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From the Danantara Indonesia Investor Relations Team

INVESTING AT DANANTARA INDONESIA

From Landfill to Lightbulb: Inside Denera's Bet on Indonesia's Waste-to-Energy

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Photo credit: Denera team

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"There is no such thing as **away**.
When we throw anything away, **it must go somewhere.**"

ANNIE LEONARD, American proponent of sustainability
and a critic of consumerism, gained international recognition
as the creator and narrator of viral documentary film "The Story of Stuff" (2007)

March 2026 was a busy month for Danantara Investment Management's (DIM) flagship waste-to-energy (WtE) programme. Alongside the selection of operating partners for projects in Bekasi and Denpasar, a new vehicle was formally established: PT Daya Energi Bersih Nusantara, or Denera.

For Fadli Rahman, Denera's CEO, the story began earlier.

Before joining DIM in December 2025, Fadli and the team visited several landfill sites across Indonesia. What began as a routine field check evolved into something else.



*The Denera team during a site visit to the Galuga landfill, Bogor, West Java /
Photo credit: Denera team*

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*"Keep human!
See people, go
places."*

- Henry Miller

"We came to the Galuga landfill in Bogor and saw hundreds of people living on a massive pile of trash," Fadli told the investor relations team. "They are living on waste, breathing air from waste, and consuming water contaminated by waste."

For Fadli and the team, the visits settled something. "We said, 'This is the right job.'"

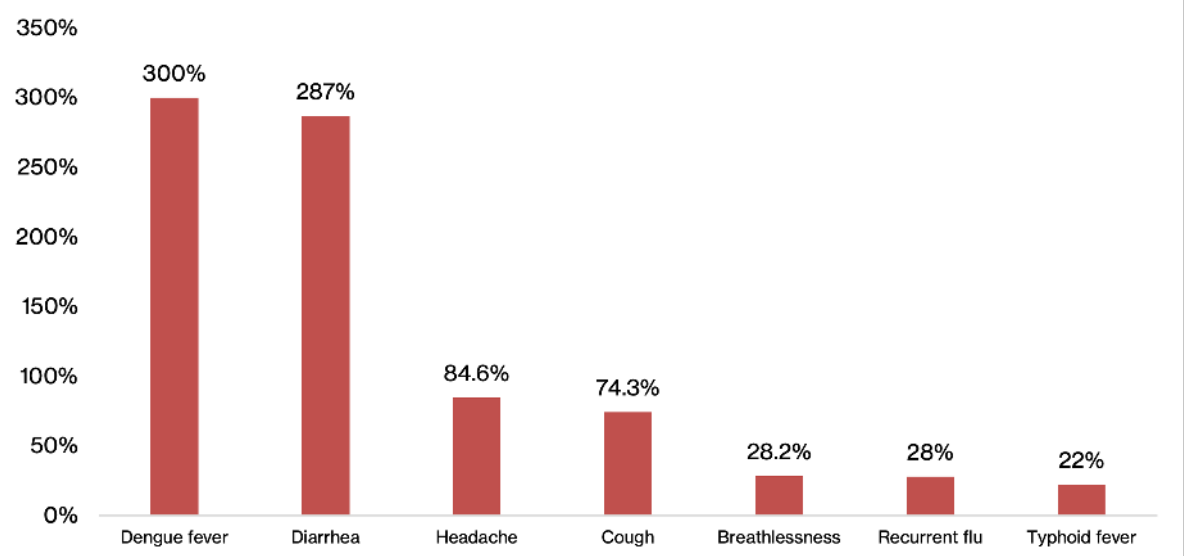
The Numbers Behind Neglect

The Galuga landfill is far from being an exception. In Yogyakarta, Fadli recalls seeing two hills: one made of fresh waste, and another that appears green, but is also trash. At Bantargebang, the landfill that serves Jakarta, groundwater is contaminated within a 500-meter to one-kilometer radius, producing wastewater called “leachate” for the past 10 to 15 years.

They are just a few of Indonesia’s 550 landfills nationwide that take care of 56.6 million tonnes of municipal solid waste each year.

Yet only around 39 percent of the country’s waste is properly processed. The remainder is buried, burned in the open, or left to accumulate, slowly degrading while releasing hazardous pollutants.

