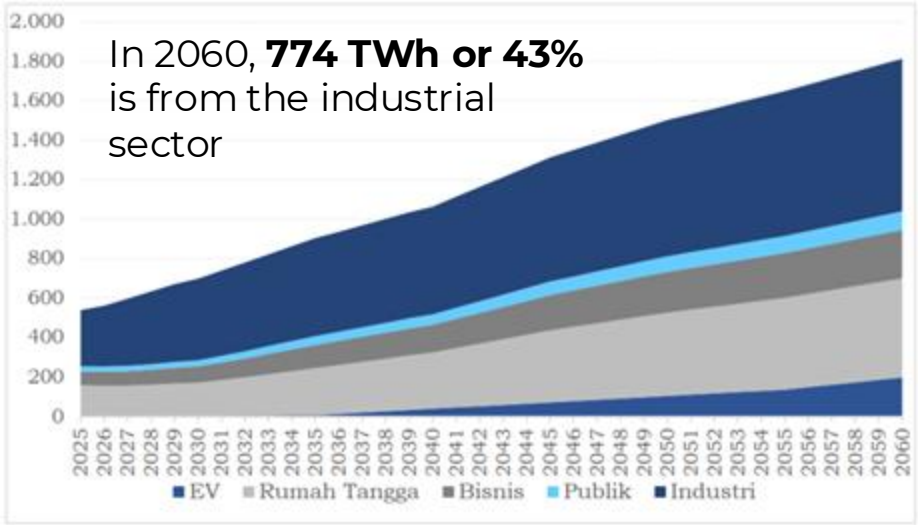
Introduction to Fossil Fuel Captive Power Plant Mapping

Institute for Essential Services Reform (IESR)

3 Desember 2025

Urgency of Captive Power Decarbonisation

National Electricity Demand Projection (TWh)



Source: RUKN 2025-2060

Net Zero and Decarbonisation Commitments

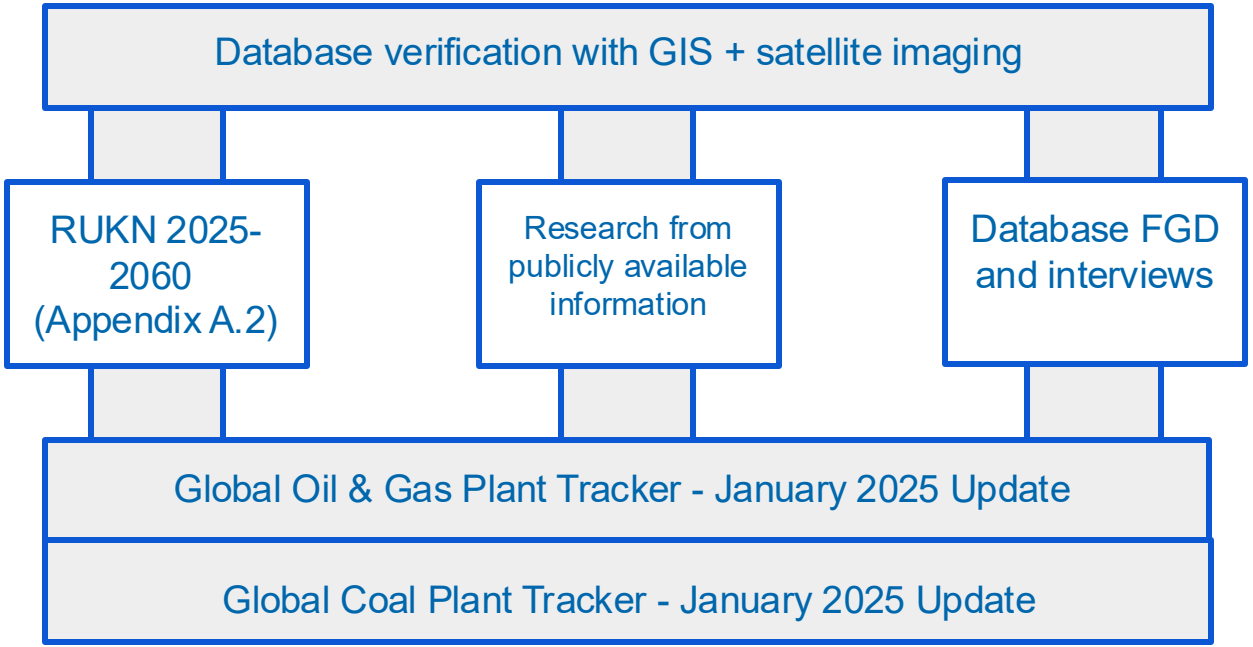
JETP INDONESIA

meanwhile...

