space.

[2] It is equivalent to annual emissions from 6.6 natural gas-fired power plants. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

Project Description

Key facts sidebar

Location	Neglasari, Bandung City, Indonesia
Waste generation	497.67 tonnes/year, 1.3 kg/person/day
Organic fraction	around 57%
Project name	Upscaling Community-Based Waste Management Projects through Project Co-Development with the Informal Sector
Duration	April 2025–September 2026
Organic waste treated	368.6 kg/day
Treatment	BSF (75%) and composting (25%)
Households served	1,777

The upscaling community-based waste management projects through project co-development with the informal sector has been implemented by Yaksa Pelestari Bumi Berkelanjutan (YPBB) in Neglasari Sub-district, Bandung City, from April 2025 to September 2026 with support from the Global Alliance for Incinerator Alternatives (GAIA) and the Climate and Clean Air Coalition (CCAC). The project was designed to demonstrate that decentralized, community-based organic waste management can effectively reduce methane emissions while generating environmental, social, and economic benefits. It also aims to develop a practical and replicable model that can be scaled up in other communities across Indonesia.

Bandung City generates over 1,600 tonnes of waste per day. Around 625 tonnes of organic waste is generated per day, from which 356 tonnes comes from the household establishments. This pilot aims at this particular source of organic waste where the implemented model will be replicated to all 151 sub-districts in the city. This intervention is critical as the current disposal site (Sarimukti Landfill) is expected to run out of space by the end of 2026. After that, the city will not have anywhere to dispose of its waste, until the new landfill (Legoknangka Landfill) starts its operation by 2029 the fastest. Moreover, the existing organic waste treatment facility is operating below its designed capacity and there is limited space to build new facilities.

Households and participating businesses—including restaurants, fruit vendors, and traditional herbal medicine shops—separate organic waste at source before collection through Bandung's GASLAH program[3].

Food waste and kitchen scraps (75%) are processed through black soldier fly (BSF) bioconversion at the Neglasari Maggot House[4], which distributes larvae to participating households through the Home BSF programme, enabling households to process part of their own food waste. This facility is operated by different levels of governments, with the city government managing separate waste collection and the subdistrict government overseeing BSF processing and urban farming. The remaining garden waste and other coarse organics (25%) are composted using perforated brick systems. The project combines centralized and household-scale treatment, producing BSF larvae for animal feed, together with BSF frass and compost for urban farming. By April 2026, the integrated system reached a treatment capacity of approximately 600kg of organic waste per day.

Figure 1 Source-separated organic waste collection in Neglasari

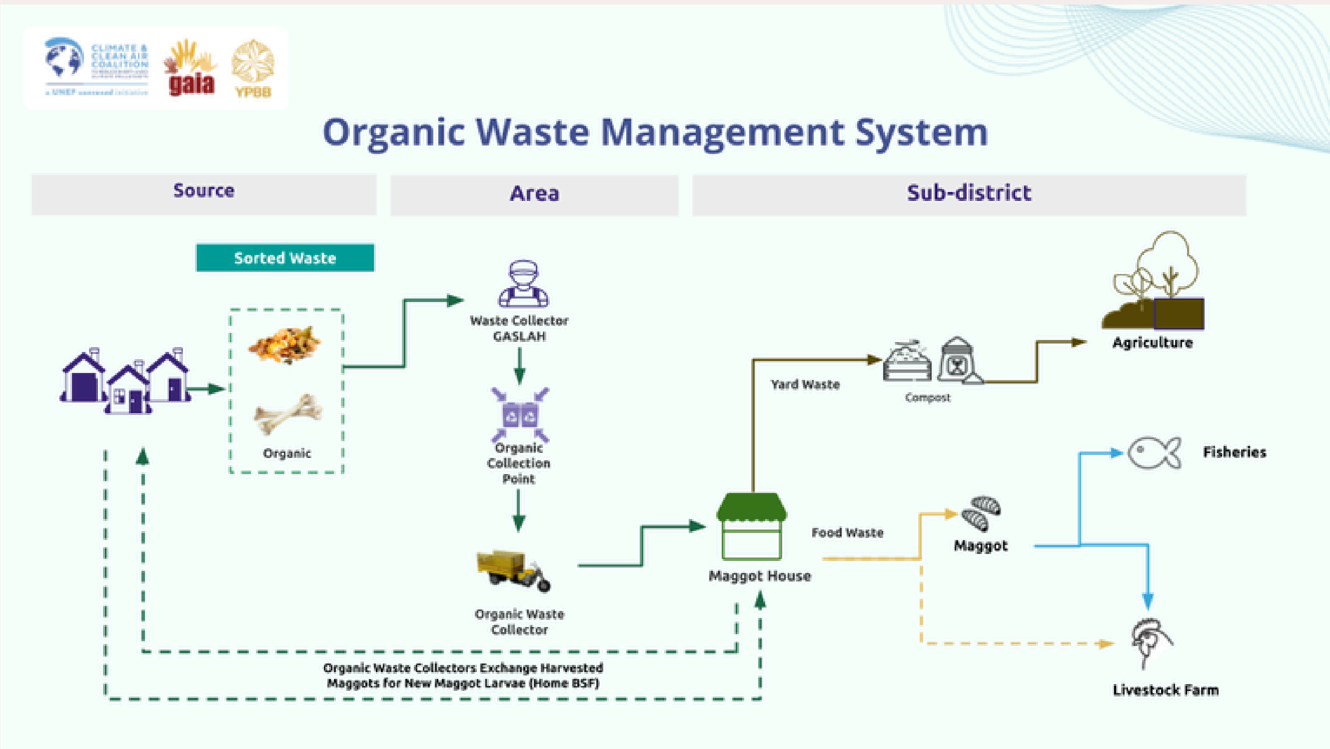

Figure 2 Operational flow of the community-based organic waste management system

[3] Bandung city's flagship program for source separation and organic waste diversion.
[4] It is a community-operated facility managed by trained local workers under the coordination of the Neglasari Sub-district Administration and supported by the Bandung City Environmental Agency through the GASLAH programme.

The project has brought together partners across different sectors, including local governments, community groups, informal waste workers, BSF practitioners, researchers and civil society organizations.[5] This multi-stakeholder collaboration has created a community-based organic waste management model that can reduce methane emissions, create green jobs, strengthen community participation, and provide a scalable model for sustainable waste management in Indonesia.

