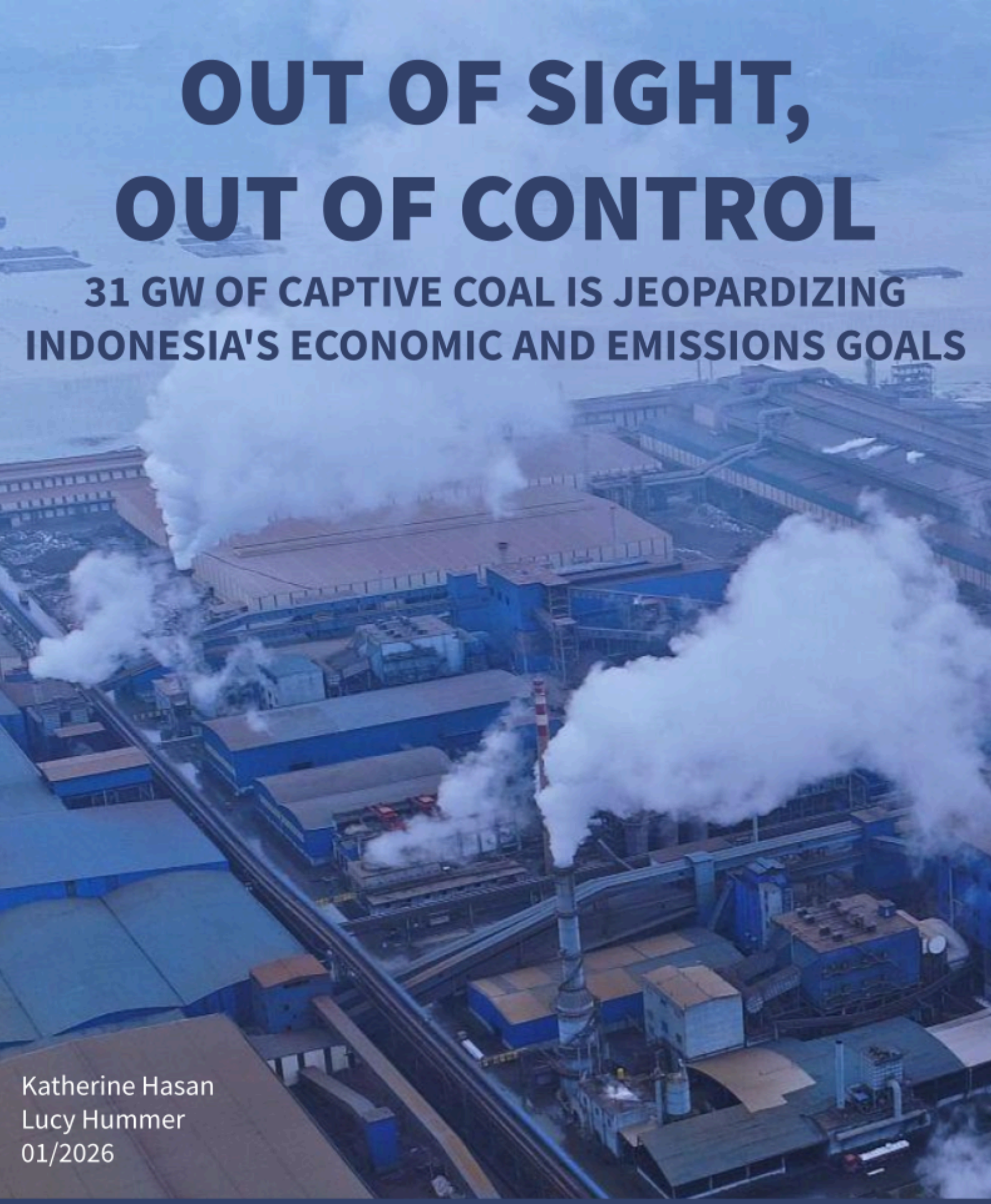
OUT OF SIGHT, OUT OF CONTROL

31 GW OF CAPTIVE COAL IS JEOPARDIZING INDONESIA'S ECONOMIC AND EMISSIONS GOALS



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CREA
Global Energy Monitor

Out of sight, out of control: 31 GW of captive coal is jeopardizing Indonesia's economic and emissions goals

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About CREA

The Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions to air pollution. CREA uses scientific data, research, and evidence to support the efforts of governments, companies, and campaigning organisations worldwide in their efforts to move towards clean energy and clean air, believing that effective research and communication are the keys to successful policies, investment decisions, and advocacy efforts. CREA was founded in Helsinki and has staff in several Asian and European countries.

About GEM

Global Energy Monitor (GEM) develops and shares information on energy projects in support of the worldwide movement for clean energy. By studying the evolving international energy landscape, and creating databases, reports, and interactive tools that enhance understanding, GEM seeks to build an open guide to the world's energy system.

Out of sight, out of control: 31 GW of captive coal is jeopardizing Indonesia's economic and emissions goals

Key findings

- Coal growth in Indonesia's stagnant national power grid is being dwarfed by an explosive, nickel-driven captive coal surge, with a total of 4.49 gigawatts (GW) of industrial off-grid captive coal capacity now marked operational between Global Energy Monitor's (GEM) releases in July 2024 and July 2025.
- Captive coal accounted for about 80% of all year-over-year coal additions, with growth concentrated in the nickel hubs of Central Sulawesi and North Maluku, which have seen capacity more than double since 2023.
- Projects in development would put Indonesia's total captive coal capacity over 31 GW, triple the nation's 2023 total captive coal power capacity, eclipsing Australia's current total coal fleet (22.8 GW), and tying with Germany's operating fleet (32.3 GW).
- GEM identifies 7.95 GW total from nine announced captive projects and 160 MW from one pre-permitted project, while Indonesia's Just Energy Transition Partnership (JETP) captive power study – the only attempt by the government to map the expansion – presents an inconsistent baseline by tabulating 4.45 GW of planned capacity but citing only 3.1 GW in its text and omitting all announced projects.*
- The JETP study includes severe regulatory loopholes, such as exemptions for national strategic projects, but no credible attempt to implement the cancellation of planned captive coal projects. By ignoring this demand, the current plan largely underestimates realistic clean energy needs, failing to plan and implement industrial projects in a way that enables them to be powered by clean energy.
- CREA analysis shows that short-term gains are leading to long-term economic erosion, as nickel hub profits peak in year five and then are consumed by environmental costs by year eight. CREA also projects excluding captive coal from retirement targets will cause 27,000 additional air pollution-related deaths and USD 20 billion in economic burden cumulatively.
- The proliferation of 'sacrifice zones' poses a critical risk, a reality confirmed by the December 2025 Poso District Court ruling which found nickel operators liable for unlawful environmental destruction. This jeopardizes Indonesia's place in global supply chains as markets increasingly scrutinise and reject high-carbon products.

***EDITORIAL NOTE, 4 February 2026 —** A footnote has been added to page 18 of this report to clarify that the JETP Captive Power Thematic Report included the reasoning behind differing cited captive coal power capacity totals. Specifically, 1.1 GW shifted from permitted to under construction, leading to a tally of 5.5 GW under construction and 3.1 GW planned at the time of release. Consequently, JETP scenario modeling proceeded with these figures while outlining an Asset-Level Alternatives Analysis for 4.452 GW across ten projects. This update reflects the dynamic nature of asset development, and was made following commentary submitted by a member of the JETP Captive Power Study Thematic Report editorial board.*

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Over 5 GW of coal power marked as operational in Indonesia in past year – 4.4 was captive

This briefing, the third in a series of joint reports between the Centre for Research on Energy and Clean Air (CREA) and Global Energy Monitor (GEM), summarizes the past year and three-year developments of Indonesia's captive coal power sector – which refers to industrial coal power not connected to the national grid.

The analysis includes: 1) Indonesia's entire coal fleet, from on-grid operated by PT Perusahaan Listrik Negara (PLN) — the state-owned electricity provider, along with Independent Power Producers (IPPs) — local and foreign-invested that have entered Power Purchase Agreements (PPAs) to build and operate power plants and sell the electricity exclusively to PLN — and 2) off-grid, captive units. The prior releases in September 2023 and November 2024 serve as records of the exceptional growth of industry-driven coal power developments in the country, using GEM's Global Coal Plant Tracker (GCPT) releases in July 2023, July 2024, and July 2025 as the main reference.

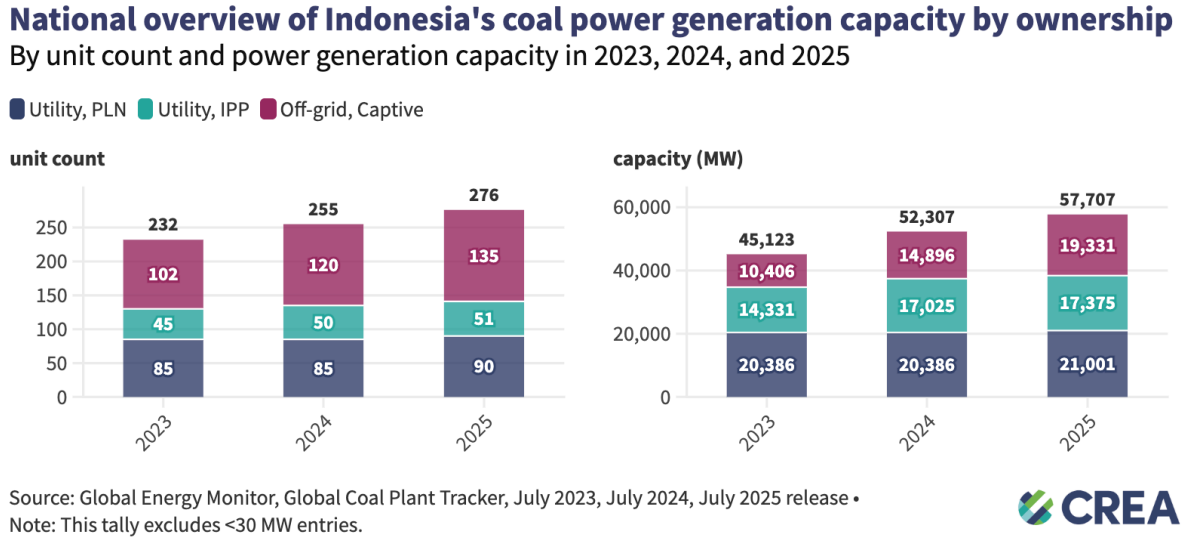


Figure 1 — Shares between utility and captive coal power generation by unit count and generation capacity in MW in 2023, 2024, and 2025

Figure 2 provides mapping of the currently operating units and their distribution across the country. New coal power capacity additions can be noted for seven locations, namely South Sumatra, South Kalimantan, Banten, South Sulawesi, and East Nusa Tenggara for new on-grid coal plants, and Central Sulawesi and North Maluku for additions of captive.

