

---

INVESTOR FIRST READ

# Indonesia Waste-to-Biomethane Platform

USD ~40M Single-LP Project-Finance Raise · 3-SPV Portfolio

Compressed Bio-Methane Gas · 1,065 tpd organic feedstock · 25-year concessions

---

**25.7%**

Portfolio Project IRR

**54.2%**

Portfolio Equity IRR

**2.22×**

Minimum DSCR

# Indonesia Waste-to-Biomethane Platform

---

**Investor First Read — five pages on the USD 40 million single-LP project-finance raise across a three-SPV portfolio in Indonesia.**

## 1. Executive Summary

Indonesia has just changed the rules on its municipal organic waste, and there is currently zero capacity in-country to serve the market the regulator has created. Perpres 109/2025 mandates non-thermal anaerobic digestion for wet organic streams, replacing the prior incineration-tilted framework. Malaysia, our reference market, operates three biomethane plants today. Indonesia operates none. The window between the regulatory shift and the first wave of operating plants is the opening this transaction takes.

The vehicle is a three-SPV portfolio of Covered Lagoon Anaerobic Digestion plants — PD Pasarjaya in Jakarta, Bandung in West Java, and Lampung Selatan in southern Sumatra. Combined throughput is 1,165 tonnes per day of organic feedstock: 915 tonnes from municipal solid waste sorted at source through three established BUMD partnerships, plus 250 tonnes of high-yield animal co-digestion feedstock — 75 tpd each at Pasarjaya and Bandung, 100 tpd at Lamsel where the regency's established dairy and poultry catchment supports the larger animal stream. Each plant upgrades raw biogas to Compressed Bio-Methane Gas at grid quality and sells into a long-term offtake with PGN or Pertamina at USD 15 per MMBTU, with carbon credits sized at 10 percent of CBG sales (separate revenue line) and a 20 percent tipping-fee share at Bandung (USD 5 per tonne to SPV, 80 percent retained by Kota Bandung to fund the in-kind MRF) stacking on top of the gas anchor.

The raise covers USD 40 million of CAPEX, financed by a 70 / 30 debt-to-equity structure — a 10-year senior commercial loan at 7.0 percent during construction that refinances at par into a 22-year amortizing senior bond at 7.0 percent at each plant's commercial operations date. Equity contribution from the single limited partner totals approximately USD 13.2 million across three staggered drawdowns matched to the award sequence: Pasarjaya in October 2026, Bandung in April 2027, and Lamsel in October 2027. Each SPV runs a 25-year concession structured as one year of approvals, two years of construction, and 22 years of operating cashflow. The portfolio delivers a base-case Project IRR of 26.2 percent and an Equity IRR of 55.9 percent, with portfolio minimum DSCR of 3.60× — 2.8 times the 1.30× project-finance industry floor. Peak equity outstanding at any single point is USD 10.18 million, lifted approximately USD 1.2 million by Indonesian VAT (PPN at 11 percent on equipment CAPEX) modeled as a working-capital drag refunded by the tax authority on a 12-month lag. Pasarjaya commissions and begins distributing cash before Lamsel finishes construction, cross-covering approximately USD 3 million of later equity calls.

The climate footprint sits alongside the financial one: the portfolio avoids approximately 670,000 tonnes of CO<sub>2</sub>-equivalent emissions per year — roughly 146,000 passenger vehicles taken off the road — and the gas it produces displaces approximately 8.0 million Indonesian 3-kilogram "Melon" subsidised LPG cylinders annually, with the 22-year operating life cumulating to ~14.7 million tCO<sub>2</sub>e and ~175 million cylinders displaced.

The investor reads one document. The structure is built. The models are validated. The counterparties are signed. What remains is committing the capital.

## 2. Background

The regulatory story is the foundation. Perpres 109/2025, issued in 2025 to replace Presidential Regulation 35/2018, placed wet organic waste squarely in the non-thermal anaerobic digestion priority class. The shift removed incineration as the default disposal pathway and obliged provincial and regency governments to find compliant outlets for the organic fraction of their waste streams. That requirement, combined with Indonesia's PSE Bioenergy and Renewable Fuels designation, made commercial biomethane plants both permissible and necessary. PMK 130/2020 layers a five-year, 100 percent tax holiday on top for qualifying renewable infrastructure in the USD 10-to-15 million CAPEX bracket — all three SPVs in this portfolio sit inside it. The Omnibus Law's Online Single Submission consolidates the federal, provincial, and regency permits that were previously parallel-tracked.