Figure 3 Community-based organic waste treatment facilities

[5] At the local level, the Bandung City Government and the Neglasari Sub-district administration have supported implementation by aligning the project with existing municipal programmes including GASLAH for organic waste diversion, Buruan SAE for urban farming, Gober for urban cleanliness, Dapur DASHAT for community nutrition, and Kang Pisman for the citywide zero waste campaign.

Context

Bandung City faces significant challenges in managing organic waste, which accounts for nearly 60% of its 1,600 tonnes of municipal solid waste generated each day. Despite existing collection services, most organic waste is still transported to the Sarimukti landfill. The urgency of improving organic waste management became evident in August 2023 when a buildup of methane gas triggered a massive fire at the landfill that burned for over a month. Prompted by the landfill closure scheduled for October 2026, Bandung City has shown commitment in methane reduction by joining the Lowering Organic Waste Methane (LOW-M), an initiative led by CCAC, where the city aims to divert 560 tonnes/day or at least 90% of its organic waste from landfill through a mandatory source-separated collection and decentralized treatment system.

Indonesia's Second Nationally Determined Contribution (NDC), submitted in 2025, reinforces the country's commitment to waste reduction, source separation, and circular economy approaches—including a target of zero waste by 2040 and zero emissions from the waste sector by 2050. These national priorities are reflected in Bandung City's local regulations, which require households to separate waste. However, implementation remains challenging due to limited public participation, weak monitoring of source separation, and insufficient decentralized treatment capacity. As a result, only an estimated 15% of organic waste is currently separated at source (26% at the current pilot site), leaving substantial opportunities to expand community-based waste management systems.

For more than two decades, YPBB has promoted a zero waste approach that was later internalized as a government program, known as Waste-Free Area (Kawasan Bebas Sampah/KBS) program, which was later supported by the Kang Pisman campaign. YPBB's work has supported communities to reduce waste generation through source separation, composting, and community participation. Building on this experience, YPBB has developed innovative models for decentralized organic waste management that strengthen local capacity while reducing dependence on landfill disposal.

The Neglasari pilot project represents the next step in this long-term effort by demonstrating how community-based organic waste management with BSF technology and composting, combined with local food production, can reduce methane emissions while creating local economic opportunities and supporting a more resilient, inclusive, and circular urban waste management system.

Business Model

The pilot project applies a collaborative financing model that combines support from government institutions, development partners, local communities, and civil society. The Bandung City Environmental Agency (DLH) funds core infrastructure and salaries for an initial cohort of over 1,500 organic waste collectors and education officers under the GASLAH program, while the Neglasari Sub-district Administration provides operational funding for the Maggot House workforce.

The largest (75.92%) element of initial capital expenditure (CAPEX) is for Maggot House, which is approximately IDR 384 Million (approximately US$22,203) required for construction and BSF rearing facilities and organic waste treatment equipment. Although land acquisition can account for up to 91%[6] of the total cost structure in Bandung, the pilot project successfully removed the major financial barrier to implementation thanks to the West Java Provincial Government's provision of public land, highlighting the critical role of public land provision in enabling scalable decentralized waste management systems.[7]

Annual operating expenditure (OPEX) for existing operations reaches approximately IDR 193.7 million (approximately US$11,200). Labor constitutes the largest cost component at 59.85%, followed by raw materials (25.91%) and overhead costs (14.24%). This composition indicates that efficiency gains in labor utilization and input management are critical levers for improving overall financial performance. At the same time, the relatively moderate share of overhead costs suggests that infrastructure-related expenses remain manageable and do not pose a major barrier to scaling.

While labor represents the largest operational expense,[8] it also functions as engines of local green job creation, also providing safer and more inclusive livelihoods for informal waste pickers. In this decentralized model, for every tonne of organic waste treated, the city employed four jobs for waste collectors and treatment officers and six jobs for urban farming officers.

Rather than relying solely on direct financial returns, the model creates value through resource recovery. Organic waste is fed to BSF larvae, which reduce the need for commercial feed by replacing up to 30% of poultry feed and up to 100% of catfish feed. BSF frass is combined with compost to produce nutrient rich growing medium for urban farming.

---

[6] Based on estimates from the ATR/BPN land valuation platform (https://bhumi.atrbpn.go.id/), land prices in the area range between IDR 10–20 million per m^2. Under a purchase scenario, the required 100 m^2 for the Maggot House would cost approximately IDR 1 billion. When combined with an additional 278 m^2 for urban farming, total land acquisition costs could reach up to IDR 3.78 billion.

[7] This is in line with Climate Policy Initiative (CPI)'s finding that 89% of capital expenditure for the organic waste management model in Bandung goes to fixed assets, including land acquisition. Climate Policy Initiative (CPI). 2025. Financial Analysis of Solid Waste Management Business Models: Case Studies in Indonesia and Brazil. https://www.climatepolicyinitiative.org/wp-content/uploads/2025/06/Financial-Analysis-of-Solid-Waste-Management-Business-Models.pdf

[8] According to CPI, labor represents the largest operational expense in Indonesian community-based waste management models, ranging from 74% to 98% of total operational expenses. Ibid.

During the pilot, a small proportion of fresh BSF larvae was sold to local fish and poultry farmers, while most production was used within the project to supply its own livestock and aquaculture activities. Likewise, BSF frass, compost, and vegetables produced through urban farming were utilized within the community rather than marketed commercially. This approach prioritizes internal value creation by reducing operating costs, strengthening local food production,[9] and circulating resources within the community, while demonstrating the broader environmental, economic, and social benefits of decentralized organic waste management.

As part of public service, the model is also financially attractive as it not only delivers broader social and environmental co-benefits by strengthening community participation in waste separation and local ownership of waste management, but it also reallocates cities' waste management budgets from maintaining environmental standards due to conventional waste technology application, into job creation in segregation, organic treatment, and food production. All with significantly lower cost compared to other kinds of waste management systems relying on complex technologies.[10] These benefits are expected to grow, as Bandung has already established many of the enabling conditions required for scaled-up implementation: clear policy direction for source separation and decentralized treatment in Bandung City Regional Regulation Number 9 of 2018 concerning Waste Management, community maggot-rearing facilities developed during the 2023 waste emergency, the city-wide GASLAH program for separate organic waste collection, and continued government support for infrastructure, land, and operational staff.