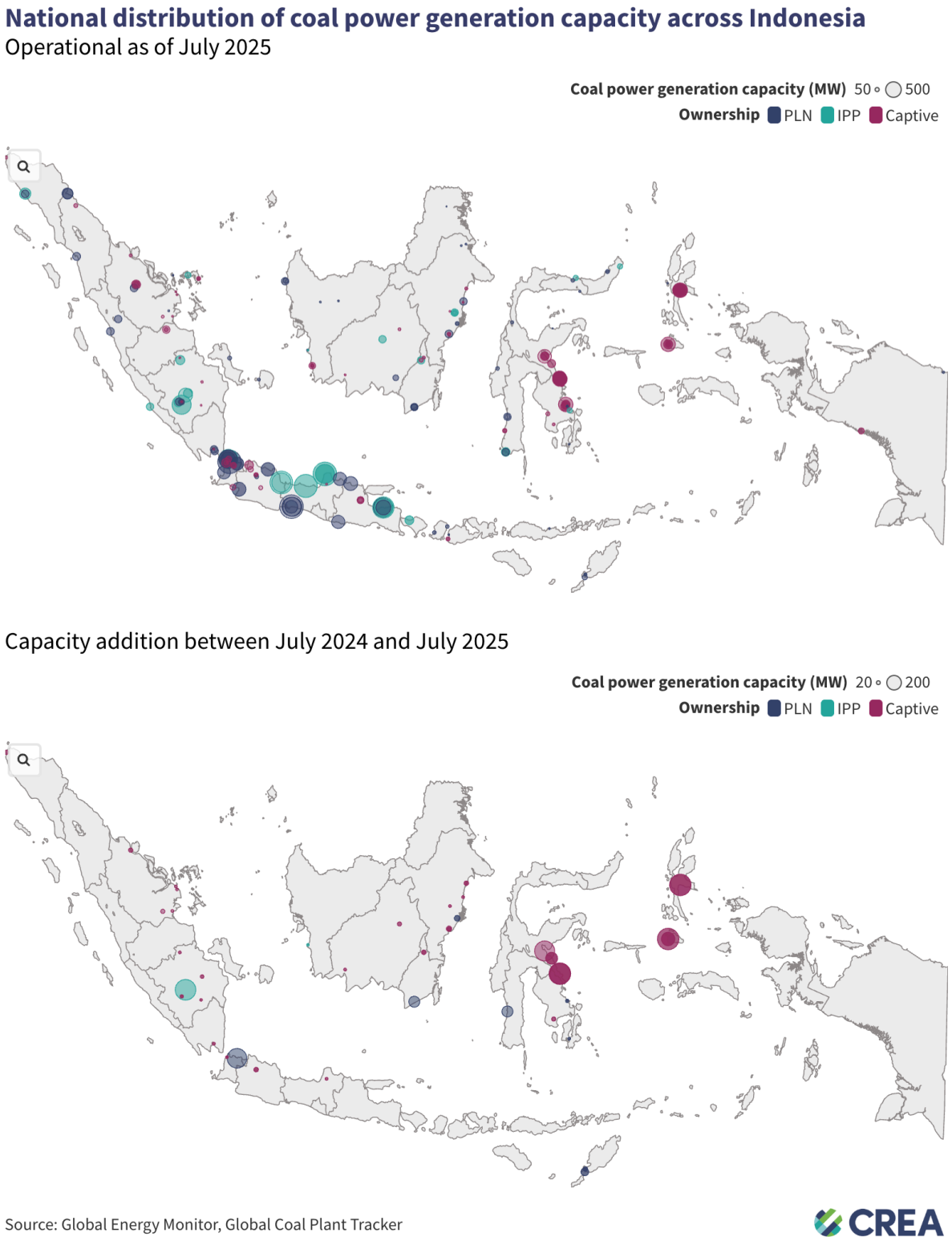


Figure 2 — Distribution of operational CFPPs, as of July 2025 (top); new capacity additions, July 2024-July 2025 (bottom)

Despite the fact that a coal moratorium has been practically enforced under Presidential Regulation No. 112 Year 2022 (PERPRES 112/2022), Indonesia continues to integrate new coal power generation into the national power systems — both on-grid and off-grid.

Between GEM's GCPT July 2024 and July 2025 releases, Indonesia's tracked net coal capacity increased by 5.40 GW, with the vast majority (4.49 GW) being dedicated to off-grid captive use for energy-intensive strategic industries, dwarfing the 965 MW added to the public grid.

This has been made possible through specific exemptions for coal projects already included in PLN's 10-year business plan or *Rencana Umum Penyediaan Tenaga Listrik* (RUPTL) 2025-2034, as well as for captive power plants dedicated to "national strategic projects" (*Proyek Strategis Negara* or PSN) that contribute to value-added processing. Furthermore, Indonesia's National Electricity General Plan, or Rencana Umum Ketenagalistrikan Nasional (RUKN) 2024-2060, outlines the continued expansion of coal capacity by 26.8 GW over the next seven years, driven largely by over 20 GW of industrial captive power projected to peak in 2037 (Ember, 2025).

The split of on-grid and captive off-grid coal power

Beyond the captive industrial units, CREA's analysis on the near-term project pipeline outlined in PLN's recent RUPTL 2025-2034 reveals a massive continued investment in grid-connected coal power at a total of 6.35 GW (CREA, 2025). This expansion is overwhelmingly dominated by the Java-Bali grid, anchored by the massive **Jawa-9 and Jawa-10 units (1 GW each) at** the Banten Suralaya complex (GEM, 2025). The remaining capacity strengthens the coal backbone across other regional grids rather than industrial parks, including **Sumbagsel-1 and Sumsel-1 (650 MW total)** for the Sumatra-Bangka system, alongside **Palu-3 and Sulut-1 (100 MW each)** in Sulawesi, **Lombok FTP2 (100 MW)**, and small-capacity units in Halmahera, Sorong, and Timor.

Looking further ahead, the long-term planning for the remaining 3.1 GW reinforces this reliance on high-carbon grid infrastructure, specifically prioritizing mine-mouth coal plants over captive integration. The Sumatra grid accounts for the bulk of this future capacity (2.4 GW), featuring major mine-mouth projects like **Jambi-1 and Jambi-2 (600 MW each)**. Notably, the 1.2 GW tagged as **Sumatra "Hybrid"** suggests the potential revival of previously canceled grid projects like **Bangko Tengah (2x600 MW)** as well as **Riau-1 (2x300 MW)**.

Similarly, Kalimantan's anticipated 650 MW addition is largely driven by mine-mouth units like **Kalselteng-3 (200 MW) and Kalselteng-4 (200 MW)**, also marked as "hybrid", further cementing a strategy of expanding conventional coal grid capacity rather than transitioning to renewable or captive industrial configurations.

Only a total of 965 MW of new grid coal power capacity addition is noted operational between July 2024 and July 2025 — much lower than a total of 3.25 GW anticipated in RUPTL 2025-2034. There was only a single newly operating IPP-owned grid-connected coal plant, namely **Sumsel-1 Unit 1 (350 MW)** in South Sumatra. The remaining are owned and operated by PLN, namely **Asam-Asam Unit 5 (100 MW)** in South Kalimantan, **Banten Lontar Unit 4 (315 MW)** in Banten, and **Timor-1 Unit 1 & 2 (2 x 50 MW)** in East Nusa Tenggara. **Barru Phase II Unit 1 (100 MW)** in South Sulawesi is noted as operational in the GCPT's July 2025 release with most recent information available for its Commercial Operation Date (COD) in 2023.

For captive coal power, capacity additions have been progressing steadily, with a total addition of 4.49 GW of coal power capacity now marked as operational between the GCPT's July 2024 and July 2025 releases.

Out of 4.49 GW, 1.53 GW comes from retroactive COD updates, marking the operational year before 2024. These include Sulawesi Labota Unit 1, 2, and 3 (1,080 MW in total – 2x350 MW and 380 MW with COD in 2021, 2022, and 2023 respectively) and PT Halmahera Persada Lygend Nickel Smelter Phase II Unit 1, 4, and 5 (3x150 MW, COD in 2023). One captive unit, Kalimantan Cement Works (55 MW, COD 1998) was updated from operational to retired between the July 2024 and July 2025 releases, likely reaching the end of its operational lifespan.

Units marked as operational with COD in 2024 and 2025 make up a total of 2.96 GW – located in five facilities that are all tied to the nickel processing industry. Newly operating captive CFPPs are located in **PT Indonesia Huabao Industrial Park (IHIP) power station**, **Delong Nickel Phase IV power station**, and **Sulawesi Labota power station** — all three in Central Sulawesi, and **PT Halmahera Persada Lygend Nickel Smelter power station and Weda Bay power station** — both in North Maluku.

- **PT IHIP Unit 1, 2, and 3 (350 MW in total – 116 MW, 117 MW, and 117 MW, COD in 2024)** makes up nearly all of the capacity, with another 100 MW of expansion anticipated. Located in the Indonesia Huabao Industrial Park (IHIP) in Morowali, Central Sulawesi, the power complex is owned by a subsidiary of Zhejiang Huayou Cobalt, and supplies electricity to the park's nickel processing facilities.