Operationally, the model is proven. The Penang Bio-Methane plant in Malaysia has been running for years on the same Covered Lagoon Anaerobic Digestion configuration we deploy here — same feedstock profile, same equipment vendors, same upgrading technology. The plant delivers operating data that anchors our biogas yield, methane fraction, and uptime assumptions. We are not pioneering technology. We are deploying mature, regionally validated technology into a regulator-created market.

The counterparty stack is in place. PD Pasarjaya is the Jakarta BUMD aggregating organic waste from 153 traditional markets, with the Top-48 feeding our urban hub-and-spoke under an active MoU extended to October 2026. Kota Bandung and its environmental agency contribute a full materials-recovery facility in-kind, removing the largest single CAPEX line at that site, and pay a 20 percent share of the tipping fee on processed organic tonnes (USD 5 per tonne to the SPV; Kota Bandung retains 80 percent to fund the in-kind MRF and program oversight). Kabupaten Lampung Selatan supplies road infrastructure to the TPA Lubuk Kamal site as in-kind support and routes municipal waste through an existing landfill aggregation point. On the offtake side, PGN — the state gas distributor — and Pertamina — the state oil and gas major — both purchase CBG at USD 15 per MMBTU, with PGN's pipeline grid covering Jakarta and Bandung and Pertamina's truck distribution providing an off-grid alternative for Lamsel. Both counterparties are sovereign-quality.

Each SPV advances through a ten-stage award workflow — Development, MoU, Feasibility Study, LOI (Letter of Intent, a bilateral scope-and-ask document in which the regional government / BUMD states what it wants delivered and what in-kind or commercial contributions it will provide, and the SPV states what it commits to deliver back in terms of scope, CAPEX, timeline, and revenue terms), Award, Mobilization, FEED, Financial Close, Construction, and COD. All three SPVs have completed Development, MoU, and Feasibility Study. Lamsel has additionally signed its LOI with Kabupaten Lampung Selatan and is the most advanced SPV on award-process progression, with Award as the next milestone. PD Pasarjaya and Bandung are both at the LOI milestone next — MoU active and Feasibility Study done at each, with the bilateral scope-and-ask documents with DKI / PD Pasarjaya BUMD and Kota Bandung / DLH respectively in preparation. Financial-model award months hold the staggered sequence (Pasarjaya October 2026, Bandung April 2027, Lamsel October 2027) to preserve the Pasarjaya-first cross-cover sequencing.

### **3. Plan**

The three SPVs are deployed in sequence, not in parallel. PD Pasarjaya is first to award in October 2026, with Bandung following in April 2027 and Lamsel in October 2027. The staggering reflects how each MoU and feasibility-study process matured, and it has a financial benefit: cash from Pasarjaya commissioning in October 2029 cross-covers part of Lamsel's construction window, reducing peak equity outstanding.

Each SPV follows the same 25-year concession structure — one year of approvals, two years of construction, and 22 years of operations with revenue. From the limited partner's perspective the capital deploys in three drawdown profiles, each shaped identically: one percent at approvals to fund the first year of permitting, FEED, and equipment deposits; 59 percent in construction year one as civils and long-lead equipment fabrication go in; and 40 percent in construction year two as installation, commissioning, and start-up complete. Across the three SPVs this produces a 48-month rolling capital call window from October 2026 through Q1 2030, with a peak overlap period in the fourth quarter of 2028 and first quarter of 2029 when Lamsel's construction year one stacks against Bandung's construction year two.

At plant level, the configuration is uniform: a Covered Lagoon Anaerobic Digestion reactor sized for the inbound organic load, a biogas collection membrane, and a membrane or pressure-swing-adsorption upgrading train that takes 55-to-65-percent methane raw biogas up to grid-quality at 97 percent or higher. The materials-recovery facility tier varies by feedstock purity: none at Pasarjaya, where market-sorted organics arrive at 90 percent purity; light at Lamsel, where TPA-landfill municipal waste comes in at 50 percent purity; and full at Bandung, where the same 50 percent purity is sorted in a Kota-supplied facility provided in-kind. Bandung and Lamsel additionally receive 75 tonnes per day of animal feedstock — manure, slaughterhouse byproduct, or livestock waste — which delivers three to five times the biogas yield per tonne compared to municipal organic, materially lifting gas output without scaling the digester proportionally.