Compared to waste incineration and landfill,[11] this decentralized organics management in combination with urban farming model can create up to four times more jobs created per tonne of waste, showing that the model is financially attractive in terms of job creation. At scale, replication across Bandung's 151 sub-districts of the maggot house and urban farming operation alone could create up to 755 additional green jobs. [12]

[9] Bandung imports 96% of its food, primarily staples like rice, fish, meat, vegetables, and fruits. AKATIGA. "Strengthening Community Supported Agriculture: Tani Sauyunan as a Model of Sustainable Local Food Systems in Greater Bandung Area." https://www.akatiga.org/language/en/program/strengthening-community-supported-agriculture/

[10] Government-led facilities like in Neglasari have significantly lower Levelized Cost of Waste Management (LCOW) compared to technologies like RDF and Incinerator. Climate Policy Initiative (CPI). 2025. Financial Analysis of Solid Waste Management Business Models: Case Studies in Indonesia and Brazil. https://www.climatepolicyinitiative.org/wp-content/uploads/2025/06/Financial-Analysis-of-Solid-Waste-Management-Business-Models.pdf

[11] Both landfill and waste incineration have the poorest job creation potential of an average of 1.8 jobs/10,000 tonnes per year and 1.7 jobs/10,000 tonnes per year. This is consistent in multiple literatures that Global Alliance for Incinerator Alternatives (GAIA) assessed. Ribeiro-Broomhead, Julia, and Neil Tangri. 2021. Zero Waste and Economic Recovery: The Job Creation Potential of Zero Waste Solutions. Global Alliance for Incinerator Alternatives. https://doi.org/10.46556/GFWE6885. YPBB's internal and unpublished research, found out that the decentralized system creates at least twice more jobs per 1000 tonnes per day of waste compared to Waste-to-Energy incineration. This does not include jobs created from urban farming.

[12] Two jobs are estimated to be created per 600kg of organic waste for treatment and three jobs for farming.

This figure excludes the additional waste collector required to support the city-wide replication of the model, on top of recently deployed 1,500 workers through the GASLAH program. Collectively, the deployed workers will substantially increase organic waste diversion, reducing landfill transport requirements, lowering waste management costs, and mitigating methane emissions.

Based on the model's optimized capacity of 600 kg per day of organic waste, with four workers and no operational subsidy, the decentralized system remains only marginally viable, as reflected in a revenue–cost ratio of 1.06 and a payback period of 14 years. This indicates that, under purely market-based conditions, financial returns alone are insufficient to drive implementation. However, when combined with institutional support and operational optimization, the model becomes financially feasible, viable, scalable, and attractive for wider replication.

Overall, the Maggot House model demonstrates that financial feasibility is achieved not solely through revenue generation, but through a combination of moderate capital requirements, manageable operating costs, and sustained public investment. The CAPEX structure—dominated by essential infrastructure—underscores the role of government support in enabling implementation. This reinforces waste management as a core public service that requires consistent budget commitment to ensure long-term sustainability. Within this framework, the model delivers broader environmental, social, and economic benefits, while remaining scalable through efficiency improvements and targeted subsidies, making it a practical pathway for expanding decentralized organic waste management systems.

The nature of technologies and infrastructures deployed in decentralized organic waste management systems is simple and affordable. These include home BSF bucket, home composter box, perforated bricks, composting peats, pipe composting, where it can be built at a low-cost, allowing any governments, even those with constrained budget to be able to procure and start implementing this model. In fact, many of these are simple technologies, meaning it further reduces the cost and fosters local economies and businesses.

Based on YPBB's findings, at least three key prerequisites must be met for successful replication. First, **the availability of adequate physical resources**—including land with secure tenure as well as supporting facilities, equipment, and operational infrastructure. This constraint is increasingly manageable, as the Indonesian Government has developed more than 3,700 Material Recovery Facilities (MRFs) over the past two decades, each requiring a minimum land area of around 200 m^2 with capital expenditure starting from IDR 300 million (approximately US$17,300). In comparison, a Maggot House requires a smaller footprint of approximately 100 m^2, with a bigger capacity of organic waste treatment target (500-600 kg/day vs 100-200 kg/day on conventional MRF), indicating a more accessible entry point for local governments to establish decentralized treatment systems.

Second, there must be **consistent flow of source-separated organic waste** with sufficient quality and volume to sustain processing systems. This prerequisite is supported by the national regulatory framework under Law No. 18/2008 on Waste Management, which mandates waste separation at source. Several local governments have operationalized this mandate through more stringent policies and enforcement mechanisms. For example, Bandung City with Regional Regulation Number 9 of 2018, Surabaya through Regional Regulation number 1 of 2019, and Bali through Governor Regulation No. 47/2019. These policy examples demonstrate that regulatory backing for source separation already exists and can be strengthened to support replication. The Bandung government has invested further on assigning GASLAH officers (organic waste collectors) to ensure a consistent flow of source separated organic waste.

Third**, sustained institutional and financial commitment from local government** is essential to support the public-service functions that markets do not adequately provide. This includes investment in land, source-separated collection, education, and treatment operations, along with policy support and coordination across government agencies and communities.