- **Delong Nickel Phase IV Unit 3 (330 MW, COD in 2024)** is one out of two units planned to power an annual production capacity of 80,000 tons. This power station is part of the fourth expansion phase of the Delong Nickel complex in North Morowali, Central Sulawesi. It is operated by PT Nadesico Nickel Industry (PT NNI), a joint venture between Zhongwei New Materials (CNGR) and Jiangsu Delong Nickel Industry. The plant is specifically designed to power PT NNI's smelters, which target an annual production capacity of **80,000 tons of ferronickel (FeNi) and nickel matte (Ni matte)**.
- **Sulawesi Labota Unit 9 (380 MW, COD in 2024)** is situated within the massive Indonesia Morowali Industrial Park (IMIP) that now has 3,360 MW of operational coal power generation capacity dedicated to a number of tenants, namely PT Walsin Nickel Industrial Indonesia, Indonesia Eternal Smelting Co, Indonesia Huaqing Aluminum Co Ltd, Indonesia Wanjia Ferro Nickel Co Ltd, Indonesia Zhaohui Ferro Nickel Co Ltd, and PT Sulawesi Mining Investment. All boilers virtually use supercritical technology to maintain high-baseload electricity required for Rotary Kiln Electric Furnace (RKEF) lines producing **stainless steel**.
- **PT Halmahera Persada Lygend (HPL) Nickel Smelter Phase III, Unit 1 & 2 (2x380 MW, COD in 2024 and 2025, respectively)** expanded power capacity in the Obi Island complex, signaling a shift from 150 MW units built in earlier phases to deployed to more centralized, higher-capacity generation. This move signals rapidly growing energy demands from the expanded refinery operations under the Harita-Lygend partnership. While the initial PT HPL facilities established a 55,000-ton benchmark, the recent full commissioning of the PT Obi Nickel Cobalt (ONC) Phase III expansion in August 2024 has effectively boosted the complex's aggregate designed annual production capacity to **120,000 tons of MHP**.
- **Weda Bay Unit 12, 13, and 14 (3x380 MW, COD in 2024 for Unit 12 & 13, and in 2025 for Unit 14)** is located at the Indonesia Weda Bay Industrial Park (IWIP) in Central Halmahera. With these additions, the total captive coal power capacity installed and operating in IWIP has reached 4,540 MW. This massive power complex serves multiple tenants that operate **FeNi and Ni Matte** production lines at a scale that would be considered one of the largest globally. These tenants include PT Weda Bay Nickel, a joint venture between Tsingshan and Eramet producing **FeNi and Ni Matte intermediates**; PT Youshan Nickel Indonesia, a partnership between Huayou Cobalt and Tsingshan producing **Ni Matte**; PT Angel Nickel Industry, which operates RKEF lines to produce **NPI**; PT Yashi Indonesia Investment, a producer of **FeNi**; and PT Huafei Nickel Cobalt, which operates one of the world's largest High Pressure Acid Leach (HPAL) facilities to produce **MHP**.

Captive coal capacity doubled in two years, reaching 19.3 GW and surging by 4.5 GW annually

The trajectory of the currently operating and projected coal power generation capacities from the utility providers — PLN and IPPs — and off-grid, captive industrial and commercial users, are illustrated in Figure 3.

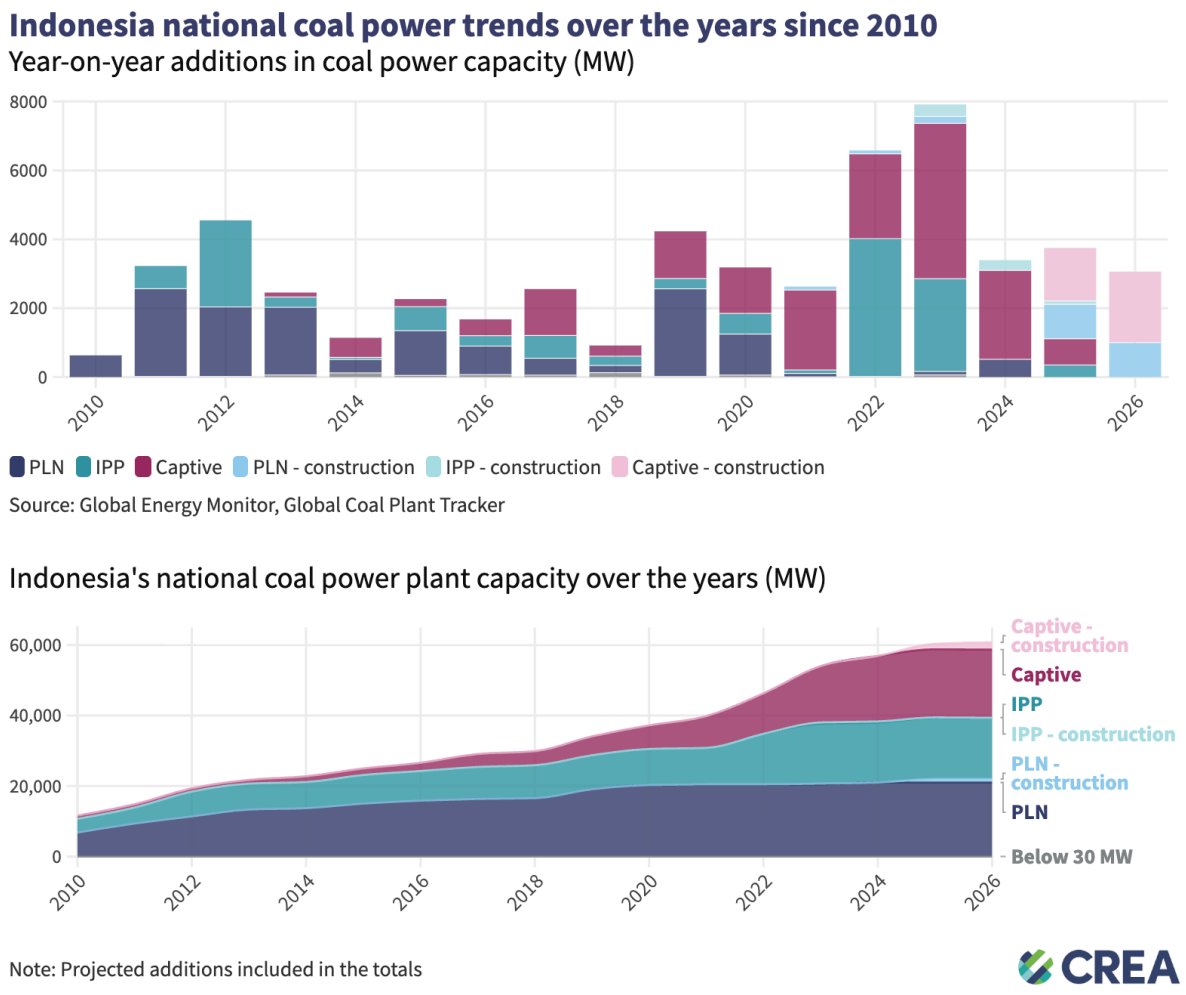


Figure 3 — Capacity trends over the years in Indonesia's coal power generation - annual additions (top); national total operating capacity (bottom)

Focusing on the growth trajectory after 2010 to the mid-2020s, Indonesia has seen a significant shift in capacity additions — from grid capacity expansions by PLN and IPPs to sustained and sizable growth of captive coal-fired power plants. From 2010 to 2025, total operational PLN and IPP coal power capacity additions reached 28.3 GW. Meanwhile, captive coal power capacity in the same time period has grown by 18.4 GW.

Captive coal capacity has grown about 8 times faster than on-grid capacity over the last 25 years and represents half of the total capacity additions. While captive coal plants accounted for only a small fraction of the coal fleet in 2010 – from nearly one-tenth, with over half of currently proposed additions designated for industrial use, Indonesia's captive coal fleet is on track to reach 26.2 GW by 2026, potentially accounting for one-third of Indonesia's total coal power infrastructure.

Figure 4 provides a view of on-grid and off-grid coal power capacity developments by phase. The tally of operational capacity shows a steady increase year by year; beyond this, it is clear that prospective projects have been steadily increasing, reaching the highest totals since 2023.

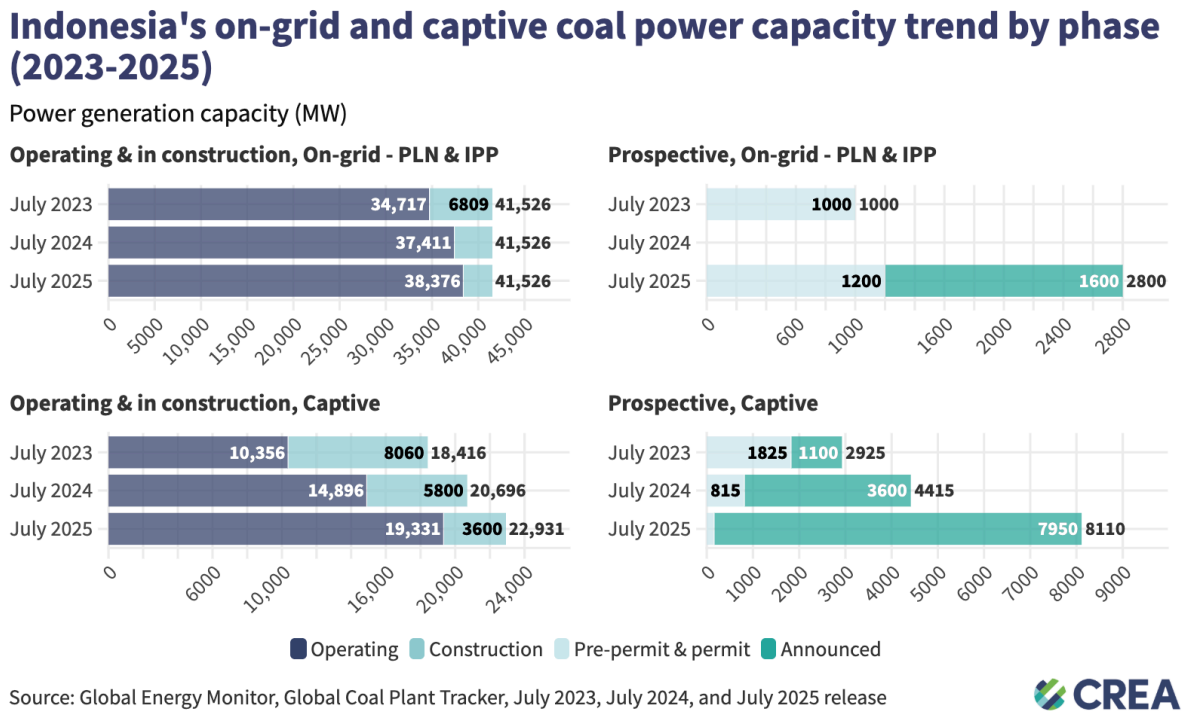


Figure 4 — Indonesia's on-grid and captive coal power generation capacity development shift by phase, 2023-2025

Looking at capacities currently in construction as of July 2025, coal-based power generation for on-grid capacity will increase by 3.15 GW, and off-grid captive capacity by 3.60 GW. While projects in construction signal somewhat slower additions, a closer look at prospective projects, namely those in pre-construction, pre-permitted, permitted, and announced stages, show significant capacities will be added through 2030 and beyond. Prospective on-grid coal power capacities have shifted from 0.7 GW in July 2023 to 2.8 GW in July 2025. On the other hand, prospective captive coal power capacities have grown from 4.4 GW in July 2023 to 8.1 GW in July 2025.

Figure 5 shows year-on-year additions of both operating and prospective coal power plant projects for both on-grid and captive. For grid coal power, notable additions at a similar scale occurred in 2012 and 2022; since then, on-grid coal expansion has been largely reduced due to the enforced moratorium as of 2022. Prospective projects for the grid are coming from exempted coal power projects as made explicit in PERPRES 112/2022.