Health Risk Multipliers Near Landfills



What it costs to live near a landfill, in elevated disease risk / Source: Danantara Indonesia

The science is clear. Poorly lined landfills contaminate groundwater and create leachate, which then enters the food chain through soil, plant roots, and surface runoff. Open burning of trash releases black carbon, carcinogenic dioxins, and particulate matter into the air.

Imagine living near a landfill, as many Indonesians do. In DKI Jakarta alone, landfills make up nearly 800,000 square meters in area. Neighboring West Java, which houses the Jakarta suburbs of Bekasi, Bogor, and Depok, has the country’s highest number of active waste sites.

This means infectious disease outbreaks are no longer accidental events, but a structural feature of the system.

The People Behind Denera

Understandably, Indonesia's waste problem is often framed as an environmental issue. In practice, it also sits at the intersection of infrastructure, regulation, and capital: areas where progress tends to be slow, and difficult to sustain.

On paper, the ambition is straightforward: turn an urgent social and environmental problem into something more manageable, investable and executable.

Solving that problem requires a team that understands how infrastructure works: technically, operationally, and financially.



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Denera's leadership and team. From left, Maulana Muhammad (third), Fadli Rahman (fourth), and Cynthia Hendrayani (fifth)/ Photo credit: Denera team

Led by Fadli as CEO, Denera's leadership team also includes Cynthia Hendrayani as Chief Techno-Commercial Officer (CTCO) and Maulana Muhammad as COO. A search for a CFO is ongoing. Even in its current form, the team reflects a deliberate mix of backgrounds.

Fadli comes from what he describes as an "energy family." After studying petroleum engineering with a Ph.D. from the Colorado School of Mines in the US, he built his career across oil and gas private companies, management consulting, government, and state-owned enterprises, now known as Danantara Indonesia companies. Eventually, he led decarbonization efforts across Danantara Indonesia companies through the Ministry of State-Owned Enterprises.

"I was taught that energy is the most important aspect that powers our life," he says.

Maulana's function is to get the project to the finish line: a role that demands more than technical oversight. He began in tech at Microsoft before joining Ruangguru as one of its earliest employees, helping scale the company rapidly. He later built his own startup, studied technology management at Columbia, and moved into Indonesia's energy and commodities sector.

*"Stay within a
well-defined circle
of competence."
- Charlie Munger*

It is his experience in his last role that gives him the "street-smart," stakeholder-oriented approach necessary for infrastructure. In a landscape where permits and local coordination often stall progress, Maulana's focus on the ground-level reality is what ensures these projects actually come to fruition.

Cynthia anchors the commercial logic. Starting as a process engineer in oil and gas, she moved into climate finance and saw firsthand why waste projects struggled to scale.

"Renewable energy always had funding issues," she says. The problem, she found, was rarely technical. "People still think waste is simple: just throw it away and it disappears," she says. In reality, waste management is expensive and difficult to structure in a way that attracts the right kind of capital.

Even with tipping fees and regulatory support, projects often stalled. Local governments, she says, often struggled to structure investments in a way that was bankable. This resulted in projects that moved forward on paper, but failed to reach execution.



Photo credit: Denera team

At Denera, her role is to close that gap: ensuring that technical decisions translate into sustainable cash flow while still delivering on public service obligations.

"Denera is both," she says. "We are acting as a shareholder, but at the same time we have to make sure the public service is achieved."

That balance defines how the team approaches execution.

For Fadli, the principle is straightforward. "We need to ensure this is commercially attractive and bankable," he says, "but at the same time helping social development."

The Cost of Pretending Not to Smell It

The shortcomings of Indonesia's current waste management system put a steady, unpriced burden on Indonesian human capital. As data from the Denera team shows, the health exposure compounds across communities, budgets, and generations...and then some.

Every once in a while, landfill-related disasters appear on newspaper headlines and across television news.

The Leuwigajah landfill collapse in Bandung killed 143 people and buried 71 homes in 2005, making it one of the deadliest waste slides in recorded global history. The Suwung landfill in Bali caught fire five times in seven years, with the 2023 blaze lasting a month and forcing hundreds to evacuate. That same year, the Sarimukti landfill fire in Bandung generated 669 confirmed cases of acute respiratory infection.