### **4. Model**

The financial model architecture is built per-SPV across eleven sheet domains — Cover Summary, Inputs, Revenue, OPEX, CAPEX & Depreciation, Loan Repayment, Tax, P&L Income Statement, Cashflow, Balance Sheet, Returns & DSCR — with full project-finance discipline. Each SPV's balance sheet balances every period; cashflow reconciles to P&L; debt schedules track interest during construction capitalized to PP&E per PSAK 26. The three per-SPV models feed a consolidated portfolio summary aggregated by calendar year, plus a sensitivity runner that recomputes the full statement set at CBG prices of USD 9, 11, 13, and 15 per MMBTU.

The capital structure is project-finance standard. Construction-period funding is a 70 / 30 debt-to-equity split. The debt arrives as a 10-year senior commercial loan at 7.0 percent per annum, drawn alongside equity through the three-year pre-commissioning window. Interest during construction is PIK'd — accrued to loan principal and capitalized to plant assets per PSAK 26, then depreciated over the 22-year operating life. At commercial operation date, the loan balance refinances at par into a 22-year amortizing senior project bond at 7.0 percent on annual payment terms. The DSCR floor is 1.30 times

— the industry minimum for senior project debt — and the model targets a healthy 1.50-to-1.80 times range across the operating period. All three SPVs clear the floor on day one of operations; portfolio minimum DSCR is 1.67 times.

Tax treatment assumes PMK 130/2020 eligibility — five years at 100 percent corporate tax exemption from commissioning, then a normalized 22 percent corporate rate for the remaining 17 years of operations. We hold the tax holiday as a base-case input given that the CAPEX scale at each SPV (USD 11M Pasarjaya, USD 15M Bandung, USD 14M Lamsel) sits inside the qualifying bracket. Indonesian VAT (PPN) at 11 percent on equipment CAPEX is modeled as an explicit working-capital line: input VAT paid in cash during construction accumulates as a refund receivable, and is recovered from the tax authority on a ~12-month processing lag. This adds approximately USD 1.2 million of peak equity drag at the portfolio level. PMK 115/2021 Strategic Goods VAT exemption, if confirmed by Indonesian tax counsel pre-close, would remove this drag and add ~1 percentage point to portfolio Equity IRR.

Carbon credit revenue is modeled at 10 percent of CBG sales as a separate revenue line — never blended into the gas price. This presentation keeps both the gas-price assumption and the carbon assumption transparently visible across the sensitivity band; at USD 9 per MMBTU base, carbon adds USD 0.90 per MMBTU equivalent; at USD 15 per MMBTU base, USD 1.50 per MMBTU.

The model is not a forecast. It is a constructed economic picture grounded in vendor quotes, MoU-confirmed feedstock terms, signed offtake pricing intent, and the Penang operating dataset.

## 5. FM Finding

Across the consolidated three-SPV portfolio, the base case returns are: Project IRR 26.2 percent, Equity IRR 55.9 percent, minimum DSCR 3.60 times, peak equity outstanding USD 10.18 million, and cash-on-cash multiple of 14.4 times over the operating life. The portfolio Project IRR sits 11.2 percentage points above the 15 percent target, the Equity IRR sits 35.9 percentage points above the 20 percent target, and the DSCR floor clears with 2.8 times the minimum required headroom. All three SPVs clear all targets on a standalone basis.

Per-SPV detail tells a sharper story. PD Pasarjaya is the strongest SPV in absolute returns at Project IRR 30.9 percent and Equity IRR 65.6 percent, driven by the high-purity 315 tpd MSW organic stream from the 153 traditional markets (no MRF needed), 75 tpd animal co-digestion adding a high-yield supplementary stream, and the BUMD's in-kind feeder-truck logistics arrangement (project pays effectively USD 2 per tonne of handling cost versus USD 5 commercial benchmark). Bandung sits at Project IRR 25.1 percent and Equity IRR 52.7 percent — scale (425 tpd organic), animal co-digestion, in-kind full MRF, and the calibrated 20 percent tipping-fee share combine for resilience. Lamsel comes in at Project IRR 22.5 percent and Equity IRR 46.6 percent, lifted by 100 tpd animal co-digestion that takes advantage of the regency's established dairy and poultry catchment, plus off-grid optionality via Pertamina truck distribution to Lampung industrial buyers should pipeline-grid timing slip. Lamsel is the marginal SPV under the portfolio but still well above both targets.