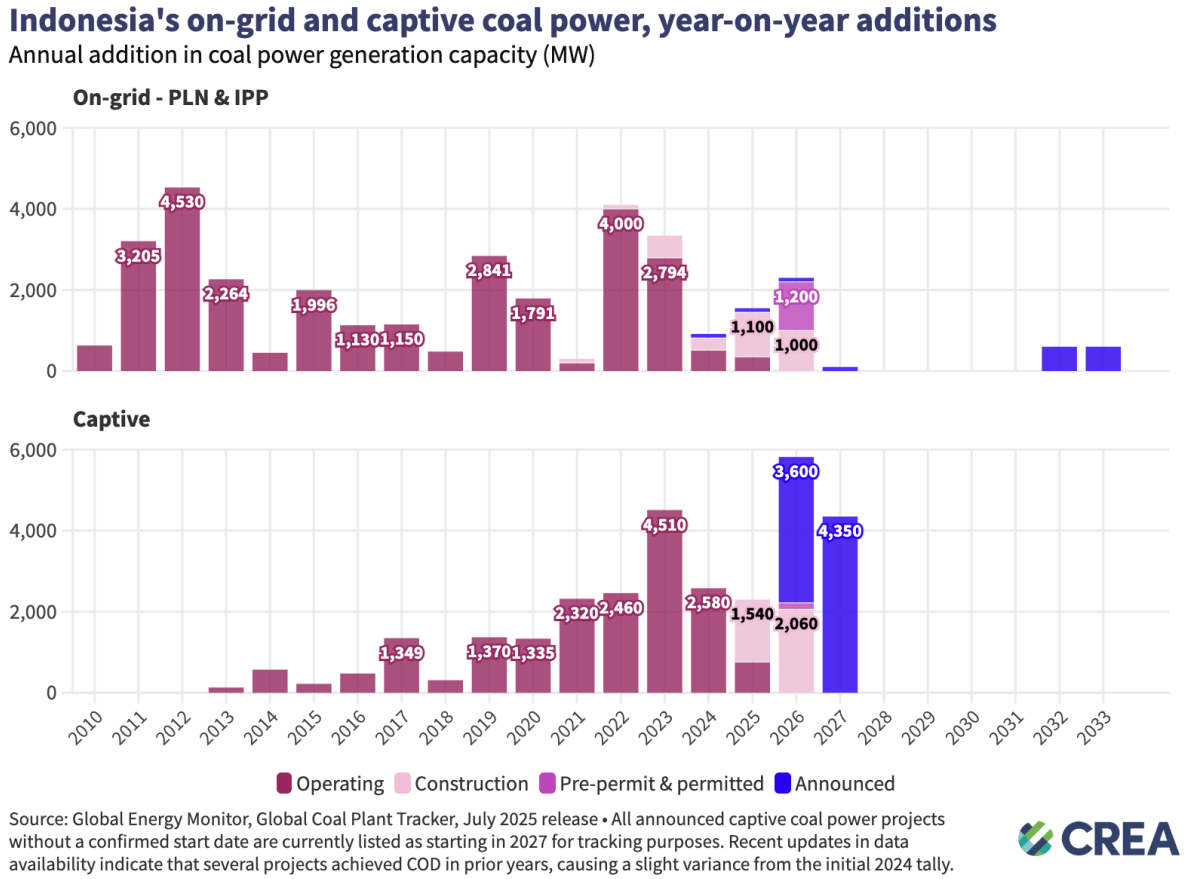


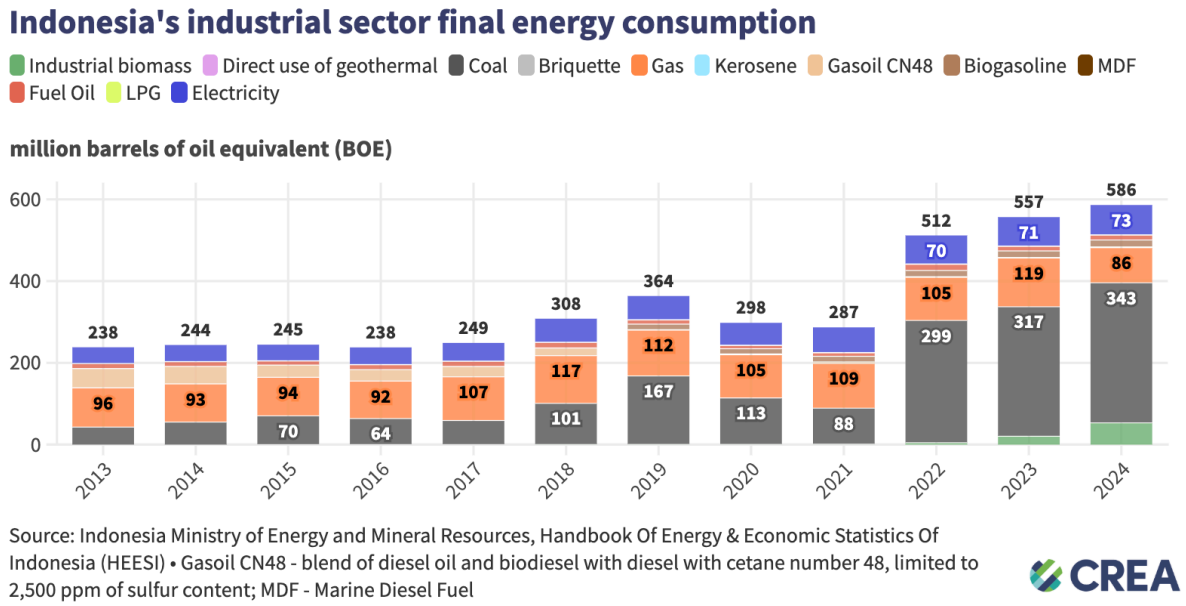
Figure 5 — Annual additions in Indonesia's on-grid and captive coal power: operational, construction, pre-permitted, and announced phases

Captive coal power, on the other hand, shows no sign of slowing down. The year of 2023 was indeed a record year, with 4.51 GW of new captive coal capacity commissioned. Although 2024 and 2025 projections show a temporary slowdown (2.58 GW and 760 MW), the medium-term outlook is robust. Currently, 3.6 GW is under construction and 160 MW is in the pre-permit stage for 2026 completion. Most notably, the total development pipeline includes 7.95 GW of announced capacity. To note, these tallies were based on known COD.

These prospective projects, along with those in operation and construction, combined amount to nearly 31 GW. To illustrate the scale, this number is **triple Indonesia's 2023 total captive coal power capacity,** eclipses Australia's current total coal fleet (22.8 GW), and nearly ties with Germany's 2024 coal capacity (32.3 GW) (Ember, 2026).

Energy trends in Indonesia's industrial sector

As established in the prior assessments and confirmed by 2024–2025 industry trends, **captive coal power in Indonesia remains the primary energy source for energy-intensive downstreaming**. According to the 2024 release of the Handbook of Energy & Economic Statistics of Indonesia (HEESI), the industrial sector's role in national energy consumption has reached a critical peak as illustrated in Figure 6 (MEMR, 2025).



Source: Indonesia Ministry of Energy and Mineral Resources, Handbook Of Energy & Economic Statistics Of Indonesia (HEESI) • Gasoil CN48 - blend of diesel oil and biodiesel with diesel with cetane number 48, limited to 2,500 ppm of sulfur content; MDF - Marine Diesel Fuel

Figure 6 — Industrial final energy consumption trend by fuel sources, 2013-2024

In 2024, the industrial sector accounted for over 40% of national final energy consumption, reaching approximately 586 million barrels of oil equivalent (BOE) – nearly half of the national final energy consumption. The trend follows a decade-long upward trajectory, going from 238 million BOE in 2013 to 586 million BOE in 2024 — in eleven years, industrial energy use has increased nearly 2.5-fold.

Growth in industrial energy consumption is predominantly fossil-based, driven largely by the metal and metallurgy sectors, where coal use has reached 99 million tonnes — nearly 9 million tonnes higher in the last year. With the total captive coal power capacity reaching 19.3 GW as of July 2025, as well as exempted expansion outlined in RUKN, industrial coal demand is on track to double by 2030. While **coal alone accounted for nearly 90% of the net increase in 2024 industrial energy use**, it should be noted that industrial biomass has seen a significant uptick from 20 million BOE to 53 million BOE in just a year — presumably driven by **biomass co-firing initiatives**.

In June 2025, the Ministry of National Development Planning (Bappenas) and WRI Indonesia launched the National Nickel Industry Decarbonization Roadmap, outlining a path toward an 81% reduction in emissions by 2045 (WRI Indonesia, 2025). The strategy includes shifting 100 billion kilowatt-hour (kWh) of industrial electricity demand toward 47.3 GW renewables, adopting bio-reductants to tackle the 26% of emissions inherent in chemical smelting, and scaling a 20 million-ton annual biomass supply chain for co-firing to meet international Carbon Border Adjustment Mechanism (CBAM) standards.

To make biomass co-firing feasible, rigorous life-cycle assessments and specific emission standards are essential to avoid 'greenwashing' intended to prolong coal fleet operations. A robust roadmap would treat biomass as a technical bridge, utilizing sustainability tracking and hybrid infrastructure to ensure it serves as a flexible backup to renewables rather than a permanent solution. Furthermore, achieving 'Green Nickel' status implies the adoption of frameworks that could validate biomass origins and provide the transparency necessary to meet the standards of global stakeholders (CREA, 2025a; DNV, 2024).

Indonesia's Second Nationally Determined Contribution (SNDC), submitted in late October 2025, shifts the country's climate targets toward absolute emission reductions but maintains a heavy industrial reliance on fossil fuels to drive an 8% GDP growth target (Republic of Indonesia, 2025). Specific measures for the industrial sector center heavily on technical fixes, rather than a retreat from coal. It shows a clear preference for a strategy that focuses on efficiency and offsetting rather than replacement.

As highlighted by Ember, industrial and energy emissions are still projected to rise or peak much later, beyond 2030 and through 2037 due to the heavy reliance on coal (Ember, 2025). Although the forestry sector is expected to become a net sink by 2030, continued coal expansion, promotion of industrial downstreaming, and prioritisation of nuclear and biomass use over wind and solar contribute to a 'highly insufficient' rating from Climate Action Tracker (CAT, 2025). The reliance on nuclear and biomass limits Indonesia's clean energy ambitions, as nuclear is slow and expensive to deploy, while biomass is a limited resource, especially if sustainability considerations are taken into account.