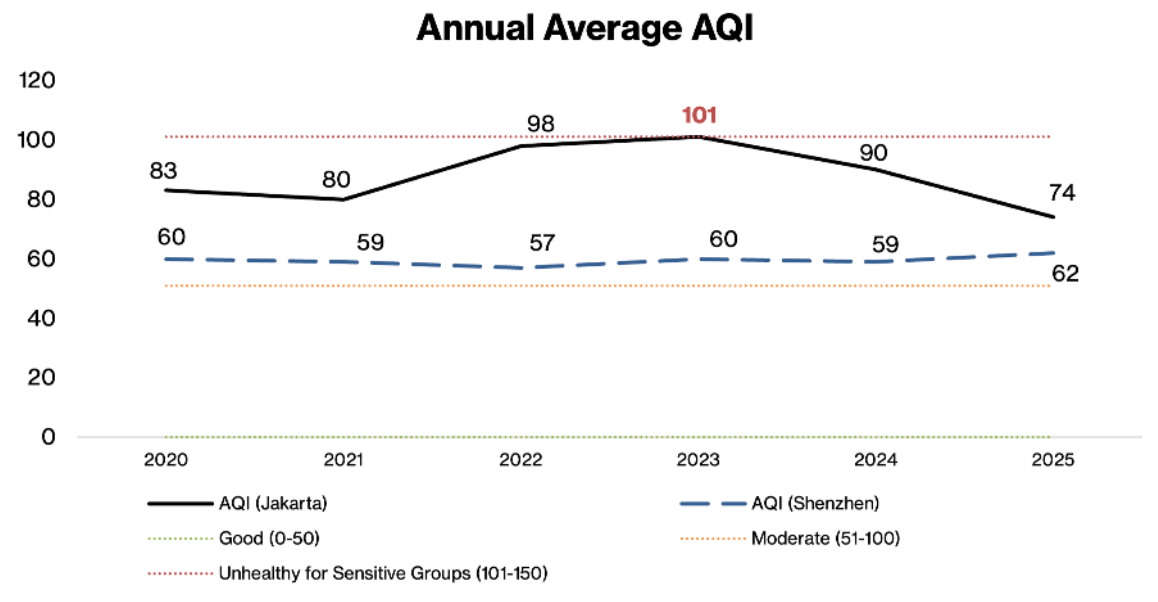
*At the Sumur Batu landfill, the bulldozer looks tiny beside the hill that grows every day /
Photo credit: Denera team*

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The burden extends beyond the physical. Living within five kilometers of a landfill means an 11.4 percent higher risk of depression. Persistent odor, visual degradation, and social stigma contribute to stress, anxiety, and diminished quality of life.

And those do not yet capture the costs that accumulate elsewhere: in lost working hours, weaker lungs, and futures shaped before they begin.

Mountains of trash are not only an eyesore: they also make their presence felt in the air Indonesians breathe. Studies suggest that a 10 percent deterioration in air quality can reduce labour productivity by 0.35-5.5 percent.



Jakarta's annual AQI has hovered in the upper end of the 'Moderate' band over the past several years, briefly crossing into 'Unhealthy for Sensitive Groups' in 2023. Meanwhile Shenzhen, a comparable Asian megacity, has stayed closer to 60: the result of decades of compounding investment in waste, energy, and emissions infrastructure. WtE is one piece of that broader picture.

The economic toll is visible at every scale. Globally, the direct cost of waste management was estimated at US\$252 billion in 2020. Including hidden externalities, the figure rises to roughly US\$361 billion, or about 0.42 percent of global GDP.

Closer to home, food waste alone drains Indonesia of an estimated US\$14-33 billion each year, and the World Bank estimates that poor sanitation and waste management already cost the country around 2.3 percent of GDP annually.

The smell fades at the edge of the landfill. The cost, however, does not.

It is against that backdrop that Denera begins its work.

Why 30 Beats 51 (For Now)

The Denera team's philosophy is most visible in how the company approaches its projects.

Following a comprehensive selection process, DIM appointed Wangneng Environment and Zhejiang Weiming Environment Protection as operators for its Bekasi and Denpasar plants.