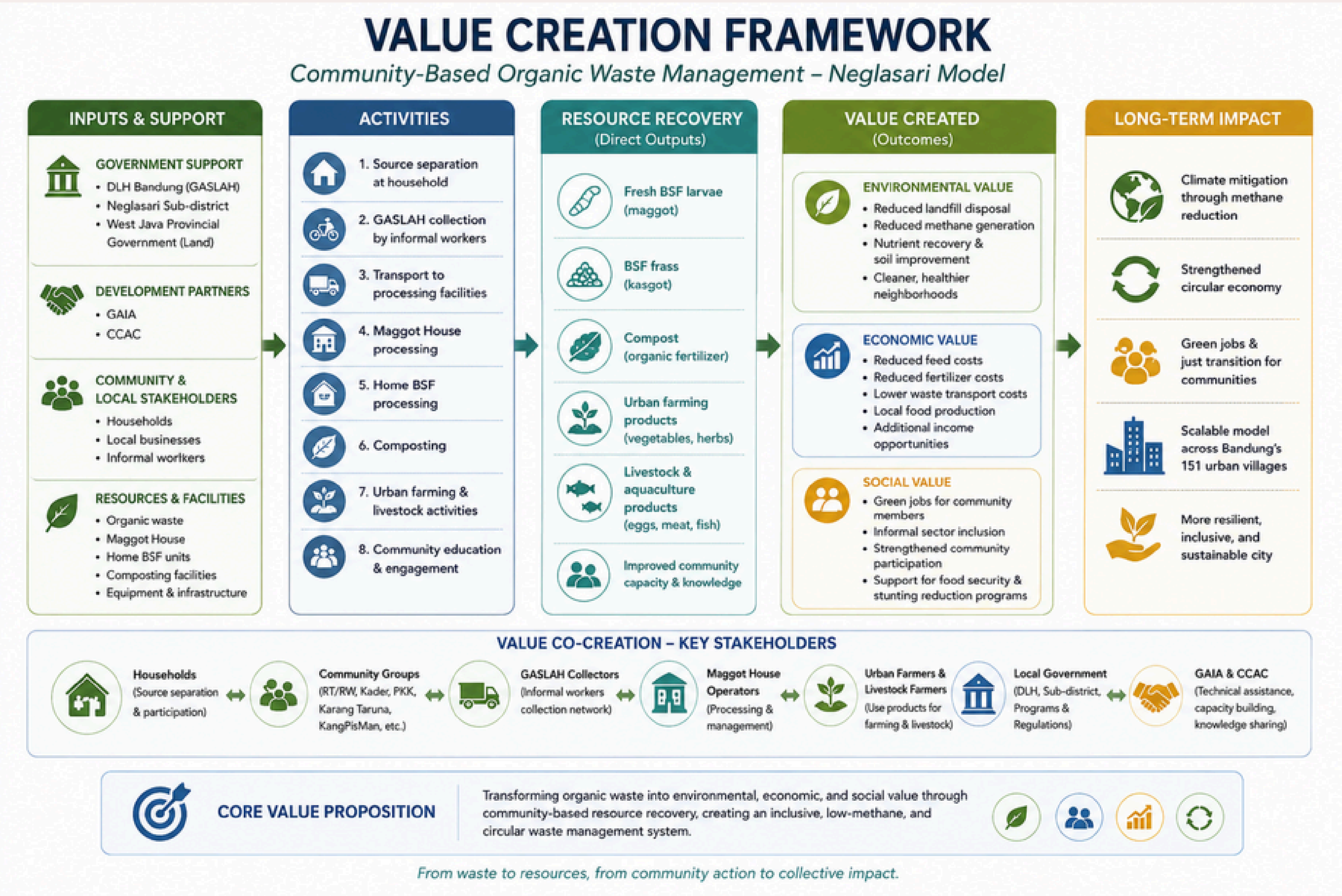

Figure 4 Value Creation Framework

GHG Emissions Analysis

Greenhouse gas (GHG) emissions were estimated using GAIA's Combined CH_4 and CO_2 Emissions from Waste Calculator, developed by Eunomia,[13] to compare the climate impacts of different organic waste management scenarios in Neglasari Sub-district and to assess the potential benefits of scaling up the model across Bandung City.

Three scenarios were assessed at the pilot scale: Baseline (pre-project conditions), Current Pilot (existing implementation), and Optimized Pilot (full treatment capacity with complete source separation). Under baseline conditions, only around 9% of organic waste is separated and treated, equivalent to 44.81 tonnes per year. The current pilot has increased source separation to 27.04%, allowing 263.20 tonnes of organic waste to be treated annually. Under the optimized scenario, all organic waste generated in Neglasari (497.67 tonnes per year) would be diverted from landfill through source separation and decentralized treatment.

Scenario	Compliance with Organic Sorting	Total Organic Waste Processed (tonne per year)	GHG emissions by 2030(tonne per year, CO_2e)	Methane emissions by 2030 (tonne per year)
BASELINE	9%	44.81	484	387
CURRENT PILOT	27.04%	134.55	418	330
OPTIMIZED PILOT	100%	497,67	136	100

Table 1 Estimated GHG emissions for the pilot project in Neglasari

The results show that the current pilot has already reduced GHG emissions compared with the baseline. By 2030, annual emissions are projected to decline from 484 tonnes CO_2e under the baseline scenario to 418 tonnes C02e under the current pilot; looking into estimated methane emissions, it decreases from 387 to 330 tonnes CH_4, representing a 15% reduction.

[13] Eunomia Research & Consulting. (2025). Combined CH & CO Emissions from Waste Calculator. Global Alliance for Incinerator Alternatives.

However, because waste generation continues to grow by approximately 0.85% per year, the existing treatment capacity is insufficient to offset future emissions. Approximately 73% of organic waste still reaches landfill, where it continues to generate methane.