Nickel remains the driver of captive growth

Focusing on captive coal power, new additions are found in Central Sulawesi and North Maluku and are all linked to the nickel industry. Figures 7 and 8 provide the latest tally of all coal power plant entries above 30 MW in the GCPT's July 2025 release — of provincial distribution and captive industry — respectively by phase.

With last year's additions, **Sulawesi and North Maluku are firmly established as the island groups with the highest captive coal power generation capacity in Indonesia**. While currently known prospective additions suggest they will maintain this lead, a shift in the industrial landscape is emerging. **Large-scale projects announced in Riau Islands (4.75 GW), North Kalimantan (1.1 GW), and West Java (2 GW) signal that these provinces are set to become Indonesia's newest frontiers for captive power growth.**

Through the years, combined capacity in **Central Sulawesi, Southeast Sulawesi, South Sulawesi, and North Maluku**, areas virtually dominated by the nickel industry, has grown **from 7.2 GW in July 2023 to 11.7 GW in July 2024 and 16.2 GW in July 2025 — a 2.25-fold jump in only two years.** Since the first tally was done with the GCPT July 2023 release, capacities in Southeast Sulawesi and South Sulawesi have remained at 2.43 GW and 70 MW, respectively. Meanwhile, Central Sulawesi captive coal power has risen from 2.96 GW to 7.33 GW between July 2023 and July 2025 — marking a 2.5-fold expansion, and North Maluku from 1.87 GW to 6.37 GW in the same time period — a 3.4-fold rise.

Breaking down the current distribution by industrial sector, the **nickel industry remains the primary captive coal user**, with 15.4 GW in operation and 2.5 GW in construction. Other metal industries are much smaller in scale; however, **the aluminum industry is an emerging exception** with 0.78 GW in operation, 1.1 GW in construction, and 1.1 GW

announced. Outside the metals industry, **captive-powered industrial parks are on the rise**, with a total of 6.85 GW announced for West Java (2 GW), Riau Islands (4.75 GW), and Central Sulawesi (100 MW).

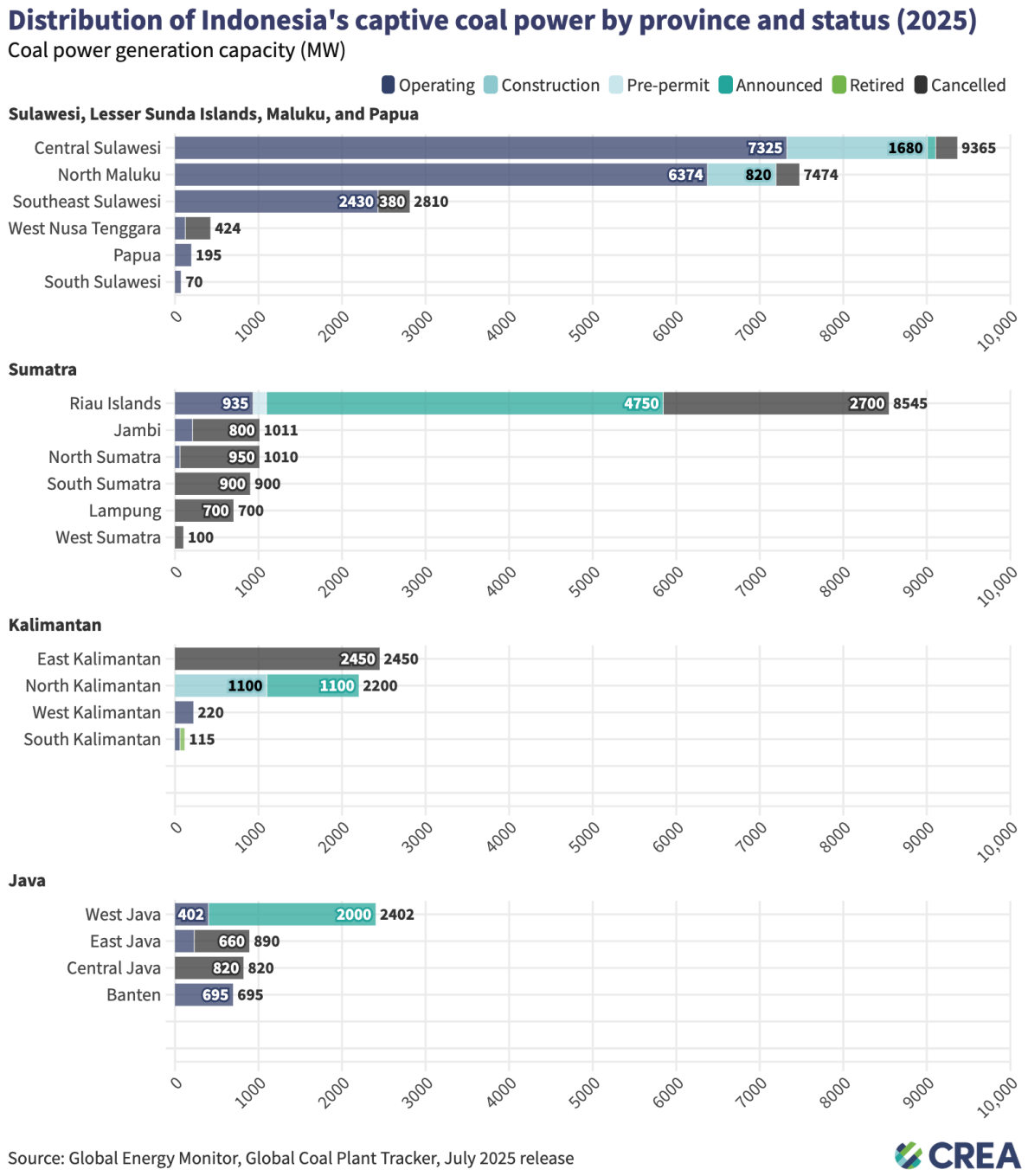


Figure 7 — Captive coal power capacities across the provinces in Indonesia, grouped by status, as of July 2025

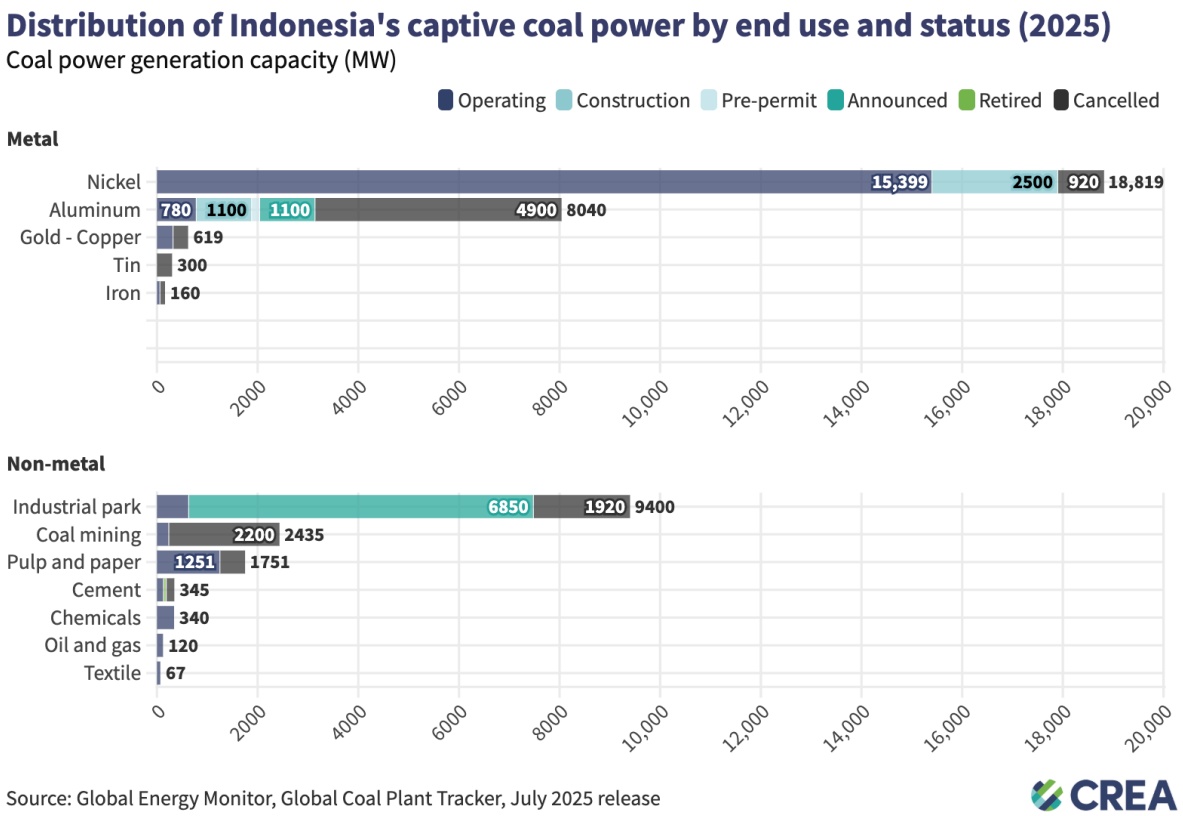


Figure 8 — Distribution of Indonesia's captive coal power capacities for metal and non-metal industries, grouped by status, as of July 2025

Figure 9 illustrates how captive coal capacity developed over the past three years across different end-use industries.