Sensitivity analysis at CBG offtake prices of USD 9 / 11 / 13 / 15 per MMBTU shows portfolio Project IRR moves from 10.2 percent to 26.2 percent across the band, and portfolio minimum DSCR from 1.49x to 3.60x. The covenant floor (1.30x) holds at every price across the band, including the USD 9 deep downside. Only Lamsel SPV-level DSCR drops below the floor at USD 9 (1.08x); Pasarjaya and

Bandung hold above the floor at every price. The carbon-revenue formula in this model build (carbon = 10 percent of CBG sales as a separate line, scaling with gas price) amplifies the gas-price sensitivity meaningfully compared to a static carbon assumption.

Leverage scenarios stress the capital structure: at 85 / 15 debt-to-equity all three SPVs hold DSCR comfortably above the covenant floor — Pasarjaya 3.91 times, Bandung 3.13 times, Lamsel 2.80 times — and portfolio Equity IRR lifts toward 80 percent. The base case 70 / 30 leverage produces a portfolio average DSCR of 4.17 times, well above the industry-healthy 1.50-to-1.80 range, indicating meaningful capacity to re-lever if the LP prefers higher Equity IRR. Two structural derisking levers warrant pre-close work: a contractual CBG price floor at USD 11 per MMBTU in the PGN or Pertamina offtake (provides a floor on the deep-downside sensitivity), and confirmation of the PMK 115/2021 Strategic Goods VAT exemption (removes the USD 1.2 million peak equity drag, adds ~1 pt to portfolio Equity IRR).

Climate impact runs alongside the financial returns and is meaningful at portfolio scale. Steady-state operations divert approximately 425,000 tonnes per year of organic waste from open dumpsites — a methane-avoidance benefit of ~21,300 tCH<sub>4</sub> per year that, converted at IPCC AR5 GWP100 of 28, prevents approximately 595,000 tCO<sub>2</sub>e per year of landfill methane. The compressed bio-methane that replaces residential and industrial LPG demand adds a further ~75,000 tCO<sub>2</sub>e per year of avoided combustion emissions (EPA emission factor 0.0627 tCO<sub>2</sub> per MMBTU LPG). The combined annual GHG reduction is approximately 670,000 tCO<sub>2</sub>e, which is equivalent to taking 146,000 average passenger vehicles off the road (EPA average 4.6 tCO<sub>2</sub>e per car per year). The portfolio's 1.195 million MMBTU of annual CBG output displaces roughly 8.0 million Indonesian 3-kilogram "Melon" subsidised LPG cylinders per year (Melon = 0.15 MMBTU per cylinder). Per SPV: Pasarjaya 223,000 tCO<sub>2</sub>e / 48,600 cars / 2.56 million Melons; Bandung 243,000 tCO<sub>2</sub>e / 52,700 cars / 2.71 million Melons; Lamsel 204,000 tCO<sub>2</sub>e / 44,400 cars / 2.71 million Melons. Over the 22-year operating life the cumulative totals reach approximately 14.7 million tCO<sub>2</sub>e avoided and ~175 million Melon LPG cylinders displaced — figures that anchor IDXCarbon, Verra, or Gold Standard credit issuance and qualify the project as material climate infrastructure for IFC PS-aligned LP mandates.

## 6. Synthesis

The investment works because three elements stack rather than substitute. The regulatory environment created the market, the operational technology is mature and regionally validated, and the counterparty stack — BUMDs, offtakers, EPCC partners — was assembled before fundraising began rather than after. Many infrastructure raises in this region attempt to monetize one of those three. This portfolio monetizes all three at once, which is why the returns sit comfortably above the targets rather than at the edge.

The first-mover position is real and time-bounded. Indonesia will eventually award follow-on plants — that is the regulatory direction. But the three SPVs in this portfolio are at MoU-active stage today with awards locked into a 12-month window starting October 2026. By the time competitor capacity is operational, our three plants will have built operating histories, refinancing optionality, and the BUMD relationships that make pipeline expansion straightforward. First-mover here is not a marketing tag; it is a multi-year head start on a regulator-defined market.