- Perpres no. 112/2022 still allows new coal power plants for industrial use
- Captive coal & other fossil-fueled power plants still favoured by industries

Fossil-fuel Captive Power Database Development

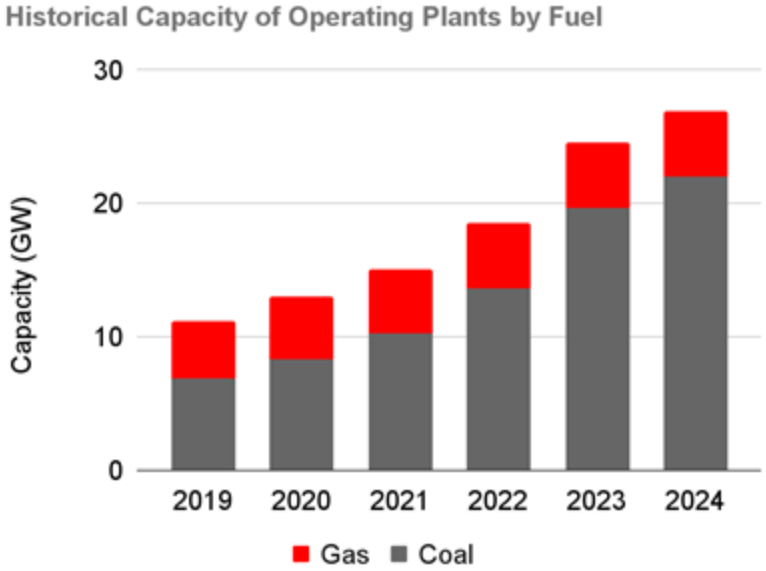
Data sources



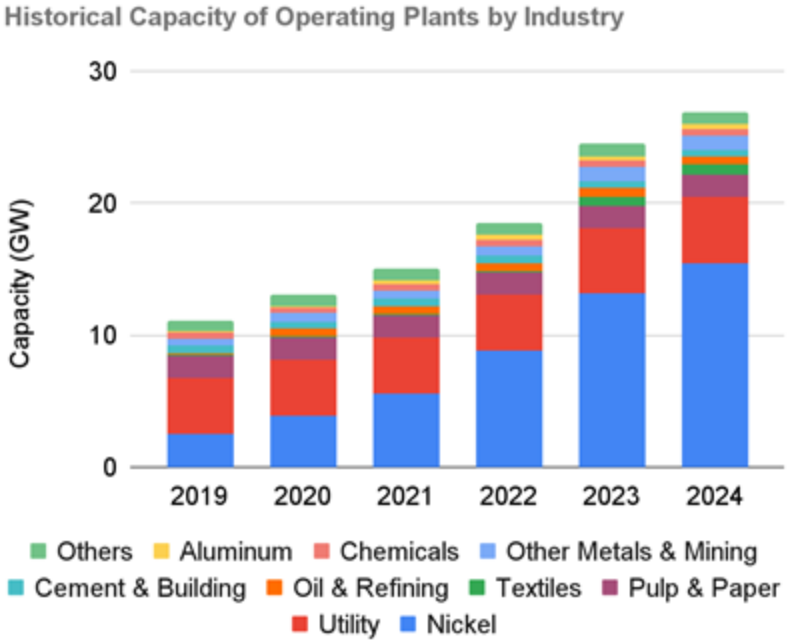
- **137 companies** with captive power licenses
- **175 units** of captive power plants with **11 types of technologies**
- **31.1 GW of total capacity** (announced, permit, construction, operation)