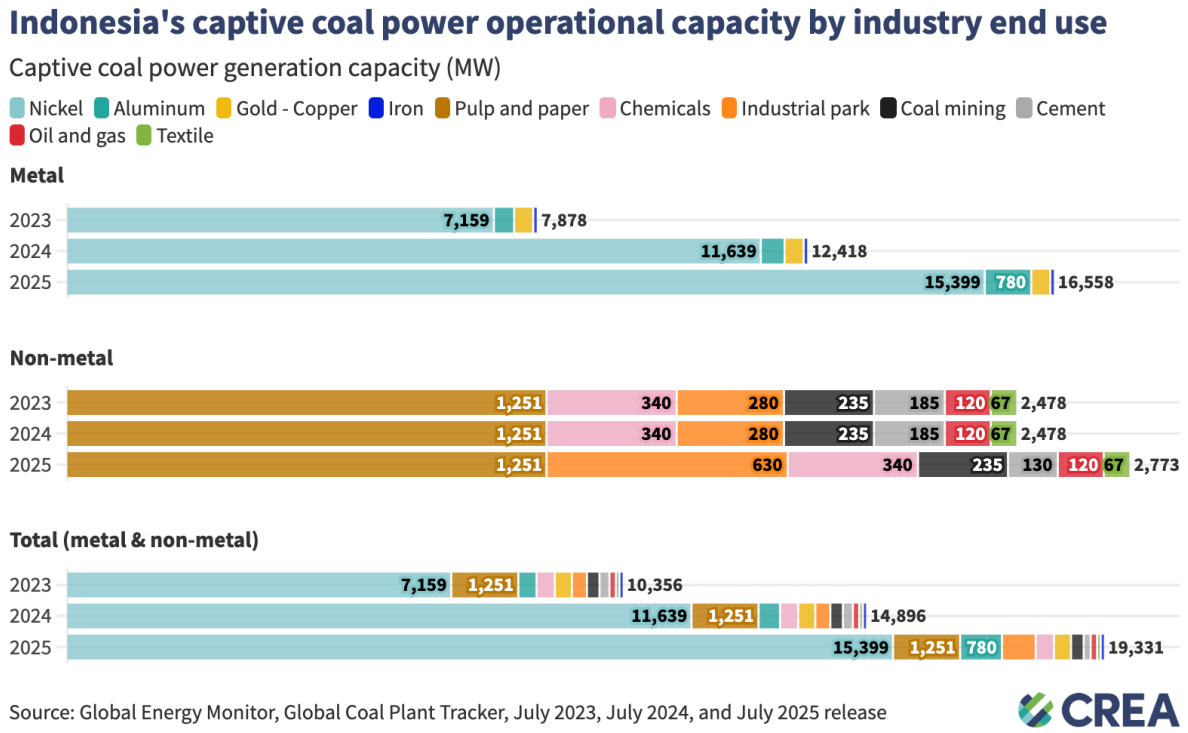


Figure 9 — Distribution of Indonesia's operational captive coal power capacities for metal and non-metal industries, grouped by status, as of July 2025

Growth has been predominantly driven by **the nickel industry, with captive coal power capacity rising from 7.16 GW in 2023, to 11.6 GW in 2024 and 15.4 GW in 2025**. If all prospective projects are realised, total capacity will reach **18 GW**. Projects in the pipeline include Halmahera Persada Lygend Nickel Smelter power stations (820 MW in construction), Delong Nickel Phase III power stations (1.35 GW in construction), and Delong Nickel Phase IV power station (330 MW in construction).

Captive coal power linked to **industrial parks has grown from 280 MW in 2024 to 630 MW in 2025**. This sector will see a much larger boom, expected to reach **7.5 GW**. Major forthcoming captive coal plants announced to support industrial parks include Hongshi Silikon power stations in West Java (2 GW), Gallant Venture power stations in Riau Islands (2.25 GW), Xinyi Group power stations in Riau Islands (2.5 GW), and IHIP power station in Central Sulawesi (100 MW).

As for **the aluminum industry**, progress has been slower, with capacity growing from **340 MW in 2023 to 400 MW in 2024 and 780 MW in 2025**. With the anticipated prospective projects, total captive coal power linked to aluminum processing will reach **3.14 GW**. These projects include Alamtri Aluminum Smelter power stations (1.1 GW construction, 1.1 GW announced), and Tianshan Alumina power station (160 MW pre-permit).

Indonesia's urgent priority to bring 'out of sight' captive coal into the light

Aligning with JETP Captive Power Thematic Report

In November 2025, the Just Energy Transition Partnership Secretariat (JETP Secretariat) released **the JETP Captive Power Thematic Report**, stated to complement the analysis in Chapter 5 of **the Comprehensive Investment and Policy Plan** released in November 2023 (CIPP 2023). The study required 1.5 years to conclude since its kick off in May 2024 (JETP Indonesia, 2024).

The report includes a pathway analysis, building a 'Captive Scenario' against a 'Baseline Scenario'. The JETP Captive Scenario applies two assumptions for the captive coal fleet — classifying existing or under-construction assets to adhere to PERPRES 112/2022 or surpassing compliance (referred as 'enhanced' in the report), and assuming projects at permitted or pre-permit stage to shift plans and make a pivot toward renewable energy before construction begins.

This current assumption adopted by JETP is problematic because it heavily relies on enforcement mechanisms that do not exist. There is currently **no transparency** on whether captive power plants are actually meeting the 35% emission reduction mandated by PERPRES 112/2022. Furthermore, this analysis overlooks a major regulatory loophole: **coal plants powering national strategic projects are exempt from restrictions**. By excluding these plants from current models, the **true scale of power demand is underestimated**. Consequently, **the renewable capacity currently planned is likely far from sufficient** to displace these unaccounted emissions.

Figure 10 below shows JETP Captive Scenario's projections for power generation and capacity through 2050.

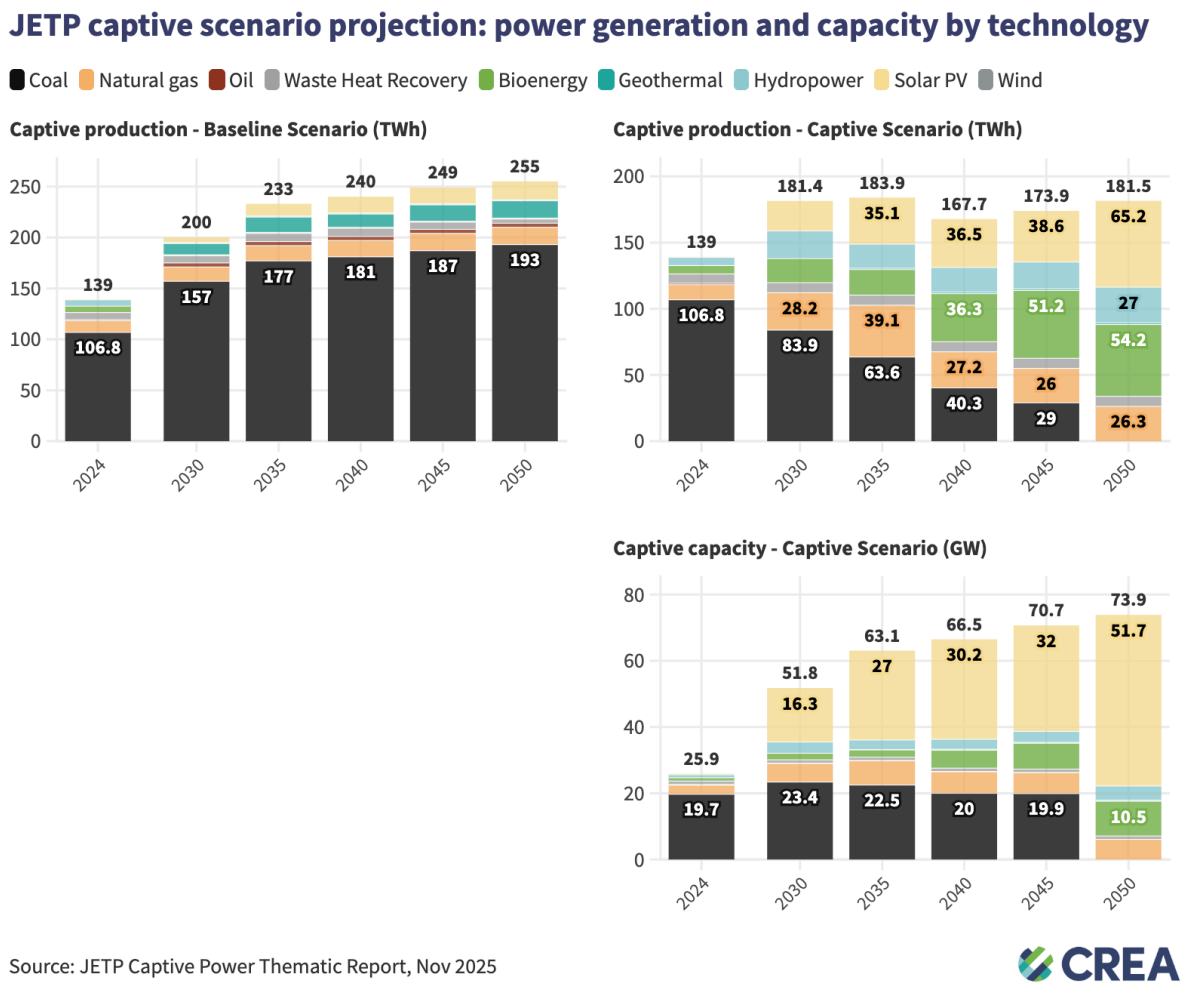
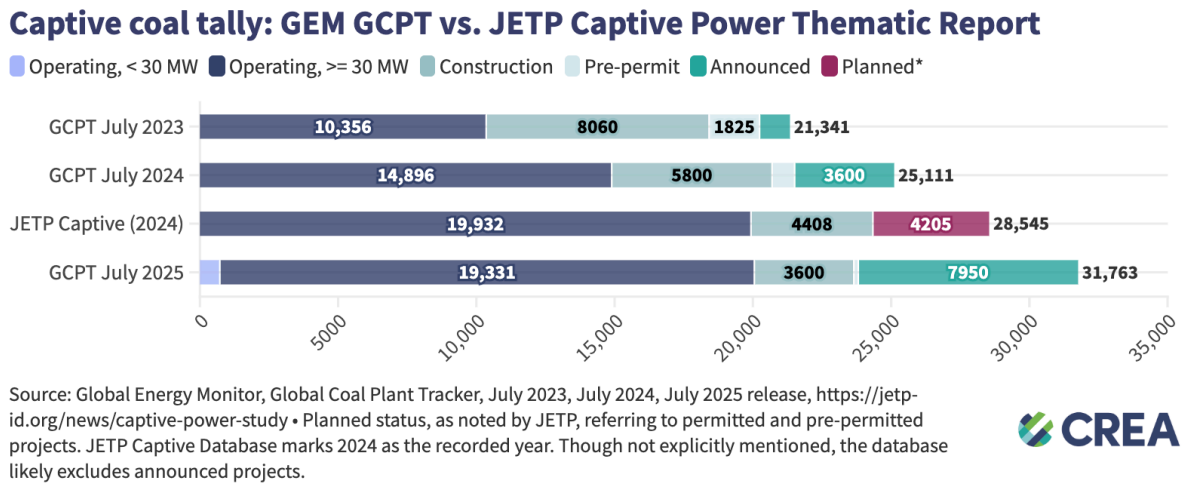


Figure 10 — Captive power projections in JETP Captive Power Thematic Report (2024-2050) - Baseline vs. Captive Scenario

The JETP Captive Power Thematic Report highlights that Indonesia's total captive coal capacity is projected to exceed 28 GW by the early 2030s, with 19.9 GW currently operating, 4.4 GW in construction, and 4.2 GW planned. To note, JETP marks operational capacity for 2024 from the JETP Captive Power Database, which was developed between June 2024 and July 2025 and sourced from the Directorate General of Electricity under the Ministry of Energy and Mineral Resources, a focus group discussion with industrial companies in January 2025, Global Energy Monitor, and desk research.