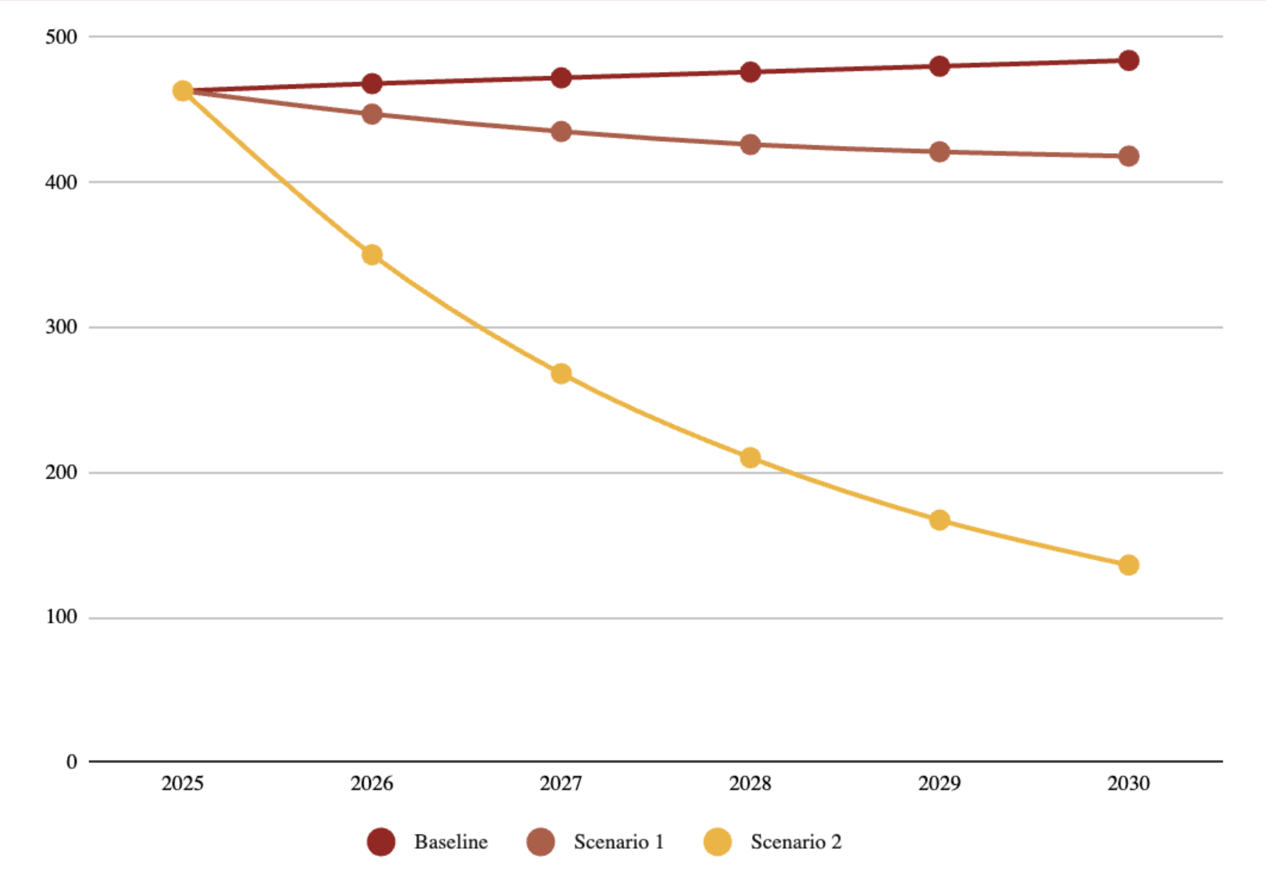

Figure 5 Estimated Annual GHG Emissions in Neglasari

The optimized scenario demonstrates the full climate mitigation potential of the system. If all organic waste is separated and treated, annual emissions in 2030 would decrease to approximately 136 tonnes CO2e—representing a 72% reduction compared with the baseline; a 74% methane reduction, from 387 tonnes to 100 tonnes. Achieving this scenario requires expanding treatment capacity and substantially increasing household participation in source separation, highlighting that behavioral change and collection systems are just as important as treatment infrastructure.

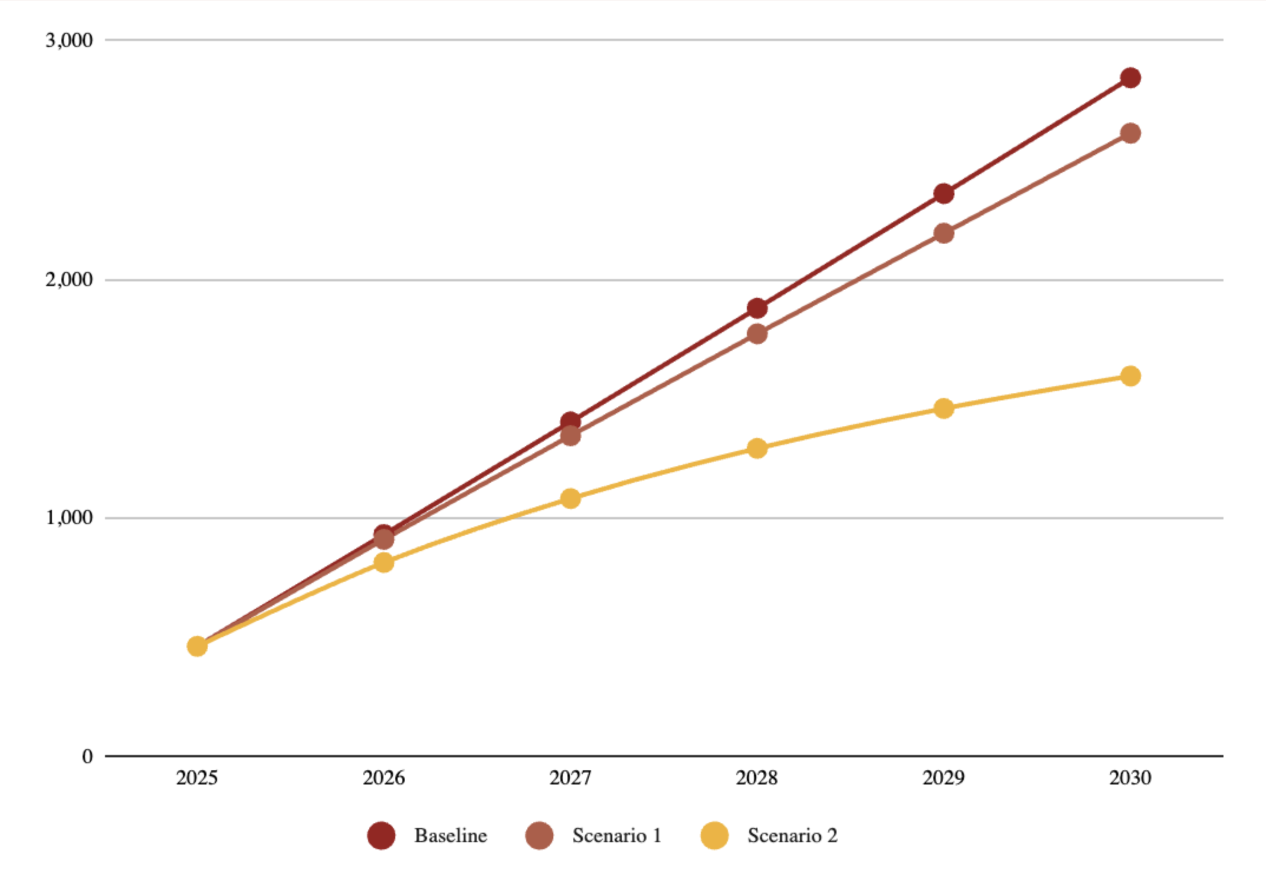

Figure 6 Cumulative GHG Emissions in Neglasari

The pilot also provides a pathway for city-wide implementation. Two scale-up scenarios were evaluated: replication in 50% of Bandung's 151 urban villages by 2027 and full implementation across all urban villages by 2028.