Fossil-fuel Captive Power Database Development

Historical Coal and Gas Captive Power Nameplate Capacity



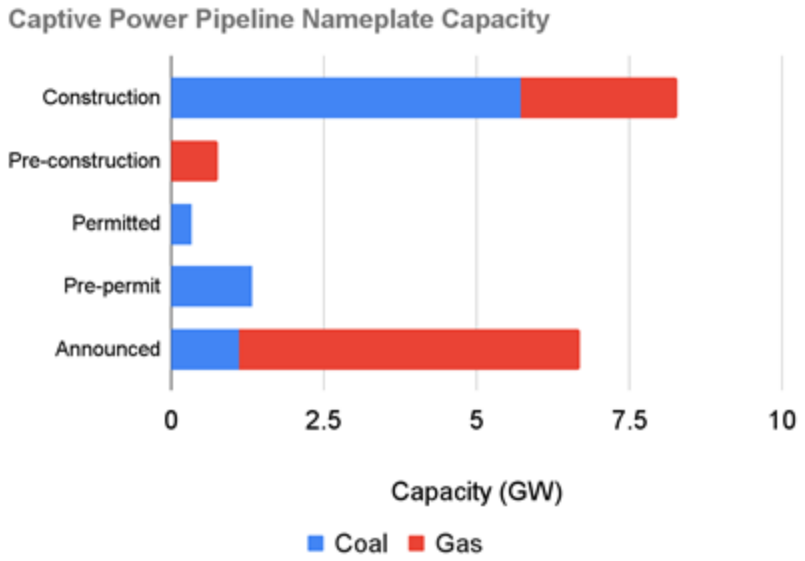
Coal forms the bulk of historical captive power capacity, with continuous growth annually.



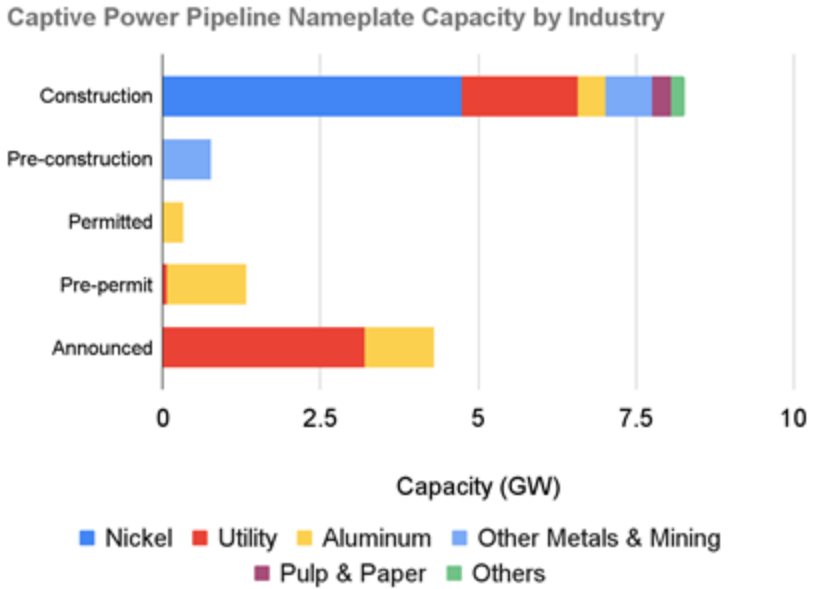
The nickel industry dominates captive fossil-fueled plants historical capacity, growing over 500% in the 5-year period to 15.5 GW.

Fossil-fuel Captive Power Database Development

Coal and Gas Captive Power Nameplate Capacity in the Pipeline



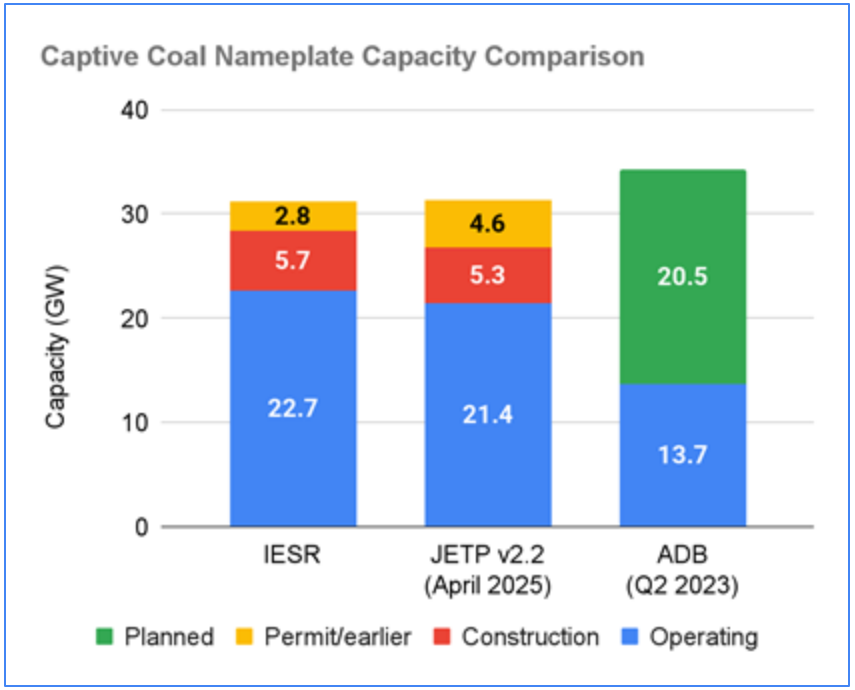
There are 17.4 GW of coal and gas captive power plants in the pipeline, with over 5 GW of coal plants and 2.5 GW of gas plants already in construction.