A comparison with existing independent monitoring in GEM's GCPT over the past three years is shown in Figure 11. JETP reports **19,932 MW** of operating captive coal power capacity. The tally comes very close to GEM's **20,052 MW** covered in the GCPT July 2025 release — covering coal power plants with capacity of 30 MW and above (19,331 MW total) and supplemental entries covering units sized smaller than 30 MW (722 MW total).



Source: Global Energy Monitor, Global Coal Plant Tracker, July 2023, July 2024, July 2025 release, https://jetp-id.org/news/captive-power-study • Planned status, as noted by JETP, referring to permitted and pre-permitted projects. JETP Captive Database marks 2024 as the recorded year. Though not explicitly mentioned, the database likely excludes announced projects.

Figure 11 — Captive coal power projections in JETP Captive Power Thematic Report (2024-2050) - Baseline vs. Captive Scenario

On the other hand, projects in construction and in development pipelines show large discrepancies — with 3.6 GW marked as in construction in the GCPT July 2025 release, 160 MW pre-permitted, and 7.95 GW announced. JETP's captive study has identified **5.5 GW of projects in construction and 3.1 GW planned (2.64 GW permitted and 482 MW pre-permitted as assessed from the report)**.

A closer look into the published figures for Indonesia's captive coal power reveals a gap between data presented at the public consultation and cited in the final official report. The report tabulated **4.45 GW of planned capacity (3.97 GW permitted and 482 MW pre-permitted)**, but it quoted a lower combined figure of **3.1 GW** in the discussion text.[1] Meanwhile, the tabulation disseminated in a public consultation forum prior to the release of the report cited a combined figure of **4.20 GW (3.73 GW permitted and 482 MW pre-permitted)**.

[1] Tabulation of **4.45 GW** planned capacities in Table B-1. Coal-Fueled Captive Power Plants Selected for Alternative Analysis at the Asset Level in the Captive JETP Scenario, and a mention of **3.1 GW** total planned capacity on page 27 in the JETP Captive Power Thematic Report

Furthermore, the consultation deck's tally of **4.4 GW** in construction grew to **5.5 GW** in the final report, suggesting that 1.21 GW (likely the Alamtri aluminum smelter project, Phase II) was moved from permitted to construction just before the final release.[2] By excluding the raw numbers and specific plant-level information, these adjustments were practically obscured, making it difficult to reconcile the differences between the listed totals.

The **4.45 GW planned projects** entries in the report's table outline ten planned coal power projects across Indonesia, mainly dedicated to the aluminum (3.27 GW) and nickel (1.08 GW) industries. The majority of these plants are already permitted (3.97 GW), with the largest developments concentrated in Kalimantan Utara (1.21 GW, presumably moved to construction), Sulawesi Tengah (1.46 GW), Riau (900 MW), and the remaining in West Kalimantan (260 MW) and Riau Islands (140 MW). **Exact mapping remains incomplete, indicating more capacity has yet to be included in potential captive coal expansion.**

These discrepancies illustrate captive coal power's rapid, 'off-radar' growth, and most importantly, the urgent need for transparent mapping. Without reconciling these datasets, Indonesia risks an unaccountable expansion of captive off-grid emissions that undermines the integrity of its decarbonisation roadmap.

[2] Addition on 4 February 2026: A footnote in 'Appendix B: Alternatives Analysis for Captive Power' on page 170, clarifies that 1.1 GW of capacity has since entered construction, leading to reclassification within JETP's scenario modeling.

Collating sub-30 MW captive coal plants

In an effort to bridge the transparency gap, this study compiles entries of coal power plants with capacities below 30 MW that are not yet accounted for in GEM's GCPT releases (given the current threshold that has been set at 30 MW). This dataset is provided to supplement the current analysis, and will be updated as new data and resources become available.

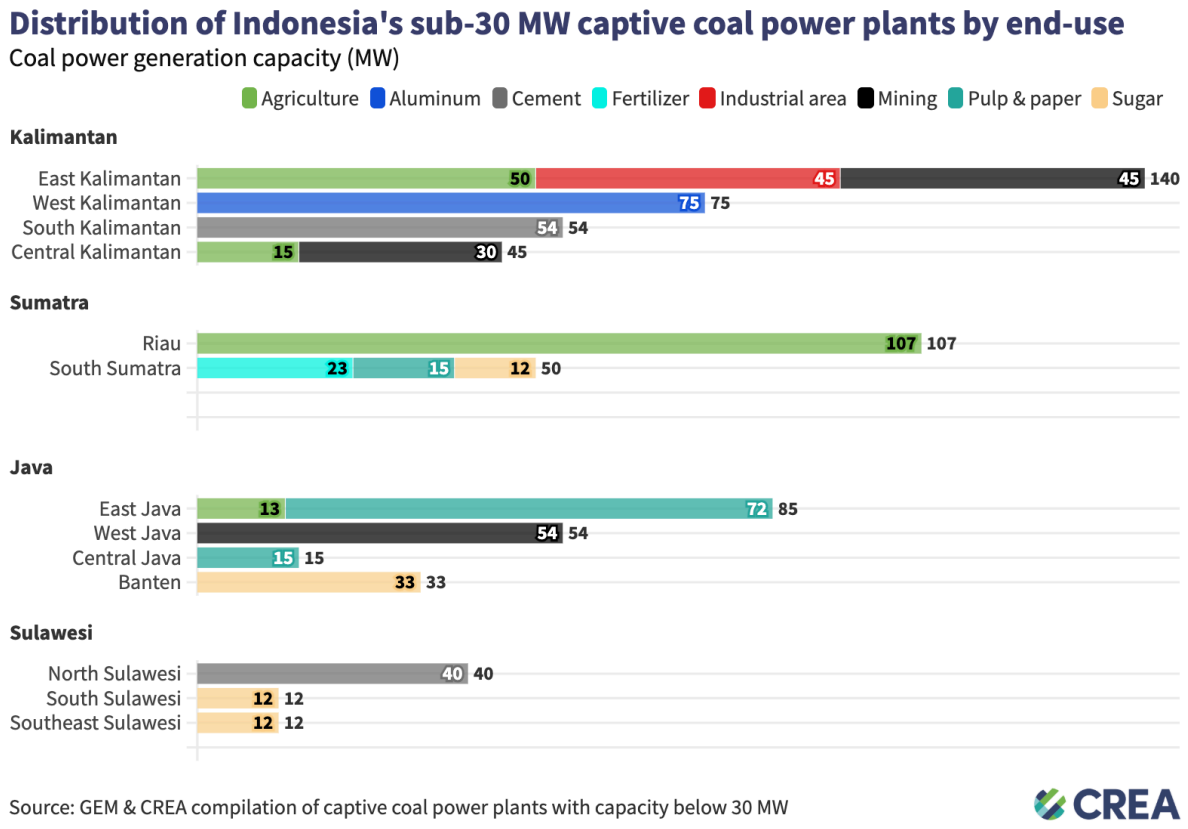


Figure 12 — Distribution of captive coal power plants with capacity below 30 MW by captive end-use and province

A total of 722 MW from 60 small-capacity captive coal power units was identified as operational at the time of this study's release – bringing the gap between GEM and JETP data for operating captive coal power capacity to just 121 MW.

As illustrated in Figure 12, these smaller units are distributed across diverse industrial sectors, with significant clusters in Kalimantan (284 MW) and Sumatra (157 MW) serving industries such as agriculture, aluminum, mining, and industrial areas. While major nickel hubs in Sulawesi currently account for a smaller portion of these sub-30 MW units (64 MW for cement and sugar production), comprehensive mapping of Indonesia's national captive coal power remains essential for identifying shifting trends and tracking potential growth.

Major regulatory loopholes legitimise more captive coal

While current projects represent a significant leap in industrial output, analysts should be wary of a massive secondary wave of expansions already in the pipeline for 2026 and beyond. Indonesia's recently formed sovereign wealth fund signaled a move to break ground on six additional mega-projects, including further aluminum smelter expansions and a multi-billion dollar aviation biofuel refinery (Bloomberg Technoz, 2026).

The sheer volume of coal-reliant infrastructure under construction remains a primary concern, as the transparency of Indonesia's energy transition is being eroded by non-transparent, off-grid project announcements. This trend is being institutionalised through proposed revisions to PERPRES 112/2022, which introduce broad exemptions for system reliability, national strategic interests, and energy independence (Kompas, 2025).

Highlighted in a recent commentary from Tenggara Strategics, these loopholes not only legitimise a massive surge in captive coal capacity but also relax operational time limits for plants integrated with industrial downstreaming (The Jakarta Post, 2025). This regulatory shift risks locking the nation into a high-emission trajectory and creating stranded assets that could undermine Indonesia's economic competitiveness as markets pivot toward green-certified minerals.

Anticipated status updates and emerging capacities

As of late 2025, Indonesia's coal landscape continues to shift with the entry of several high-capacity projects into the operational phase, alongside significant new industrial commitments. For the national grid, PLN's **Palu-3 Unit 1 & 2** **(2x50 MW)** – in construction in the GCPT July 2025 release – became operational in the first half of the year, followed by the commissioning of **Kalselteng-2 Unit 2** **(100 MW)**. As for IPPs, **Sumsel-1 Unit 1 & 2** **(2x350 MW)** successfully began operations during the second half of 2025.

Meanwhile, aggressive expansions can be anticipated in Indonesia's **alumina** production, even though not all facilities are planned to rely on captive coal power plants for energy supply. **AlamTri Aluminum Smelter**, a project by Adaro Minerals through its subsidiary PT Kalimantan Aluminium Industry (KAI) in North Kalimantan, has begun maximising the step-by-step operation of its aluminum smelter furnaces (Kontan.co.id, 2026).

This first phase of the smelter relies on a 1.1-GW onsite captive coal-fired power plant, and is projected to reach a production capacity of **500,000 tons per year (tonnes per annum, tpa) of aluminum ingot**, with full optimal operation expected by late 2026. Phase I Unit 1 (275 MW) is expected to support early-stage operations, with production reportedly

targeting the end of 2025. The second phase will add **another 500,000 tpa of capacity**, likely utilising a hybrid of coal and renewable energy. The final phase is planned to add **a further 500,000 tpa** powered by the Mentarang hydropower plant (1,375 MW with COD anticipated in 2030), designating this output as 'Green Aluminum' (ADRO, 2024).