Both are Chinese companies: a choice that is not deliberate, but still, reflects a pragmatic reality. China alone has built more than 1,100 incinerators, making them among the few players capable of delivering projects at the required speed.

At the same time, Denera is and has been open to partners from countries other than China for its upcoming projects, with registration ongoing.



*Submission day for the operating partner selection, at Danantara Indonesia's office /
Photo credit: Denera team*

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Each project is also structured to avoid overdependence. Foreign operators are required to partner with local companies, allowing for technology transfer while reducing concentration risk.

At the project level, Denera currently holds a 30% stake, with partners owning the remaining 70%. "We have flexibility to go to 51%," Fadli says, but for now, the decision to remain a minority shareholder is intentional. "We want to learn first." In effect, going to 30% is a confession: we know how to underwrite, we are still learning how to operate. It is the honest version of every JV ever signed.

Structuring matters as much as returns. Typical projects have debt-to-equity ratios around 30:70, though stronger sponsors can push leverage higher.

The bigger challenge is not the technology itself. "It's not rocket science," Fadli says. The risk lies in execution: permits, coordination, and managing large-scale construction across multiple partners.

WtE plants are also capital-intensive, typically requiring US\$150–170 million per site. Those challenges have historically held projects back. “Local governments often don’t fully understand how to structure large investments,” Cynthia says.

Effective October 10, Presidential Regulation 109/2025 set a fixed feed-in tariff of US\$0.20 per kWh for WtE electricity: almost a 50% jump over the previous capped rate. The earlier regulation, PR 35/2018, had used a tiered structure capped at US\$0.1335/kWh for plants up to 20 MW. That gap is the difference between a bankable project and one that stalls on a spreadsheet: and the evidence is on record. Of the twelve cities designated under the 2018 regulation, only two ever broke ground.

Set against the externalities, the environmental and health costs that Indonesia's waste crisis imposes on its people, the premium also looks defensible.

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Set against the externalities, the environmental and health costs that Indonesia's waste crisis imposes on its people, the premium also looks defensible.



A different kind of stack: paperwork, not waste / Photo credit: Denera team

Denera’s model attempts to address that by standardizing key elements across projects, from technology and operations to partner selection, which helps make the projects consistent.

There is a particular kind of Indonesian project that lives most of its life on PowerPoints. Denera's contribution, in a sense, is to drag a few of these into Excel, and then into concrete.

What comes next is scale. The initial wave of projects marks the first phase of a broader rollout, with additional WtE plants expected to follow this year.

But even at full scale, the limits are clear. “WtE can only solve 25–30% of our waste,” Fadli says. The program is not meant to be a complete solution, he explains, but as a catalyst for a broader waste management ecosystem.

That constraint also points to opportunity. WtE plants can also generate carbon credits: by capturing emissions that would otherwise come from landfills, and by displacing coal-based electricity. In some cases, controlled incineration can even produce cleaner emissions than the surrounding environment.

Over time, the ambition is to expand along the value chain: capturing upstream activities, adapting to evolving waste technologies, and potentially moving into adjacent infrastructure sectors.

“WtE is just downstream but an important catalyst for changes in the upstream,” Fadli says. “If you are a waste company, you need to be integrated, because the value is higher when you capture it end-to-end.”

That means looking beyond municipal waste alone. While current projects focus on household waste, other segments, such as industrial and hazardous waste, also present opportunities to build viable businesses.

Because in the end, Denera is not just solving for waste. It is testing whether infrastructure like this, long discussed but rarely executed, can finally be made to work at scale.

The landfills will still be there for years to come. The question is whether, this time, the solution can outlast them.

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Did You Know?

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*A skier on the roof of Copenhagen's energy plant, CopenHill /
Photo credit: Martin Steiner / Flickr*

CopenHill, Copenhagen's iconic WtE plant, took four years to build, from groundbreaking in March 2013 to completion in 2017. Its name is a tongue-in-cheek nod to Denmark's lack of real hills: the country's highest peak is just 170 meters.

Designed by renowned architect Bjarke Ingels, with a ski slope, hiking trails, and one of the world's tallest artificial climbing wall on its facade, it processes around 440,000 tonnes of waste annually for over 600,000 residents.

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