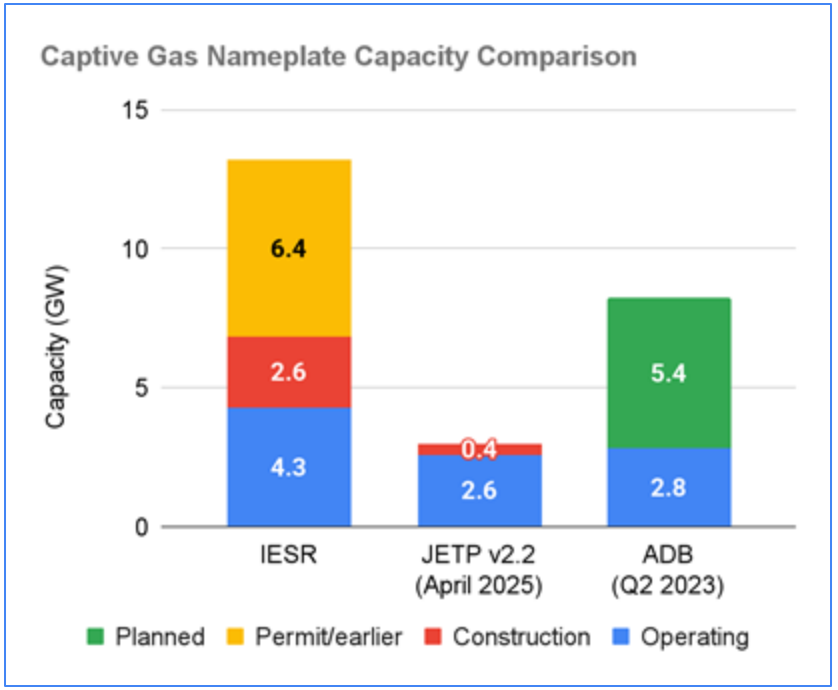


Nickel, utility, and aluminum industries lead the captive power capacity additions.

Fossil-fuel Captive Power Database Development

Key Database Comparisons (Note: Updated JETP Database on CIPP Document)





Coal capacity is relatively similar to other captive data sources, need to verify:
(1) asset details and (2) development status

Large permit/earlier gas capacity caused by 5.6 GW "announced" plants with little information outside of GEM, will need to verify development status

Fossil-fuel Captive Power Database Development

Verification using GIS and Satellite Imaging

Pinpoint exact location by using satellite images (Google)

Karpowership Zeynep Power Station in Amurang, North Sulawesi

Conch North Sulawesi Cement Power Station in Mongondow, North Sulawesi

The data that has been collected requires further checking regarding the location of the power plant.

Some issues found include:

- The power plant is located in an inappropriate location (forest, sea, settlement)
- The location of the power plant is assumed to be the same as the location of the company office

Fossil-fuel Captive Power Database Development

Verification using GIS and Satellite Imaging

Development status checking

Image: November 2023, Maxar

Construction of PLTU Ambunu (BTIIG)
Baoshuo Taman Industry Investment Group
in IHIP, Morowali, Central Sulawesi

Image: Desember 2024, Maxar

Status Change: Construction to Operating

Fossil-fuel Captive Power Database Development

Verification using GIS and Satellite Imaging

Number of units

Image: January 2025, Maxar

Confirmed number of units in GEM - GCPT data

Image: March 2022, Maxar

6 units x 150 MW in GEM - GCPT data
Corrected to 5 x 150 MW

Database as Input to MCDA

Scoring Criteria per Intervention

On-grid power system integration

- Distance to nearest substation (km)
- System reserve margin after addition of captive demand (MW)