Scenario	Compliance with Organic Sorting	Total Organic Waste Processed (tonne per year)	GHG emissions by 2030(tonne per year, CO_2e)	Methane emissions by 2030 (tonne per year)
BASELINE	15.43% (2025 as a baseline)	19,852.35	117,609	93,690
CURRENT PILOT	50% (by the end of 2027)	64,336.72	85,398	68,258
OPTIMIZED PILOT	100% (by the end of 2028)	128,673.75	44,845	36,616

Table 2 City Scale-up Scenarios for Bandung city

The analysis indicates that large-scale replication could substantially flatten the city's emissions trajectory. Under the baseline scenario, annual emissions are projected to reach 117,609 tonnes C02e by 2030. Partial city-wide implementation would reduce these emissions by 27.4% to 85,398 tonnes C02e, while full implementation would reduce them by 61.8% to 44,845 tonnes C02e. In the latter, methane emissions would drop from 93,690 tonnes to 36,616, achieving a 61% reduction by 2030.

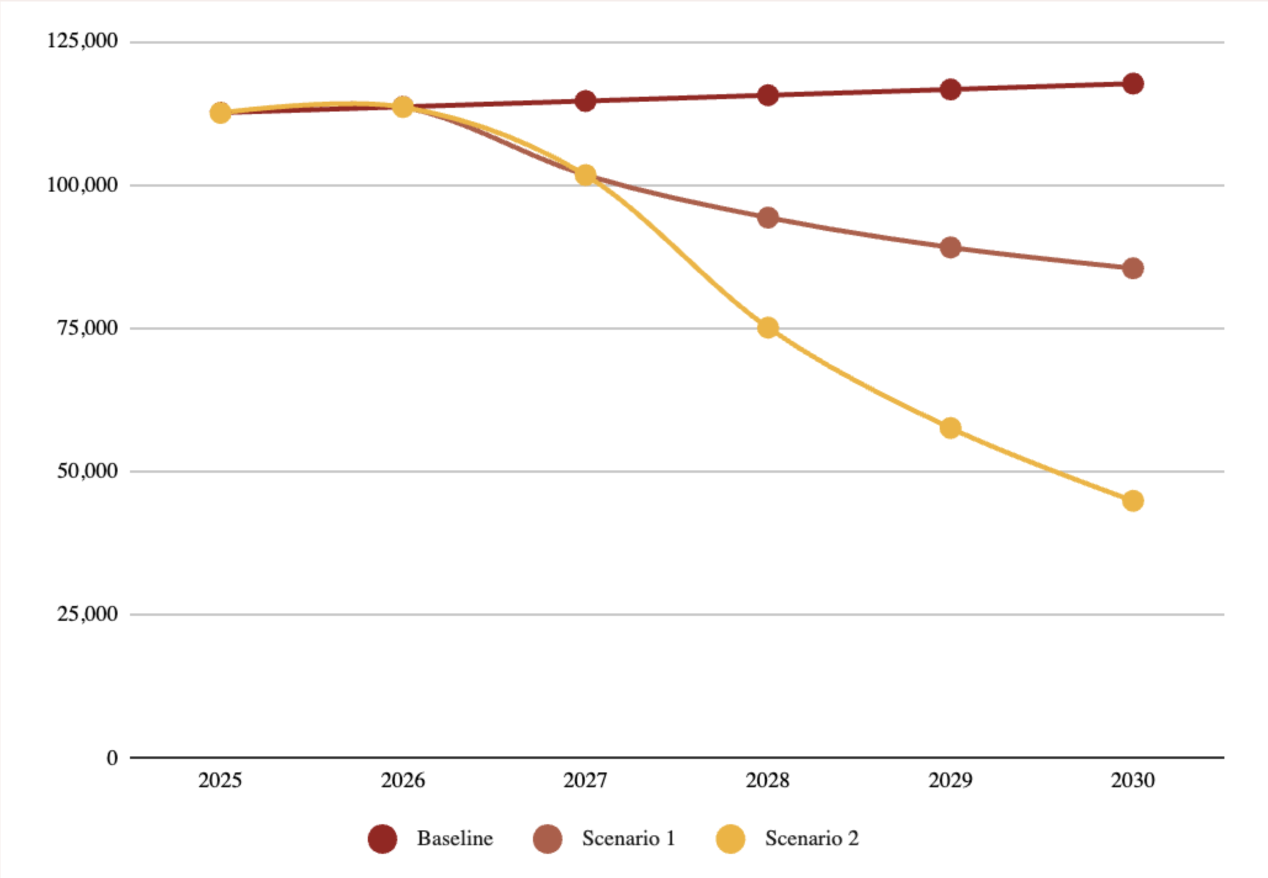

Figure 7 Annual GHG Emissions in Bandung

Between 2025 and 2050, full city-wide implementation could avoid approximately 2.54 million tonnes C02e, equivalent to a 78% reduction in cumulative CO_2e emissions, compared with the baseline. Looking at in-year global warming potential, the amount of annual methane emissions avoided is estimated to be 107,981 tonnes CH_4 by 2050, 97% down from the pre-project baseline (15% city-wide diversion).