Progress also continues at Jinjiang captive coal power plant in West Kalimantan, where PowerChina successfully completed the handover of Unit 2 – a 45 MW condensing unit and a 30 MW back pressure unit – in April 2025, setting an international record by completing the facility just 13 months after breaking ground (PowerChina, 2025; PowerChina, 2025a). The plant now provides dedicated power for the **1 million tpa alumina refinery** operated by PT Borneo Alumindo Prima (BAP), which was officially commissioned in January 2025 and is currently in its production ramp-up stage (SMM, 2025). The second phase of the alumina project, adding **2 million tpa**, is planned to commence in 2026. The project remains a core component of the Indonesia-China Integrated Industrial Park, rooted in the bilateral agreement signed on October 3, 2013 (Tempo, 2013).

Another notable development is the Mempawah Smelter Grade Alumina (SGA) refinery expansion, which is slated to begin Phase II construction in early 2026 (SMM, 2025; DMC, 2025). The project's first phase, operated by PT Borneo Alumina Indonesia (BAI), reached its initial production in January 2025 and successfully completed its first shipment in April 2025. PT BAI is owned by PT Indonesia Asahan Aluminium (INALUM) (60%) and ANTAM (40%), both under Mining Industry Indonesia (MIND ID) — Indonesia's state-owned mining holding company (BAI, n.d.).

This initial phase is on track to reach a total annual output of **1 million tonnes** by 2026. The comprehensive Smelter Grade Alumina Refinery (SGAR) program, encompassing both phases, represents a total estimated investment of USD 1.7 billion. Phase 2 will be situated adjacent to the existing facility and is designed to provide **an additional 1 million tonnes**, targeted to begin in 2028. In December 2025, INALUM opened a tender for 1.2 GW (6 x 200 MW) of captive power capacity to support Phase 2 operations (DMC, 2025). Aiming for cost-efficiency, the company has set a target price of USD 4-5 cents per kWh. The tender is fuel-neutral, **accepting bids for both coal and gas sources** (Warta Ekonomi, 2025).

Last, PT Tianshan Alumina project in Lingga, Riau Islands — aiming for **2 million tpa of alumina** — is linked to a 160 MW captive coal plant for its first phase of operations (Mysteel, 2025). It has progressed to the permitted stage but remains physically stalled due to a site overlap with an Indonesian Navy training area. As of January 2026, a joint field team from the Ministry of Defense, Indonesian Navy, and the local government is being formed to conduct a final site review and determine the project's fate (Kutipan, 2026).

Further expansion in the **nickel** industry is also underway, in spite of its already-massive fleet, as evidenced by PT Petrindo Jaya Kreasi Tbk (CUAN) acquisition of PT Guna Darma Integra (GDI) through its subsidiary PT Volta Daya Energi Indonesia (VDEI) (Petrindo, 2025). This transaction has cleared the path for a USD 600 million, 680 MW coal plant in Halmahera, North Maluku, designed to serve as the energy backbone for the Feni Haltim (FHT) Industrial Park. This USD 6 billion initiative will feature both pyrometallurgical RKEF and hydrometallurgical HPAL smelters (IndoPremier, 2025).

Managed by a joint venture between PT Aneka Tambang Tbk (Antam) and Ningbo Contemporary Brunp Lygend (CBL) – a subsidiary of the global battery leader CATL – the park is targeted to annually produce **88,000 tpa of NPI by 2027 and 55,000 tpa of MHP by 2028**. Beyond smelting, the FHT site is planned to host facilities for Nickel-Cobalt-Manganese (NCM) cathode materials and a battery recycling plant (Bloomberg Technoz, 2025).

Indonesia Weda Bay Industrial Park (IWIP) in North Maluku, already linked to 4.54 GW of operational captive coal power, remains a primary driver of captive growth. As of early January 2026, IWIP has absorbed a fresh USD 8 billion investment round. This capital is fueling a comprehensive battery-to-aluminum ecosystem, including an electrolytic aluminum smelter slated to begin production later in 2026, alongside HPAL plants.

Despite persistent growth in the broader nickel industry, a notable downturn has impacted PT Gunbuster Nickel Industry (GNI), one of Indonesia's largest operators. Delong Nickel Phase III, under PT Gunbuster Nickel Industry, is now reported to be facing a critical standstill. Following the bankruptcy and restructuring of its Chinese parent company, Jiangsu Delong Nickel Industry Co. in late 2024, the project has effectively been shelved (Bloomberg Technoz, 2025a).

In August 2025, PT GNI reportedly slashed production to 30-40% capacity, leaving 12 of its 25 production lines idle, struggled with delayed payments to energy suppliers, and faced difficulties in securing nickel ore supply (Bloomberg Technoz, 2025b). There are ongoing discussions regarding a potential state-led acquisition or consortium involving Danantara and MIND ID to stabilise the assets (Indonesia Miner, 2025; CELIOS, 2025).

Key takeaways and policy recommendations

Indonesia's energy landscape is witnessing a stark divergence as industrial captive coal expansion eclipses national grid development. Between July 2024 and July 2025, captive coal power accounted for over 80% of all new coal additions, pushing the sector to 19.3 GW while grid-connected projects realized less than a third of their targets. Growth is heavily concentrated in nickel hubs, where expansion reaches over two-fold since 2023, directly threatening Indonesia's opportunity to peak power sector emissions by 2030.

With a total of nearly 31 GW from all operational and prospective captive coal capacities, this industrial-only fleet now triples Indonesia's 2023 captive base, eclipses Australia's entire national coal fleet (~23 GW), and rivals the total coal capacity of Germany (32.3 GW).

A critical accountability gap further undermines national decarbonisation efforts, as 4.45 GW of planned projects are simply assumed to be 'avoided' in what stands as Indonesia's only comprehensive attempt to map its captive power landscape. These projects are shielded by regulatory loopholes in PERPRES 112/2022, which grants exemptions to PSN and lacks public mechanisms to enforce mandated 35% emission reductions. Without reconciling independent monitoring with official plans, this risks signaling a wavering commitment and a diluted will, pushing the national emissions peak to 2037, assuming current plant build timelines and average usage.

The human and economic costs of this trajectory are severe, with the exclusion of captive coal from retirement targets projected to cause 27,000 additional deaths and USD 20 billion in economic burden cumulatively, spanning from the present through the final decommissioning of the last operating units (CREA, 2023).

A focused study on nickel hubs, specifically Central Sulawesi, Southeast Sulawesi, and North Maluku, debunks the myth of sustained economic gain; while the industry's economic yield peaks in its fifth year, the environmental impacts begin to drastically erode total economic output by the eighth year. Environmental degradation is expected to result in IDR 3.64 trillion (USD 235 million) in losses for local farmers and fishermen over the next 15 years. Furthermore, air pollution alone in these regions is set to cause 5,000 annual deaths and a USD 3.42 billion yearly economic burden by 2030 (CREA, 2024).

This proves that the industry is trading traditional livelihoods and long-term public health for short-term industrial gain.

While marketed as part of the green electric vehicle supply chain, coal-powered nickel hubs have become 'sacrifice zones' for local communities. In December 2025, Poso District Court ruled that PT Gunbuster Nickel Industry (GNI), PT Nadesico Nickel Industry (NNI), and PT Stardust Estate Investment (SEI) operating in North Morowali, Central Sulawesi, committed unlawful acts resulting in severe environmental pollution and destruction (Betahita.id, 2025). The court ordered these companies, who own and operate major captive coal plants and industrial estates, to restore coastal areas, rivers, and settlements within six months.

Beyond this, Indonesia faces significant strategic risks as a critical mineral supplier. Failure to decarbonise its industrial base could jeopardize its position in global supply chains and lead to exclusion under international carbon-based standards and trade measures. Urgent policy intervention is required to integrate captive retirement into national planning and secure a just energy transition.

To ensure a transparent and just decarbonisation pathway, the Indonesian government should prioritise the following actions:

- **Synchronizing data and closing loopholes in the regulation** — The government and supporting actors must recognise the need to synchronise RUKN and JETP databases with independent monitoring to eliminate the transparency gap, and revisit PERPRES 112/2022 to remove exemptions that bypass the coal moratorium.
- **Mandating accountability and early retirement** — Policymakers should establish a public monitoring framework to enforce the 35% emissions reduction mandate and explicitly integrate captive coal units into national 2040 phase-out targets to mitigate health and economic costs.
- **Putting clean energy and strategic investment first, and scaling up efforts** — Indonesia can no longer afford delays in its clean energy development, which is essential for meeting **the 2030 JETP climate targets**. The hard-won commitment through the partnership currently outlines aims to fundamentally transform the national power sector by 2030.[3]

As a nation that enters a pivotal period to move towards the Golden Indonesia 2045 aim, Indonesia must acknowledge the profound economic and environmental benefits of an ambitious early retirement schedule for its coal fleet. This is especially critical for captive assets, which are projected to reach **28 GW by the early 2030s**, and currently entrench some of the most carbon-intensive industrial practices globally.

[3] Capping total emissions at 290 MTCO2e, setting a sub-cap of 250 MTCO2 for the on-grid system, accelerating renewables share in on-grid generation to 44% (56.5 GW in JETP CIPP 2023 scenario), and establishing a roadmap to achieve Net Zero Emissions by 2050 (JETP, 2023)

Methodology

This study utilises comprehensive datasets to track and analyse coal-fired power generation trends and heavy industry developments.

Global Coal Plant Tracker (GCPT) by Global Energy Monitor (GEM) — GEM's Global Coal Plant Tracker (GCPT) provides information on coal-fired power units from around the world generating 30 megawatts and above. The GCPT catalogues every operating coal-fired generating unit, every new unit proposed since 2010, and every unit retired since 2000. The GCPT uses a two-level system for organising information, consisting of both a database and wiki pages with further information. The database and Wiki pages are updated bi-annually. Coal plant data is validated and updated through government data, reports by power companies, news and media reports, local non-governmental organisations, on-the-ground contacts, and satellite imagery.

CREA's analysis — CREA analyses the progression in captive coal power in the past year, and assesses growth between July 2023, July 2024, and July 2025. In this study, further research was done to compile entries for units excluded in the GCPT's routine monitoring that applies to coal-fired power plants with 30 MW capacity or larger. CREA and GEM anticipate periodic updates to the supplemental dataset for captive coal power plants with a capacity below 30 MW, ensuring that our mapping of the captive power sector remains a current and accurate tool for researchers and policymakers.

Identifying and verifying new projects — Beyond currently known projects, the study also identifies newly announced projects, informing emerging industrial needs. Sources used to verify existing entries and collect relevant new information for announced projects, include reports released by government agencies, companies, trade associations, news articles, interviews, research papers, local advocacy groups, social media releases, and other publicly available documents.

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