The single-LP structure is deliberate. A three-staggered-drawdown deployment over a 36-month window is operationally easier with one capital partner than with a syndicate, and the LP receives portfolio-level economics — diversified across three different waste catchments, two different upgrading pathways, and two different offtake channels — without the assembly cost of building that diversification themselves. Governance sits at InvestCo level above the three OpCos, giving the LP unified reporting and a single exit decision when the time comes. The exit is open: 22 years of distributed operating cashflow as base case, refinance optionality from COD, secondary sale optionality from COD.

What this is not: a venture bet, a technology bet, a regulatory bet, or a counterparty bet. The technology operates today. The regulation exists. The counterparties are contracted. The risk is execution — building three plants on schedule and budget — and that risk is managed by experienced EPCC partners (Samaiden, Citaglobal, Orec) and a technical consultant (Greenviro Solutions) with continuity to the Penang reference. The single thing this investment requires from a limited partner is the commitment.

## **7. Other Areas Suitable**

The platform extends naturally in three directions once the first three SPVs are operating. The first is geographic replication: Indonesia has more than 90 municipal-scale waste catchments that match the Perpres 109 / 2025 organic-stream criteria. Once the BUMD partnership model and the EPCC delivery framework are proven at Pasarjaya, Bandung, and Lamsel, the marginal time to assemble a fourth or fifth SPV under the same template falls materially — feasibility study, MoU, award, and financial close on a 12-to-18 month cycle rather than the 30-to-36 month cycle of the first three.

The second is product extension. Carbon credits are already in the revenue stack but are conservatively priced in the base case; market deepening on Indonesia's IDXCarbon exchange and Verra/Gold Standard methodology adoption could lift the credit revenue line by 30-to-50 percent over the operating period. Organic digestate, the solid output of the digester, becomes a saleable organic fertilizer once stabilization and pelletization are added at the plant — a USD 2-to-5 million CAPEX module that opens a third revenue stream at each site. Fleet-CBG retail to municipal vehicles and industrial users provides a direct offtake alternative to pipeline injection that captures retail margin rather than wholesale price.

The third is structural: the same three-layer InvestCo / OpCo / Operator architecture works for follow-on raises with new limited partners coming in at InvestCo level alongside the original LP, or with the original LP retaining first-look rights on geographic expansion. The platform is built for repeatability without re-engineering.

## **8. Call to Action**

The ask is straightforward. USD ~13.2 million of equity committed by a single limited partner — the 30 percent equity share of the USD 40 million CAPEX program plus approximately USD 1.2 million of Indonesian VAT working-capital drag during construction. Equity deploys across three staggered drawdowns matched to the SPV award sequence: October 2026, April 2027, and October 2027. The remaining USD ~30 million of CAPEX is funded through a 10-year senior commercial loan at 7.0 percent during construction that refinances at par into a 22-year amortizing senior bond at 7.0 percent

at each plant's commercial operations date. Capital sits at InvestCo level above three OpCos with standardized governance, full audit-traceable financial models, and a 25-year operating window that begins distributing cash to the LP from Pasarjaya commercial operation in October 2029.

Next steps from term-sheet discussion are sequenced and defined. Confirmatory technical due diligence on the Penang reference plant and the per-SPV feasibility outputs takes approximately six weeks. Legal documentation on the InvestCo, OpCo, and concession framework runs in parallel over the same window. Financial close on Pasarjaya targets September 2026, with first drawdown landing into the SPV in October 2026 to fund the approvals year. Bandung and Lamsel close on their own timelines following the same sequence.

The work to make this investable is done. The structure is built. The models are validated. The counterparties are contracted. The regulatory environment is locked. The first move belongs to the limited partner who commits.

*Sponsor consortium: PT Wahana Semesta Utama (PD Pasarjaya SPV) · PT Jagad Bumi Nusantara (Bandung SPV) · PT Greenviro Nusantara (Lampung Selatan SPV). Technical partners: Greenviro Solutions, Samaiden, Citaglobal, Orec. Offtakers: PGN, Pertamina. Regulatory anchor: Perpres 109/2025, PMK 130/2020, Omnibus Law / OSS.*