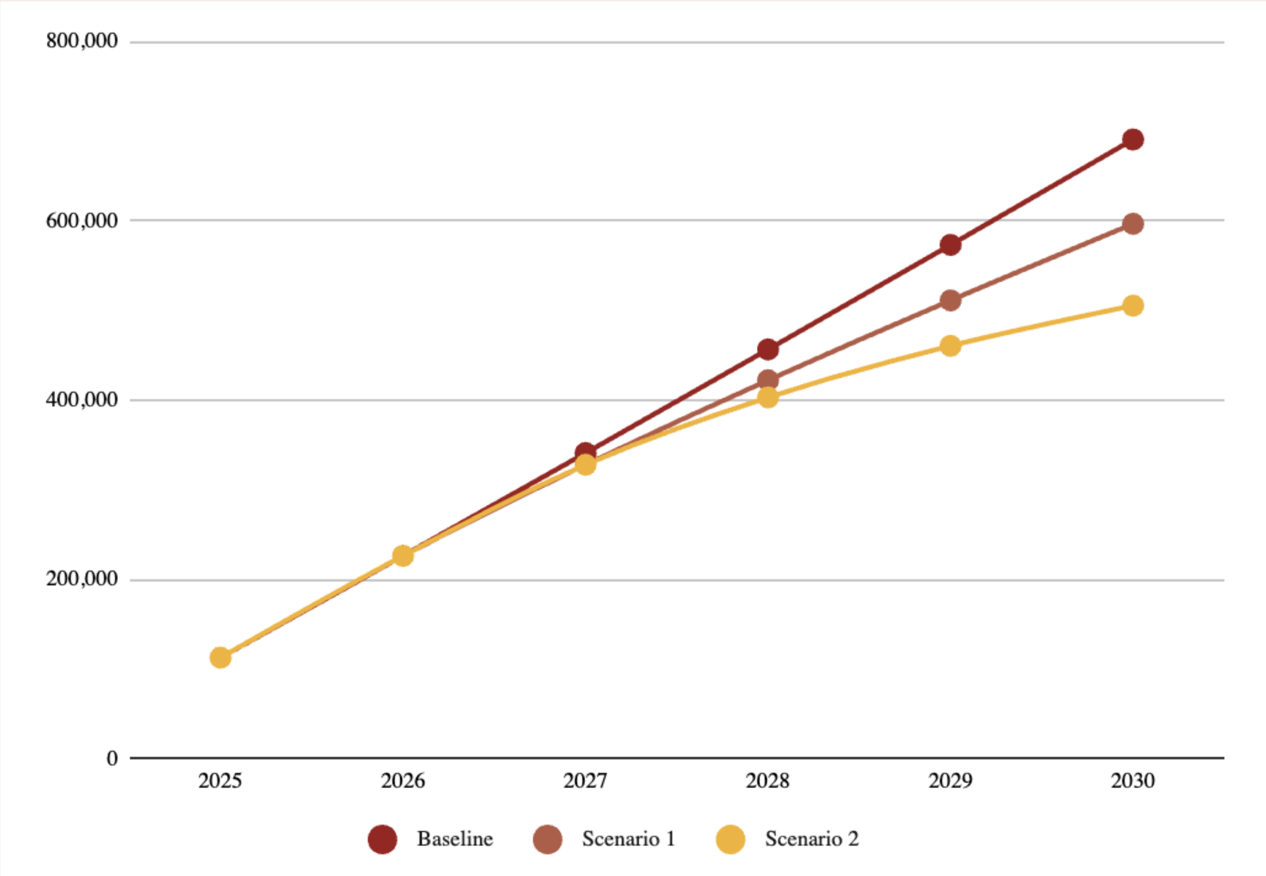

Figure 8 Cumulative GHG Emissions in Bandung

Overall, the analysis demonstrates that decentralized community-based organic waste management is an effective methane mitigation strategy. While the pilot has proven the technical feasibility of the model, maximizing climate benefits will require stronger source-separation policies, expanded treatment capacity, and continued collaboration between government, communities, and development partners to enable city-wide replication.

Recommendations

The Neglasari pilot demonstrates that community-based organic waste management can be financially feasible when the government finances the public-service functions that markets do not pay for, particularly land, source-separated organics collection, education, and waste treatment. This model is financially attractive as it generates public goods such as recoverable organic products, local livelihoods, and avoided landfill costs. Its long-term viability will depend on replicating this enabling environment, increasing the volume and quality of separated organics, and capturing more of the value from BSF, compost, frass, and urban-food production.

Each of the following recommendations should be implemented progressively, with expansion to new sub-districts and reduction of public subsidy triggered by verified performance data — not by a fixed citywide timeline or political pressure to show fast results. This principle protects Bandung's public budget from being committed faster than evidence justifies. Respectively, the upfront cost of a decentralized organic waste management system is low-cost and small in scale, letting the city to test, monitor, and correct at the site level before advancing to the next. This would convert what could be a citywide fiscal risk into a series of manageable, individually reversible decisions. Importantly, this approach will foster readiness for implementation and replication, such as feedstock supply and quality, worker capacity and capability, infrastructure readiness, and off-take arrangements that are built over time at each site.

1. Leverage the low barrier-to-entry of community-based decentralized models to justify rapid and lower-risk replication.

Bandung City should prioritize expanding the Neglasari model because its low barrier-to-entry allows for fast, low-risk, city-wide replication rather than a single large capital gamble.[14] Each Maggot House requires a smaller footprint and less per-tonne capital outlay than a standard large scale waste processing facility. In Bandung, one Maggot House unit requires 100 m^2, versus the RDF Producing Facilities that needed as minimum as 600 m^2, removing the land-availability barrier that typically blocks implementation.

[14] In 2025, Bandung built two large-scale RDF plants, but it stalled a year later. See here: https://www.jabarprov.go.id/en/berita/dlh-kota-bandung-masifkan-pemanfaatan-teknologi-rdf-dan-partisipasi-warga-olah-sampah-21962 and Pikiran Rakyat. 2025. "Teknologi RDF Bandung Mandek di Sejumlah TPST, Fasilitas Tak Aktif dan Produk Menumpuk." Pikiran Rakyat, June 26, 2025. https://koran.pikiran-rakyat.com/news/pr-3039987775/teknologi-rdf-bandung-mandek-di-sejumlah-tpst-fasilitas-tak-aktif-dan-produk-menumpuk

Since land makes 91% of capital costs in Bandung organic waste projects, and Neglasari's site was provided free by provincial and sub-district governments, this in-kind arrangement can be repeated across Bandung's 151 sub-districts without new debt or large centralized investment. Maggot house also proves to be capital efficient. A single unit needed smaller investment per tonne of waste (0.3 IDR billions per tonnes) compared to the RDF facilities (0.8 IDR billions per tonne)[15]. This allows officials to fund replication incrementally from existing budgets, testing each new site before committing to the next — making city-wide scale-up both financially manageable and politically low-risk.

This low-entry logic extends further down the model's technology tiers. **Home composting and Home BSF units require no land acquisition at all,** since they operate within a household's existing space, effectively eliminating the single largest cost driver identified in the CAPEX structure. Combined with neighborhood-scale decentralized composting — which needs only modest shared public space rather than a dedicated large facility — this tiered approach means the city is never forced into a one-time, high-cost technology commitment such as an incinerator, mechanized composting equipment, or a biodigester. Instead, Bandung can deploy a spectrum of options — from zero-cost home-level systems to low-cost neighborhood facilities — matched to whatever space and budget each sub-district actually has available.