On-site renewable power sources

- Renewable technical potential on-site

Fuel-switching from coal to gas

- Distance to nearest gas pipe connection (km)
- Distance to Shoreline (km)

CCS/CCUS

- Unit capacity (MW)
- Distance to carbon storage site (km)
- Population density (density/ km2)

General Criteria:

- Project development (Status)
- COD date (year)
- Emission reduction potential (tCO2/year)
- Assumed 70% CF * respective power plant type emission factor
- Unit capacity (MW)

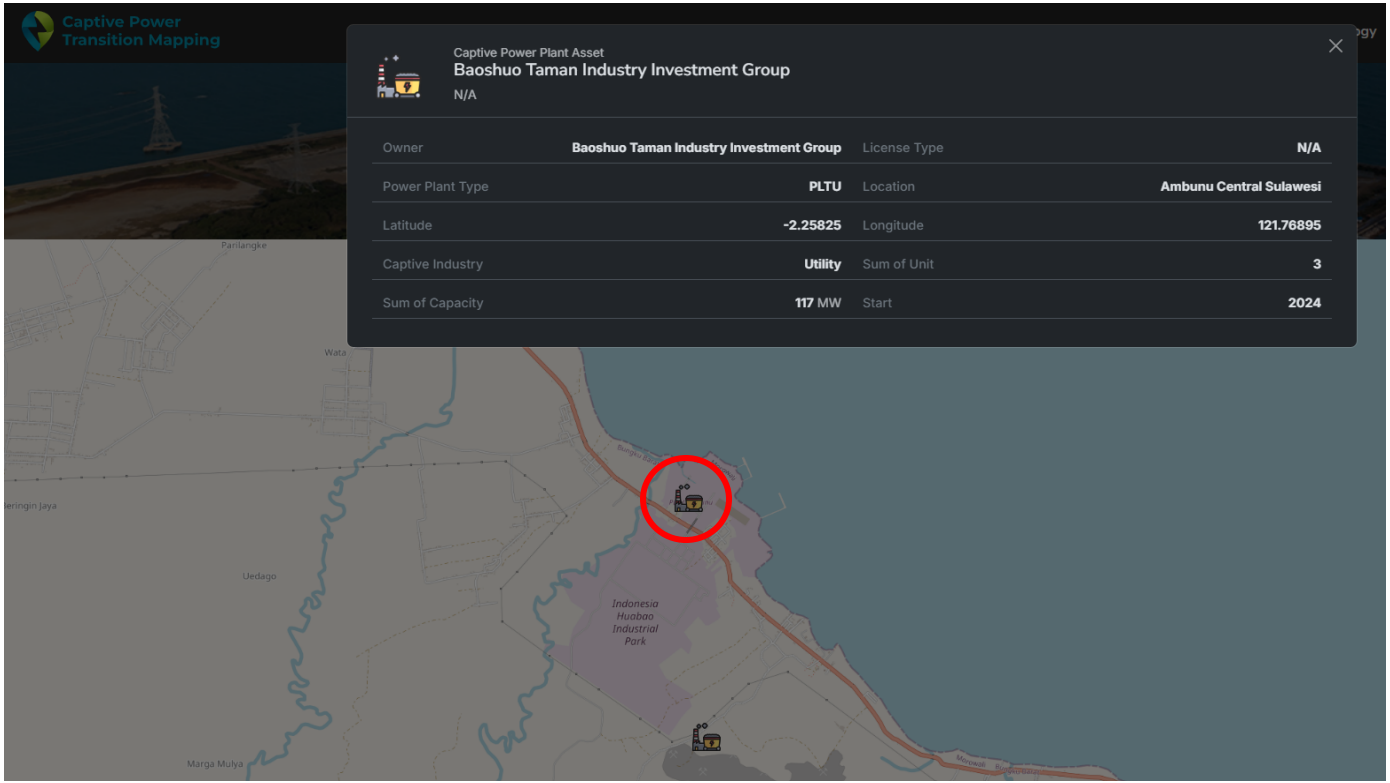
Captive Power Transition Mapping

https://captivepp.coalradar.id/

Captive Power Transition Mapping is a central platform for data, information, and mapping on independently operated (captive power plant) fossil fueled power plants, as well as available intervention options to support the decarbonization agenda of captive power plants. This platform is expected to serve as a reference for industry actors seeking to decarbonize existing captive power plants or to build new renewable energy-based power plants to support industrial activities in line with efforts to achieve net-zero emissions targets set by industry management.