This flexibility is what allows officials to fund replication incrementally from existing budgets, testing each new site before committing to the next, and choosing the right-sized technology tier for each location rather than defaulting to expensive centralized infrastructure — making city-wide scale-up both financially manageable and politically low-risk.

2. Allocate public subsidy strategically and improve revenue generation for financial resilience.

Public subsidy in Neglasari already spans both CAPEX and OPEX — Bandung City funds core infrastructure and over 1,500 GASLAH collectors and educators, while the sub-district funds the Maggot House workforce — and this pattern should be formalized as a deliberate strategy for citywide scale-up, not treated as a one-off pilot arrangement. To hold up across 151 sub-districts, the model must strengthen its Cost-Revenue Ratio and shorten its Payback Period, while ensuring public subsidy is structured to survive scale-up without becoming an open-ended fiscal liability.

[15] ibid.

A. Build revenue to reduce dependence on subsidy over time

- **Secure product off-takers.** Guarantee buyers for BSF larvae, frass, and compost through public procurement, particularly with agencies positioned to absorb these products at scale — such as the Food and Agriculture Agency (Buruan SAE) and the National Population and Family Planning Agency (Dapur DASHAT) — converting internal-use value into recorded income.
- **Track avoided costs.** Quantify landfill and transport savings alongside product revenue to present a complete financial picture, not just direct sales.

B. Improve cost-efficiency to lower the cost per tonne treated

- **Raise feedstock volume and quality.** Expand source separation and collection coverage — currently only 27.04% of organic waste is separately collected and treated — to spread fixed labor costs over more tonnage.
- **Build worker capacity.** Train collectors, Maggot House operators, and urban-farming staff throughout the operational chain to improve throughput and product quality.
- **Pair labor subsidy with performance, not attendance.** Subsidizing collectors without enforcing source separation risks paying for contaminated waste; link wages to feedstock quality incentives and stricter enforcement of Regional Regulation No. 9/2018.

C. Structure public subsidy to be sustainable and strategic at scale

- **Fund OPEX through ring-fenced avoided landfill costs, not discretionary budget lines.** Quantify savings from reduced hauling and tipping fees under the Municipal Savings Model and legally dedicate them to worker salaries, so subsidy survives budget cuts or leadership change. However, this may require an assessment of the local policy framework that allows savings to be reinvested directly for the OPEX and CAPEX needs of new sites.
- **Leverage existing public assets to secure land for replication.** Finding 150 more free sites is a major challenge. Leveraging existing parks, markets, or municipal depots through cross-sectoral coordination avoids bottlenecks, though it may require further legal analysis to prevent inter-agency land conflicts.
- **Guard against market saturation. Citywide replication will flood local markets with BSF and compost supply, risking price collapse.** When the government provides offtaker contracts to local implementers, it locks in public procurement commitments that protects their revenue streams and improves its financial feasibility.
- **Withdraw subsidy only when evidence confirms readiness.** This case study finds that the model is highly reliant on public support to run financially feasible. As a public service, the government should carefully assess each site individually and only draw back subsidies gradually when it shows steady off-take income and consistent feedstock quality. Rather than applying a fixed citywide timeline for each of the 151 sub-districts, this approach evaluates each site individually and prevents premature funding cuts that could cause new sites to fail.

3. Integrate Just Transition process for informal workers through city-wide replication.

Scaling the Neglasari model across Bandung's 151 sub-districts should prioritize formalizing informal waste workers into stable, service-based green jobs, moving them away from income-insecure reliance on recyclables sales and low retribution fees. Citywide replication could create over 2,255 green jobs when combining the 755 additional Maggot House and urban-farming positions with the 1,500 workers already deployed through GASLAH. Bringing informal workers into the model through training, safer working conditions, and formal service contracts would replace unpredictable earnings from waste sales with regular pay for collection, sorting, and treatment — giving them the same institutional legitimacy and economic certainty as government-supported staff, and positioning livelihood security as a core justification for citywide funding alongside the model's other benefits.

Acknowledgments

This publication is part of the overall project funded by the Climate and Clean Air Coalition (CCAC), titled **Upscaling community-based waste management projects through project co-development with the informal sector**.

We gratefully acknowledge the collaboration of the Bandung City Government, the Neglasari Sub-district Administration, local community groups, GASLAH organic waste collectors, Maggot House operators, urban farming groups, Black Soldier Fly (BSF) practitioners, Angga Dwiartama Ph.D and other researchers from the Bandung Institute of Technology (ITB), and all participating households whose commitment and active participation made this project possible.

Their collective efforts demonstrate the importance of partnerships in developing innovative, community-based solutions that reduce methane emissions while strengthening local livelihoods and advancing a more circular and inclusive waste management system.

The Editorial Team

Authors

YPBB
Egi Mariah Nurpagi
Fictor Ferdinand
Agung Achmad Subadi
Masfiya Nur Rahma
Muhammad Firza Alfajri
Wulansari
Danny Yusufiana Rofi

Editors

Cecilia Allen
Doun Moon

Designer

Nadia Beatrice Cruz

Reviewers

Yobel Novian Putra, Sonia G. Astudillo (GAIA), and Camille Tahon (CCAC)

About GAIA

The Global Alliance for Incinerator Alternatives (GAIA) is a worldwide alliance of grassroots groups, non-governmental organizations, and individuals working to advance environmental justice by promoting zero waste solutions that reduce pollution, protect public health, and address climate change.

www.no-burn.org

About YPBB

Yaksa Pelestari Bumi Berkelanjutan (YPBB) is an Indonesian non-governmental organization dedicated to promoting sustainable consumption and production through zero waste approaches, resource efficiency, environmental education, and community empowerment. For more than two decades, YPBB has worked with local governments, communities, schools, businesses, and development partners to advance waste reduction, climate action, and circular economy initiatives across Indonesia.

About CCAC

The Climate and Clean Air Coalition (CCAC) is a global partnership of governments, intergovernmental organizations, businesses, scientific institutions, and civil society committed to reducing short-lived climate pollutants, including methane, to protect the climate and improve air quality.

Building Community Resilience and Green Jobs through Organic Waste:
The Case of Bandung, Indonesia

1958 University Avenue, Berkeley, CA, USA