Captive Power Plant Asset (1)

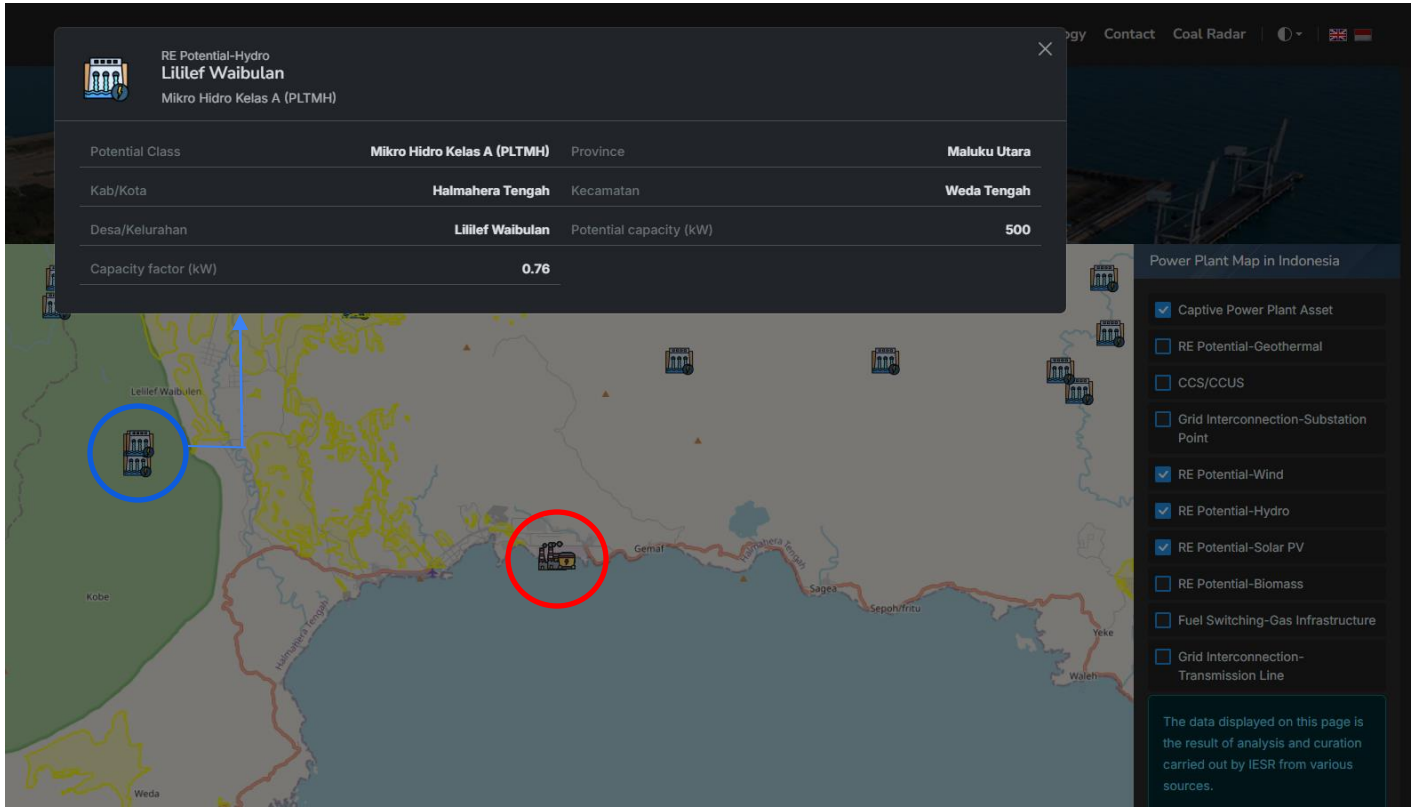
Captive Power Plant Asset (2)



The captive power plant asset shown properties, such as:

- Owner
- License Type
- Power Plant Type
- Location
- Coordinate
- Captive Industry
- Sum of Power Plant Unit
- Sum of Power Plant Capacity
- Operation Starting Date

Captive Power Plant Asset – Renewable Reseources



Showing renewable resources around captive power plant asset vicinities.

Captive Power Plant Asset – Infrastructure

Showing gas infrastructure, grid transmission line, and substation point around captive power plant asset.

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Thank You

Accelerating Low Carbon Energy Transition

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